DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XD732

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Shell Ice Overflight Surveys in the Beaufort and Chukchi Seas, Alaska

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; proposed incidental harassment authorization; request for comments.

SUMMARY: NMFS received an application from Shell Gulf of Mexico Inc. (Shell) for an Incidental Harassment Authorization (IHA) to take marine mammals, by harassment, incidental to ice overflight surveys in the Chukchi and Beaufort Seas, Alaska. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an IHA to Shell to take, by Level B harassment only, seven species of marine mammals during the specified activity.

DATES: Comments and information must be received no later than [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: Comments on the application should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910. The mailbox address for providing email comments is ITP.Guan@noaa.gov. NMFS is not responsible for e-mail comments sent to addresses other than the one provided here. Comments sent via e-mail, including all attachments, must not exceed a 10-megabyte file size.

Instructions: All comments received are a part of the public record and will generally be

posted to http://www.nmfs.noaa.gov/pr/permits/incidental.htm without change. All Personal Identifying Information (for example, name, address, etc.) voluntarily submitted by the commenter may be publicly accessible. Do not submit Confidential Business Information or otherwise sensitive or protected information.

A copy of the application, which contains several attachments used in this document, including Shell's marine mammal mitigation and monitoring plan (4MP) and Plan of Cooperation, may be obtained by writing to the address specified above, telephoning the contact listed below (see **FOR FURTHER INFORMATION CONTACT**), or visiting the internet at: *http://www.nmfs.noaa.gov/pr/permits/incidental.htm*. Documents cited in this notice may also be viewed, by appointment, during regular business hours, at the aforementioned address.

FOR FURTHER INFORMATION CONTACT: Shane Guan, Office of Protected Resources, NMFS, (301) 427-8401.

SUPPLEMENTARY INFORMATION:

Background

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq*.) direct the Secretary of Commerce to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

An 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 (where relevant), and if the

permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth. NMFS has defined "negligible impact" in 50 CFR 216.103 as "an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival."

Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as: any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment].

Summary of Request

On December 2, 2014, Shell submitted an application to NMFS for the taking of marine mammals incidental to ice overflight surveys the Chukchi and Beaufort Seas, Alaska. After receiving comments and questions from NMFS, Shell revised its IHA application on January 13, 2015. NMFS determined that the application was adequate and complete on January 15, 2015.

The proposed activity would occur between May 1, 2015 and April 30, 2016. The following specific aspects of the proposed activities are likely to result in the take of marine mammals: ice overflight surveys using fixed and rotate winged aircraft when flying at low altitudes.

Shell has requested an authorization to take seven marine mammal species by Level B harassment. These species include: beluga whale (Delphinapterus leucas); bowhead whale (Balaena mysticetus); gray whale (Eschrichtius robustus); bearded seal (Erignathus barbatus);

ringed seal (Phoca hispida); spotted seal (P. largha); and ribbon seal (Histriophoca fasciata).

Description of the Specified Activity

Overview

Shell plans to conduct two periods of ice overflight surveys during May 2015 - April 2016: Break-up surveys and freeze-up surveys.

Shell plans to conduct the overflight surveys from fixed wing and rotary aircraft. The aircraft to be used for the surveys are not currently under contract to Shell or a contractor to Shell. Ice and weather conditions will influence when and where the surveys can be conducted.

Dates and Duration

For initial planning purposes, Shell proposes to conduct the overflight surveys during May 1, 2015 to April 30, 2016.

Specified Geographic Region

The ice overflight survey areas are the Chukchi and Beaufort Seas, Alaska, as indicated in Figure 1-1 of Shell's IHA application. Aircraft supporting these surveys will operate out of Barrow and Deadhorse, Alaska.

Detailed Description of Activities

(1) Proposed Break-Up Surveys

The break-up surveys will occur between June and July in either the Chukchi or Beaufort Sea and will include:

- Up to five fixed-wing flights of approximately 1,500 nm total for up to approximately 13 hours total;
- One helicopter flight totaling of approximately 200 nm total for up to

approximately 3 hours total.

