

**Finding of No Significant Impact for the National Marine Fisheries Service's
Issuance of a Marine Mammal Protection Act Incidental Harassment Authorization
for Take Associated with Shell Gulf of Mexico Inc.'s 2015 Chukchi Sea, Alaska
Exploration Drilling Program**

National Marine Fisheries Service

BACKGROUND

The National Marine Fisheries Service (NMFS) received an application from Shell Gulf of Mexico Inc. (Shell) for an authorization to take small numbers of marine mammals, by harassment, incidental to conducting an offshore exploration drilling program in the Chukchi Sea, Alaska, during the 2015 open-water season. Pursuant to the Marine Mammal Protection Act (MMPA), authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses, and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring, and reporting of such takings are set forth.

In accordance with the National Environmental Policy Act (NEPA) and its implementing regulations and agency NEPA procedures, NMFS completed a *Final Environmental Assessment for the Issuance of an Incidental Harassment Authorization for the Take of Marine Mammals by Harassment Incidental to Conducting an Exploration Drilling Program in the U.S. Chukchi Sea*. This Finding of No Significant Impact has been prepared to evaluate the significance of the impacts of NMFS' proposed action and is specific to Alternative 1 in the Environmental Assessment (EA), which was identified as the preferred alternative. Alternative 1 is entitled "Issuance of an Authorization with Mitigation Measures." Based on NMFS' review of Shell's proposed action and the measures contained in Alternative 1, 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. 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 (MSFCMA) and identified in fishery management plans?

Response: NMFS does not anticipate that either issuance of the IHA or Shell's proposed activity would cause substantial damage to the ocean and coastal habitats. Several aspects of Shell's activity may impact coastal and ocean habitats, including: vessel traffic; vessel noise; and vessel anchoring; mudline cellar (MLC) construction; drilling noise and drill cuttings; permitted waste stream discharges; water withdrawals; small refueling spills; and oil spills from vessel accidental spills or well releases. The primary types of impacts would be acoustic in nature, which would not affect physical habitat features, such as substrates and water quality. While other aspects of the program may directly affect ocean and coastal habitats, such as discharges, those impacts are not expected to cause substantial damage. Shell will recycle and cool drilling muds. In addition, due to the remote chance for an oil spill by Shell's drilling program in 2015, and the relatively short time period the activity will remain on-site, no significant impacts on benthic resources are expected. The Northern Pacific Fishery Management Council (NPFMC) has designated EFH in the northeastern Chukchi Sea for Pacific salmon, arctic cod, saffron cod, and snow crab. NMFS' Office of Protected Resources Permits and Conservation Division has determined that the issuance of IHAs for the taking of marine mammals incidental to conducting an offshore exploration drilling program in the U.S. Chukchi Seas will not have an adverse impact on EFH; therefore, an EFH consultation is 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 Level B harassment incidental to Shell's exploration drilling program would not have a substantial impact on biodiversity or ecosystem function within the affected area. The impacts of the exploration drilling program on marine mammals result primarily from the acoustic activities, and these impacts are expected to be temporary in nature and not result in a substantial impact to marine mammals or to their role in the ecosystem. Source levels for the drillship *Discoverer* were generally close to the zone for potential injury. While the zone for potential injury is slightly larger for the airguns (920 m for 180-dB isopleth and 170 m for 190-dB isopleth), this activity would only occur for 20 – 28 hours over the course of the entire four month operating season. The IHA anticipates, and would authorize, Level B harassment only, in the form of temporary behavioral disturbance, of several species of cetaceans and pinnipeds. No injury (Level A harassment), serious injury, or mortality is anticipated or authorized, and the Level B harassment is not expected to affect biodiversity or ecosystem function.

NMFS' evaluation indicates that any direct or indirect effects of our action would not result in a substantial impact on biodiversity or ecosystem function. In particular, the potential for effects on biodiversity components are considered here with regard to the potential effects on diversity or functions that may serve as essential components of marine mammal habitats. Most effects are considered to be short-term and unlikely to affect normal ecosystem function or predator/prey relationships; therefore, NMFS determined that there will not be a substantial impact on marine life biodiversity or on the normal function of the nearshore or offshore ecosystems of the Chukchi Sea, Alaska.

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

Response: NMFS does not expect either issuance of the proposed IHA or Shell's proposed operations to have a substantial adverse impact on public health or safety. The constant monitoring for marine mammals, other marine life, and subsistence hunting and fishing vessels during operations effectively eliminates the possibility of any humans being inadvertently exposed to levels of sound that might have adverse effects. An oil spill (which is not authorized by the IHA, making it a prohibited action if one should occur) is highly unlikely (see response to question 6), and Shell has implemented measures to ensure that one does not occur, and if one did occur, that it can be cleaned up quickly and efficiently.

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 IHA would authorize Level B harassment (in the form of short-term and localized changes in behavior) of small numbers of marine mammals, including the endangered bowhead whale and threatened ringed and bearded seals, incidental to the proposed exploration drilling program. No injury (Level A harassment), serious injury, or mortality is anticipated or authorized. Behavioral effects may include temporary and short-term displacement of cetaceans and pinnipeds from within certain sonarified zones. The deflection of species would reduce further the likelihood of more severe impacts. The monitoring and mitigation measures required for the activity are designed to ensure that impacts are at the lowest level practicable.

Taking these measures into account, effects on marine mammals from the preferred alternative are expected to be limited to avoidance of the area around the operations and short-term behavioral changes, falling within the MMPA definition of "Level B harassment." Numbers of individuals of all marine mammal species incidentally taken to the specified activity are expected to be small (relative to species abundance), and the incidental 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.

On January 12, 2015, NMFS (Office of Protected Resources, Permits and Conservation Division) initiated a formal consultation, under Section 7 of the Endangered Species Act

(ESA), with the NMFS, Alaska Regional Office, Protected Resources Division on the proposed issuance of an IHA to Shell to take marine mammals incidental to conducting an offshore exploration drilling program in the Chukchi Sea. In June 2015, NMFS finished conducting its section 7 consultation and issued a Biological Opinion, and concluded that the issuance of the IHA associated with Shell's 2015 Chukchi Sea drilling program is not likely to jeopardize the continued existence of the endangered bowhead, humpback, and fin whale, and the Arctic sub-species of ringed seal. 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 Alaska Native subsistence activities in the Chukchi Sea. Shell also signed the 2015 Conflict Avoidance Agreement (CAA) with the Alaska Eskimo Whaling Commission (AEWC), which requires measures to reduce impacts to bowhead whales, several of which will be incorporated into the issued IHA.

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

Response: There are no commercial fishing activities that might be affected by offshore exploration drilling for oil and gas deposits. Since Level B harassment of marine mammals is anticipated, the potential 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; walruses; and polar bears. (Note that walrus and polar bear are under the jurisdiction of the U.S. Fish and Wildlife Service.) 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 Chukchi Sea. 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 in the Chukchi Sea communities between April and July, which is mainly outside of the timeframe of Shell's proposed operations. Shell will not enter the Chukchi Sea prior to July 1 and will communicate with the local communities about transits through the region, which help avoid impacts on the Kasegaluk Lagoon summer beluga hunt. Fall whaling in Barrow and Wainwright would likely occur in late September or October. Wainwright is the closest coastal village to Shell's proposed Chukchi Sea drill sites and is located approximately 78 mi (125.5 km) away. Barrow is located 140 mi (225 km) east of the proposed drill sites. Adverse impacts are not anticipated on sealing activities since the majority of hunts for seals occur in the winter and spring, when Shell will not be operating. Moreover, most sealing and whaling are

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.

conducted closer to shore than where Shell's operations will occur. Vessels will be required to communicate with the local communities when transiting back and forth between the coast and the drill sites to avoid interfering with hunting activities. Lastly, Shell will demobilize by October 31 so that transit through the Bering Strait is completed by November 15 so as to avoid impacts to late fall hunting by the communities on St. Lawrence Island.

To avoid having a significant social or economic impact, Shell will implement the measures contained in the signed CAA and the POC. Therefore, NMFS has determined (based on the above stated reasons and the analysis contained in the EA) that neither issuance of the IHA nor Shell's proposed activities are likely to result in significant socioeconomic or cultural impacts.

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, the effects are not likely to be highly controversial due to the size, nature, or effect of NMFS' proposed action. The existence of some disagreement about the effects of noise 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 regarding effects of noise from industry, environmental organizations, and Native Alaskan groups have focused mainly on: (1) questions and concerns related to NMFS' compliance with NEPA and the MMPA; and (2) criticism of the mitigation and monitoring measures proposed by NMFS. As noted elsewhere in this Finding of No Significant Impact and in NMFS' final IHA determination, NMFS is requiring, as proposed by Shell, with modifications based on an independent scientific peer review, a detailed mitigation and monitoring program designed to gather additional data and reduce impacts on affected marine mammal stocks to the lowest level practicable.