Flight altitudes for fixed wing surveys will range from 30 to 610 m (100 to 2,000 ft) but will mostly be at or above 152 m (500 ft). For helicopter flights, the altitude will range from 15 to 152 m (50 to 500 ft) but will mostly be at or above 61 m (200 ft). Flights will occur when there is daylight. Aircraft are not scheduled to fly at the same time.

(2) Proposed Freeze-Up Surveys

The freeze-up surveys will occur between November 2015 and March 2016 in either the Chukchi or Beaufort Sea and will include:

- Up to seven fixed-wing flights of approximately 2,500 nautical miles (nm) total in early winter for up to approximately 21 hours total;
- One helicopter flight in the Beaufort of approximately 200 nm that will include approximately 4 landings to collect ice measurements during late freeze-up including sampling with a battery powered ice auger for up to approximately 3 hours total.

Flight altitudes for fixed wing surveys will range from 30 to 610 m (100 to 2,000 ft) but will mostly be at or above 152 m (500 ft). For helicopter flights, the altitude will range from 15 to 152 m (50 to 500 ft) but will mostly be at or above 61 m (200 ft). Helicopter flights will also include landings. Flights will occur when there is daylight. Aircraft are not scheduled to fly at the same time.

Proposed Aircraft to Conduct Ice Overflight Surveys

Shell plans to conduct the ice overflight surveys with an Aero Commander (or similar) fixed winged aircraft and a Bell 412, AW 139, EC 145 (or similar) helicopter.

Shell will also have a dedicated helicopter for Search and Rescue (SAR) for the spring 2015 surveys. The SAR helicopter is expected to be a Sikorsky S-92 (or similar). This aircraft will stay grounded at the Barrow shorebase location except during training drills, emergencies, and other non-routine events.

Description of Marine Mammals in the Area of the Specified Activity

The Chukchi and Beaufort Seas support a diverse assemblage of marine mammals, including: bowhead, gray, beluga, killer, minke, humpback, and fin whales; harbor porpoise; ringed, ribbon, spotted, and bearded seals; narwhals; polar bears; and walruses. Both the walrus and the polar bear are managed by the U.S. Fish and Wildlife Service (USFWS) and are not considered further in this proposed IHA notice.

Among the rest of marine mammal species, only beluga, bowhead, and gray whales, and ringed, spotted, bearded, and ribbon seals could potentially be affected by the proposed ice overflight activity. The remaining cetacean species are rare and not likely to be encountered during Shell's ice overflight surveys, which are planned either during winter when nearly 10/10 ice coverage is present, or during spring when sea ice also pre-dominants the study area. Therefore, these species are not further discussed.

The bowhead whale is listed as "endangered" under the Endangered Species Act (ESA) and as depleted under the MMPA. The ringed seal is listed as "threatened" under the ESA. Certain stocks or populations of gray and beluga whales and spotted seals are listed as endangered under the ESA; however, none of those stocks or populations occur in the proposed activity area.

Shell's application contains information on the status, distribution, seasonal distribution, abundance, and life history of each of the species under NMFS' jurisdiction mentioned in this

document. When reviewing the application, NMFS determined that the species descriptions provided by Shell correctly characterized the status, distribution, seasonal distribution, and abundance of each species. Please refer to the application for that information (see ADDRESSES). Additional information can also be found in the NMFS Stock Assessment Reports (SAR). The Alaska 2013 SAR is available at: http://www.nmfs.noaa.gov/pr/sars/pdf/ak2013_final.pdf.

Table 1 lists the seven marine mammal species under NMFS' jurisdiction with confirmed or possible occurrence in the proposed project area.

Table 1. Marine mammal species and stocks that could be affected by Shell's ice overflight surveys in the Beaufort and Chukchi Seas.