NMFS also made the Draft EA available to the public for comment on the NMFS permit website (<http://www.nmfs.noaa.gov/pr/permits/incidental.htm#applications>), along with a Notice of Proposed IHA in the *Federal Register* on November 9, 2011 (76 FR 69958), which allowed the public to submit comments for up to 30 days from the date of publication of the notice. During the 30-day public comment period, NMFS received comments from the Marine Mammal Commission; the Alaska Eskimo Whaling Commission; the North Slope Borough; Shell; the Northern Alaska Environment Center; the Environmental Investigation Agency; Oceana, Ocean Conservancy, and Audubon Alaska; and Alaska Wilderness League, Center for Biological Diversity, Earthjustice, EIA, Greenpeace, Natural Resources Defense Council, NAEC, Ocean Conservation Research, and Sierra Club, along with a form letter signed by 180,036 private citizens (with many duplicate submissions). All comments will be addressed in the Federal Register notice announcing our final decision on the proposed issuance of the IHA.

The comments primarily focused on: (1) requirements under the MMPA, NEPA and ESA; (2) impacts of noise and potential oil spills on marine mammals and the subsistence lifestyle of impacted communities; and (3) the mitigation and monitoring measures proposed by Shell and NMFS. In reviewing these concerns (which are addressed in NMFS' final IHA determination and the Final EA), NMFS determined that its actions are in full compliance with NEPA, the MMPA, the ESA and other statutes.

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, EFH, or ecologically critical areas?

Response: Shell's proposed exploration drilling program will occur in the U.S. Chukchi Sea where no park land, prime farmlands, wetlands, wild and scenic rivers, critical habitat are present. Bowhead whales migrate through the area. However, Shell's activities will not commence until after the spring migration is complete through the area. The fall westward bowhead whale migration typically begins in late August or early September and continues throughout October. Mitigation measures are in place to reduce impacts to the lowest level practicable. Some ice seals conduct important life functions in the Chukchi Sea, such as making subnivean lairs for pupping; however, those activities do not co-occur temporally with Shell's operations. Detailed information about the affected environment, other marine mammals, and marine life are provided in the Final EA.

To the extent that marine mammals are important features of these resource areas, the potential temporary behavioral disturbance of marine mammals might result in short-term behavioral effects on cetaceans and pinnipeds within ensonified zones, but no long-term displacement of marine mammals, endangered species, or their prey is expected as a result of the action or the issuance of an IHA for marine mammals. Mitigation measures would reduce this potential further.

The Northern Pacific Fishery Management Council (NPFMC) has designated EFH in the northeastern Chukchi Sea for Pacific salmon, arctic cod, saffron cod, and snow crab under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). However, based on the limited area and the short duration of the proposed activity, NMFS has determined that Shell's exploration drilling will not have a substantial impact to the EFH.

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 likely to be highly uncertain or involve unique or unknown risks. The exact mechanisms of how different sounds may affect certain marine organisms are not fully understood, but there is no substantial dispute about the size, nature, or effect of this particular action. While NMFS' judgments on impact thresholds are based on somewhat limited data, enough is

known for NMFS and the regulated entity (here Shell) to develop precautionary monitoring and mitigation measures to minimize the potential for significant impacts on biological and cultural resources. The multiple mitigation and monitoring requirements are designed to ensure the least practicable impact on the affected species or stocks of marine mammals, to ensure no unmitigable adverse impact on the availability of marine mammal species or stocks for taking for subsistence uses, and also to gather additional data to inform future decision-making.

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

Response: Shell's conduct of the exploration drilling program 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, Shell's ice overflight surveys in the Beaufort and Chukchi Seas, SAE's 3D seismic survey and Hilcorp's shallow geohazard surveys in the Beaufort Sea) and BOEM Lease Sales in the U.S. Chukchi and Beaufort Seas. However, these activities are temporally and spatially 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. These activities, when conducted separately or in combination with other activities, can affect marine mammals in the study area. Any cumulative effects caused by the addition of the exploration drilling program 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.

NMFS has issued Incidental Take Authorizations for seismic surveys (to the oil and gas industry, NSF, USGS, and other organizations) that may have resulted in the harassment of marine mammals, but the surveys are dispersed both geographically (throughout the world) and temporally, are short term in nature, and all include required monitoring and mitigation measures to minimize impacts. There is no indication, based on our review of the data from past seismic surveys, that marine mammals have experienced significant adverse impacts from these activities. Thus, NMFS has determined that proposed action will not lead to cumulatively significant impacts.