Common Name	Scientific Name	Status	Occurrence	Seasonality	Range	Abundance
Odontocetes Beluga whale (Eastern Chukchi Sea stock)	*Dephinapterus leucas*	-	Common	Mostly spring and fall with some in summer	Russia to Canada	3,710
Beluga whale (Beaufort Sea stock)	*Delphinapterus leucas*	-	Common	Mostly spring and fall with some in summer	Russia to Canada	39,258
Mysticetes Bowhead whale	*Balaena mysticetus*	Endangered; Depleted	Common	Mostly spring and fall with some in summer	Russia to Canada	19,534
Gray whale	*Eschrichtius robustus*	-	Somewhat common	Mostly summer	Mexico to the U.S. Arctic Ocean	19,126
Pinnipeds Bearded seal (Beringia distinct population segment)	*Erigathus barbatus*	Candidate	Common	Spring and summer	Bering, Chukchi, and Beaufort Seas	155,000
Ringed seal (Arctic stock)	*Phoca hispida*	Threatened; Depleted	Common	Year round	Bering, Chukchi, and Beaufort Seas	300,000
Spotted seal	*Phoca largha*	-	Common	Summer	Japan to U.S. Arctic Ocean	141,479
Ribbon seal	*Histriophoca*	Species of	Occasional	Summer	Russia to	49,000

	fasciata	concern			U.S. Arctic Ocean	

Potential Effects of the Specified Activity on Marine Mammals

This section includes a summary and discussion of the ways that the types of stressors associated with the specified activity (e.g., aircraft overflight) have been observed to or are thought to impact marine mammals. This section may include a discussion of known effects that do not rise to the level of an MMPA take (for example, with acoustics, we may include a discussion of studies that showed animals not reacting at all to sound or exhibiting barely measurable avoidance). The discussion may also include reactions that we consider to rise to the level of a take and those that we do not consider to rise to the level of a take. This section is intended as a background of potential effects and does not consider either the specific manner in which this activity will be carried out or the mitigation that will be implemented or how either of those will shape the anticipated impacts from this specific activity. The "Estimated Take by Incidental Harassment" section later in this document will include a quantitative analysis of the number of individuals that are expected to be taken by this activity. The "Negligible Impact Analysis" section will include the analysis of how this specific activity will impact marine mammals and will consider the content of this section, the "Estimated Take by Incidental Harassment" section, the "Mitigation" section, and the "Anticipated Effects on Marine Mammal Habitat" section to draw conclusions regarding the likely impacts of this activity on the reproductive success or survivorship of individuals and from that on the affected marine mammal populations or stocks.

The reasonably expected or reasonably likely impacts of the specified activities on marine mammals will be related primarily to localized, short-term acoustic disturbance from

aircraft flying primarily over areas covered by sea ice with limited flight activity over open water and adjacent ice edges. The acoustic sense of marine mammals probably constitutes their most important distance receptor system. Potential acoustic effects relate to sound produced by helicopters and fixed-wing aircraft.

Dominant tones in noise spectra from helicopters are generally below 500 Hz (Greene and Moore 1995). Harmonics of the main rotor and tail rotor usually dominate the sound from helicopters; however, many additional tones associated with the engines and other rotating parts are sometimes present. Because of Doppler shift effects, the frequencies of tones received at a stationary site diminish when an aircraft passes overhead. The apparent frequency is increased while the aircraft approaches and is reduced while it moves away.

Aircraft flyovers are not heard underwater for very long, especially when compared to how long they are heard in air as the aircraft approaches an observer. Very few cetaceans, including the species in the proposed ice overflight survey areas, are expected to be encountered during ice overflights due to the low density of cetacean species in the winter survey area and small area to be flown over open water during spring. Most of these effects are expected in open-water where limited aircraft noise could penetrate into the water column. For cetaceans under the ice, the noise levels from the aircraft are expected to be dramatically reduced by floating ice. Long-term or population level effects are not expected.

Evidence from flyover studies of ringed and bearded seals suggests that a reaction to helicopters is more common than to fixed wing aircraft, all else being equal (Born et al. 1999; Burns and Frost 1979). Under calm conditions, rotor and engine sounds are coupled into the water through ice within a 26° cone beneath the aircraft (Richardson et al. 1995). Scattering and absorption, however, will limit lateral propagation in the shallow water (Greene and Moore

1995). The majority of seals encountered by fixed wing aircraft are unlikely to show a notable disturbance reaction, and approximately half of the seals encountered by helicopters may react by moving from ice into the water (Born et al. 1999). Any potential disturbance from aircraft to seals in the area of ice overflights will be localized and short-term in duration with no population level effects.