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 historical resources?

Response: NMFS' proposed action is not likely to adversely affect native cultural resources along the Chukchi Sea coast. As described in question 5 above, implementation of mitigation and monitoring measures in the IHA issued to Shell and outreach and coordination with Alaska Native communities 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. Shell's proposed action is not likely, directly or indirectly, to adversely affect places or objects listed in or eligible for listing in the National Register of Historic Places, or other significant scientific, cultural or historical resources as none are known to exist at the site of the proposed action.

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

Response: NMFS' issuance of the IHA is not expected to result in the introduction or spread of non-indigenous species.

12) Is the proposed action likely to establish a precedent for future actions with significant effects or represent 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 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. A finding of no significant impact for this action, and for NMFS' 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 proposed action to violate any Federal law or requirements imposed for the protection of the environment, as NMFS has fulfilled its section 7 responsibilities under the ESA (see response to question 4 above) and the MMPA (by submitting an application for an IHA) for this action.

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: Shell's exploration drilling program and NMFS' issuance of an IHA are not expected to result in any significant adverse effects on species incidentally taken by harassment. There have been no other exploration drilling operations in the U.S. Arctic for the last few years. However, there have been several oil and gas industry seismic and shallow hazards and site clearance surveys in the U.S. Arctic since 2006. Shell is proposing to conduct ice overflight surveys in the Beaufort and Chukchi Seas in 2015. Additionally, SAE and Hilcorp will both be conducting seismic and shallow

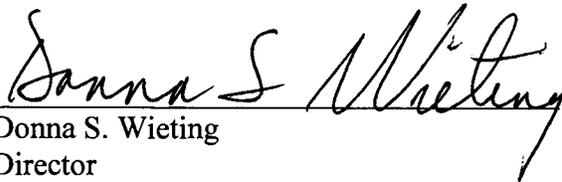
geohazard surveys, respectively, in the Beaufort Sea in 2015. However, there will be no overlap in the applicable ensonified areas of Shell's Chukchi Sea exploration drilling program and other oil and gas exploration and production activities in the U.S. Arctic. NMFS does not believe the effects of this action combined with effects from the other operations and surveys would result in cumulative adverse effects.

As described in the EA, anthropogenic activities such as commercial fishing, subsistence hunting and fishing, oil and gas development, and vessel traffic all have the potential to take marine mammals in the Arctic Ocean to varying degrees either through behavioral disturbance (vessel noise, and low-, mid-, and high-frequency sound) or more direct forms of injury or death (hunting, vessel collisions). Impacts of the proposed exploration drilling program in the Chukchi Sea are, however, expected to be minor, short-term, and incremental when viewed in light of other human activities within the study area. Unlike some other activities (e.g., Alaska Native subsistence hunting and fishing), the proposed exploration drilling program is not expected to result in injuries or deaths of marine mammals. Thus, the combination of Shell's operations with the existing oil and gas development and exploration, vessel traffic, and hunting and fishing activities is expected to produce only a negligible increase in overall disturbance effects on marine mammals. Take of only small numbers of each species by behavioral disturbance is authorized, and no injury, serious injury, or mortality is anticipated or authorized. Therefore, the proposed action is not expected to contribute to or result in a cumulatively significant impact to marine mammals or other marine resources.

Because of the relatively short time that the project area will be ensonified, NMFS anticipates that the proposed action will not result in cumulative adverse effects that could have a substantial effect on any species, such as cetaceans and pinnipeds in the area (see responses to questions 4 and 9 above). The survey would also not be expected to have a substantial cumulative effect on any seabirds, 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 seismic airguns, this loss is not expected to be significant, and would only occur for approximately 20-28 hours over the entire four month season of operations. Additionally, adult fish near seismic or drilling operations are likely to avoid the immediate vicinity of the source due to hearing the sounds at greater distances, thereby avoiding injury. Based on the implementation of required monitoring and 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 *Final Environmental Assessment for the Issuance of an Incidental Harassment Authorization for the Take of Marine Mammals by Harassment Incidental to Conducting an Exploration Drilling Program in the U.S. Chukchi Sea*, 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 an offshore exploration drilling program in the Chukchi Sea, Alaska, in accordance with Alternative 1 in NMFS' 2015 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 action have been addressed 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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JUN 02 2015

Date