Historically, there have been far greater levels of aviation activity in the offshore Chukchi and Beaufort Seas compared with that of the proposed ice overflights. None of this previous offshore aviation activity is believed to have resulted in long-term impacts to marine mammals, as demonstrated by results from a wide range of monitoring programs and scientific studies. Impacts to marine mammals from aviation activities in Arctic offshore habitats have been shown to be, at most, short-term and highly-localized in nature (e.g., Funk et al. 2013; Richardson et al. 1985a, b; Patenaude et al. 2002; Born et al. 1999).

The effect of aircraft overflight on marine mammals will depend on the behavior of the animal at the time of reception of the stimulus, as well as the distance from the aircraft and received level of sound. Cetaceans (such as bowhead, gray, and beluga whales) will only be present, and thus have the potential to be disturbed, when aircraft fly over open water in between ice floes; seals may be disturbed when aircraft are over open water or over ice on which seals may be present. Disturbance reactions are likely to vary among some of the seals in the general vicinity, and not all of the seals present are expected to react to fixed wing aircraft and helicopters.

Behavioral distances from marine mammals also depend on the altitudes of the aircraft overflight. Marine mammals are not likely to be affected by aircraft overflights that are above 1,000 ft. Therefore, behavioral harassments discussed above are only limited to those aircraft

flying at lower altitudes. Proposed monitoring measures discussed below would further reduce potential affects from Shell's proposed ice overflight surveys.

In light of the nature of the activities, and for the reasons described below, NMFS does not expect marine mammals will be injured or killed as a result of ice overflight surveys. In addition, due to the low received noise levels from aircraft overflights, NMFS does not expect marine mammals will experience hearing impairment such as TTS or PTS.

Of the seal species which may be encountered, only ringed seals are abundant in the Chukchi and Beaufort Seas during the winter and early spring when the overflights are scheduled to occur. In March-April, ringed seals give birth in subnivean lairs established on shorefast and stable pack ice (Smith and Stirling 1975; Smith 1973). Ringed seals in subnivean layers have been known to react to aircraft overhead by entering the water in some instances (Kelly et al. 1986); however, there is no evidence to indicate injurious effects to adults or pups from such a response.

Bearded seals spend the winter season in the Bering Sea, and then follow the ice edge as it retreats in spring (MacIntyre and Stafford 2011). Large numbers of bearded seals are unlikely to be present in the project area during the time of planned operations. However, some individuals may be encountered. Spotted seals are found in the Bering Sea in winter and spring where they breed, molt, and pup in large groups (Quakenbush 1988; Rugh et al. 1997). Few spotted seals are expected to be encountered in the Chukchi and Beaufort seas until July. Even then, they are rarely seen on pack ice but are commonly observed hauled out on land or swimming in open water (Lowry et al. 1998). The ice overflights are designed to maximize flying over ice, avoiding coastal and terrestrial areas. Haul outs for spotted seals are generally known, and Shell will avoid these areas during the break up surveys.

Based on extensive analysis of digital imagery taken during aerial surveys in support of Shell's 2012 operations in the Chukchi and Beaufort Seas, ice seals are very infrequently observed hauled out on the ice in groups of greater than one individual (Shell 2015). Tens of thousands of images from 17 flights that took place from July through October were reviewed in detail. Of 107 total observations of spotted or ringed seals on ice, only three of those sightings were of a group of two individuals (Shell 2015). Since seals typically are found as individuals or in very small groups when they are in the project area, the chance of a stampede event is very unlikely. Finally, ice seals are well adapted to move between ice and water without injury, including "escape reactions" to avoid predators.

Ringed and bearded seals sometimes, but not always, dive when approached by low-flying aircraft (Burns and Frost 1979; Burns et al. 1982). Ringed and bearded seals may be more sensitive to helicopter sounds than to fixed-wing aircraft (Burns and Frost 1979). In 2000, during a study on e impacts of pipe-driving sounds on pinnipeds at Northstar in the Beaufort Sea which involved helicopter, only some of the ringed seals present exhibited a reaction to an approaching helicopter (Blackwell et al. 2001). Of 23 individuals, only 11 reacted; of those 11, 10 increased alertness and only 1 moved into the water (when the helicopter was 100 m away; Blackwell et al. 2004). Reactions of ringed seals while they are in subnivean lairs vary with the characteristics of the flyover, including lateral distance and altitude of aircraft (Kelly et al. 1986).

The sound of aircraft is also reduced by the snow of the lair (Cummings and Holliday 1983). Spotted seals are sensitive to aircraft, reacting erratically at considerable distances which may result in mother-pup separation or injury to pups (Frost et al 1993, Rugh et al. 1993). However, as previously noted, few spotted seals are expected to be present in the project area during the time of planned ice overflights, and overflights will focus on offshore areas as

opposed to terrestrial habitat with potential spotted seal haulouts.

Anticipated Effects on Marine Mammal Habitat

Shell's planned 2015/16 ice overflight surveys will not result in any permanent impact on habitats used by marine mammals, or to their prey sources. The primary potential impacts on marine mammal habitat and prey resources that are reasonably expected or reasonably likely are associated with elevated sound levels from the aircraft passing overhead. Effects on marine mammal habitat from the generation of sound from the planned surveys would be negligible and temporary, lasting only as long as the aircraft is overhead. Water column effects will be localized and ephemeral, lasting only the duration of the aircrafts presence. All effects on marine mammal habitat from the planned surveys are expected to be negligible and confined to very small areas within the Chukchi and Beaufort Seas.

The primary effect of the sound energy generated by ice overflight survey activities on marine mammal habitat will be the ensonification of the water column and air at the surface. Sound energy can also affect invertebrates and fish that are marine mammal prey, and thereby indirectly impact the marine mammals.

Levels and duration of sounds received by marine mammals underwater from a passing helicopter or fixed-wing aircraft are a function of the type of aircraft, orientation and altitude of the aircraft, depth of the animal, and water depth. Aircraft sounds are detectable underwater at greater distances when the receiver is in shallow rather than deep water. Generally, sound levels received underwater decrease as the altitude of the aircraft increases (Richardson et al. 1995a). The nature of sounds produced by aircraft activities does not pose a direct threat to the underwater marine mammal habitat or prey.

Aircraft sounds are audible for much greater distances in air than in water. Under calm

conditions, rotor and engine sounds are coupled into the water within a 26° cone beneath the aircraft. Some of the sound will transmit beyond the immediate area, and some sound will enter the water outside the 26 degree area when the sea surface is rough. However, scattering and absorption will limit lateral propagation in shallow water. Dominant tones in noise spectra from helicopters are generally below 500 Hz (Greene and Moore 1995). Because of Doppler shift effects, the frequencies of tones received at a stationary site diminish when an aircraft passes overhead. The apparent frequency is increased while the aircraft approaches and is reduced while it moves away. Sounds generated underwater from aircraft flyovers are of short duration.

Helicopters will generally maintain straight-line routes, thereby limiting the sound levels at and below the surface. Given the timing and location of the proposed ice overflight activities, as well as the mitigation measures that will be implemented as a part of the program, any impacts from aircraft traffic on marine mammal habitat or prey will be localized and temporary with no anticipated population level effects.

Proposed Mitigation

In order to issue an incidental take authorization (ITA) under sections 101(a)(5)(A) and (D) of the MMPA, NMFS must, where applicable, set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses (where relevant). This section summarizes the contents of Shell's Marine Mammal Monitoring and Mitigation Plan (4MP). Later in this document in the "Proposed Incidental Harassment Authorization" section, NMFS lays out the proposed conditions for review, as they would appear in the final IHA (if issued).

Shell submitted a 4MP as part of its application (see **ADDRESSES**). Shell proposes a suite of mitigation measures to minimize any adverse impacts associated with the ice overflight surveys in the Chukchi and Beaufort Sea. These include, among others discussed in the 4MP (See Attachment A of Shell's IHA application), the following: (1) the timing and locations for active survey acquisition work; and (2) increasing altitude or deviating from survey tract when the protected species observers sight visually (from the aircraft) the presence of marine mammals. The mitigation measures are presented in the 4MP. To summarize:

- A PSO will be aboard all flights recording all sightings/observations (e.g. including number of individuals, approximate age (when possible to determine), and any type of potential reaction to the aircraft). Environmental information the observer will record includes weather, air temperature, cloud and ice cover, visibility conditions, and wind speed.
- The aircraft will maintain a 1 mi radius when flying over areas where seals appear to be concentrated in groups of ≥ 5 individuals;
- The aircraft will not land on ice within 0.5 mi of hauled out pinnipeds or polar bears;
- The aircraft will avoid flying over polynyas and along adjacent ice margins as much as possible to minimize potential disturbance to cetaceans; and
- Shell will routinely engage with local communities and subsistence groups to ensure no disturbance of whaling or other subsistence activities.

Mitigation Conclusions

NMFS has carefully evaluated the applicant's proposed mitigation measures and

considered a range of other measures in the context of ensuring that NMFS prescribes the means of effecting the least practicable impact on the affected marine mammal species and stocks and their habitat. Our evaluation of potential measures included consideration of the following factors in relation to one another:

- The manner in which, and the degree to which, the successful implementation of the measure is expected to minimize adverse impacts to marine mammals
- The proven or likely efficacy of the specific measure to minimize adverse impacts as planned, and
- The practicability of the measure for applicant implementation.

Any mitigation measure(s) prescribed by NMFS should be able to accomplish, have a reasonable likelihood of accomplishing (based on current science), or contribute to the accomplishment of one or more of the general goals listed below:

1. Avoidance or minimization of injury or death of marine mammals wherever possible (goals 2, 3, and 4 may contribute to this goal).
2. A reduction in the numbers of marine mammals (total number or number at biologically important time or location) exposed to received levels of noises generated from ice overflight surveys, or other activities expected to result in the take of marine mammals (this goal may contribute to 1, above, or to reducing harassment takes only).
3. A reduction in the number of times (total number or number at biologically important time or location) individuals would be exposed to received levels of noises generated from ice overflight surveys, or other activities expected to result

in the take of marine mammals (this goal may contribute to 1, above, or to reducing harassment takes only).

4. A reduction in the intensity of exposures (either total number or number at biologically important time or location) to received levels of noises generated from ice overflight surveys, or other activities expected to result in the take of marine mammals (this goal may contribute to a, above, or to reducing the severity of harassment takes only).
5. Avoidance or minimization of adverse effects to marine mammal habitat, paying special attention to the food base, activities that block or limit passage to or from biologically important areas, permanent destruction of habitat, or temporary destruction/disturbance of habitat during a biologically important time.
6. For monitoring directly related to mitigation – an increase in the probability of detecting marine mammals, thus allowing for more effective implementation of the mitigation.

Based on our evaluation of the applicant's proposed measures, as well as other measures considered by NMFS, NMFS has preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable impact on marine mammals species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Proposed measures to ensure availability of such species or stock for taking for certain subsistence uses are discussed later in this document (see "Impact on Availability of Affected Species or Stock for Taking for Subsistence Uses" section).

Proposed Monitoring and Reporting

In order to issue an ITA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth, "requirements pertaining to the monitoring and reporting of such taking." The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for ITAs must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the proposed action area. Shell submitted a marine mammal monitoring plan as part of the IHA application. It can be found in Appendix B of the Shell's IHA application. The plan may be modified or supplemented based on comments or new information received from the public during the public comment period or from the peer review panel (see the "Monitoring Plan Peer Review" section later in this document).

Monitoring measures prescribed by NMFS should accomplish one or more of the following general goals:

1. An increase in the probability of detecting marine mammals, both within the mitigation zone (thus allowing for more effective implementation of the mitigation) and in general to generate more data to contribute to the analyses mentioned below;
2. An increase in our understanding of how many marine mammals are likely to be exposed to levels of noises generated from ice overflight surveys that we associate with specific adverse effects, such as behavioral harassment, TTS, or PTS;
3. An increase in our understanding of how marine mammals respond to stimuli expected to result in take and how anticipated adverse effects on individuals (in different ways and to varying degrees) may impact the population, species, or

stock (specifically through effects on annual rates of recruitment or survival) through any of the following methods:

- Behavioral observations in the presence of stimuli compared to observations in the absence of stimuli (need to be able to accurately predict received level, distance from source, and other pertinent information);
- Physiological measurements in the presence of stimuli compared to observations in the absence of stimuli (need to be able to accurately predict received level, distance from source, and other pertinent information);
- Distribution and/or abundance comparisons in times or areas with concentrated stimuli versus times or areas without stimuli;

4. An increased knowledge of the affected species; and
5. An increase in our understanding of the effectiveness of certain mitigation and monitoring measures.

Proposed Monitoring Measures

(1) Protected Species Observers

Aerial monitoring for marine mammals will be conducted by a trained protected species observer (PSO) aboard each flight. PSO duties will include watching for and identifying marine mammals, recording their numbers, distances from, and potential reactions to the presence of the aircraft, in addition to working with the helicopter pilots to identify areas for landings on ice that is clear of marine mammals.

(2) Observer Qualifications and Training

Observers will have previous marine mammal observation experience in the Chukchi and Beaufort Seas. All observers will be trained and familiar with the marine mammals of the area, data collection protocols, reporting procedures, and required mitigation measures.

(3) Specialized Field Equipment

The following specialized field equipment for use by the onboard PSO: Fujinon 7 X 50 binoculars for visual monitoring, a GPS unit to document the route of each ice overflight, a laptop computer for data entry, a voice recorder to capture detailed observations and data for post flight entry into the computer, and digital still cameras.

(4) Field Data-Recording

The observer on the aircraft will record observations directly into computers using a custom software package. The accuracy of the data entry will be verified in the field by computerized validity checks as the data are entered, and by subsequent manual checking following the flight. Additionally, observers will capture the details of sightings and other observations with a voice recorder, which will maximize observation time and the collection of data. These procedures will allow initial summaries of data to be prepared during and shortly after the surveys, and will facilitate transfer of the data to statistical, graphical or other programs for further processing.

During the course of the flights, the observer will record information for each sighting including number of individuals, approximate age (when possible to determine), and any type of potential reaction to the aircraft. Environmental information the observer will record includes weather, air temperature, cloud and ice cover, visibility conditions, and wind speed.

Monitoring Plan Peer Review

The MMPA requires that monitoring plans be independently peer reviewed "where the

proposed activity may affect the availability of a species or stock for taking for subsistence uses" (16 U.S.C. 1371(a)(5)(D)(ii)(III)). Regarding this requirement, NMFS' implementing regulations state, "Upon receipt of a complete monitoring plan, and at its discretion, [NMFS] will either submit the plan to members of a peer review panel for review or within 60 days of receipt of the proposed monitoring plan, schedule a workshop to review the plan" (50 CFR 216.108(d)).

NMFS has established an independent peer review panel to review Shell's 4MP for ice overflight survey in the Beaufort and Chukchi Seas. The panel is scheduled to meet in early March 2015, and will provide comments to NMFS shortly after they meet. After completion of the peer review, NMFS will consider all recommendations made by the panel, incorporate appropriate changes into the monitoring requirements of the IHA (if issued), and publish the panel's findings and recommendations in the final IHA notice of issuance or denial document.

Reporting Measures

(1) Final Report

The results of Shell's ice overflight monitoring report will be presented in the "90-day" final report, as required by NMFS under the proposed IHA. The initial final report is due to NMFS within 90 days after the expiration of the IHA (if issued). The report will include:

- Summaries of monitoring effort: total hours, total distances flown, and environmental conditions during surveys;
- Summaries of occurrence, species composition, and distribution of all marine mammal sightings including date, numbers, age/size/gender categories (when discernible), group sizes, ice cover and other environmental variables; data will be

visualized by plotting sightings relative to the position of the aircraft; and

- Analyses of the potential effects of ice overflights on marine mammals and the number of individuals that may have been disturbed by aircraft.

The "90-day" report will be subject to review and comment by NMFS. Any recommendations made by NMFS must be addressed in the final report prior to acceptance by NMFS.

(2) Notification of Injured or Dead Marine Mammals

Shell will be required to notify NMFS' Office of Protected Resources and NMFS' Stranding Network of any sighting of an injured or dead marine mammal. Based on different circumstances, Shell may or may not be required to stop operations upon such a sighting. Shell will provide NMFS with the species or description of the animal(s), the condition of the animal(s) (including carcass condition if the animal is dead), location, time of first discovery, observed behaviors (if alive), and photo or video (if available). The specific language describing what Shell must do upon sighting a dead or injured marine mammal can be found in the "Proposed Incidental Harassment Authorization" section of this document.

Estimated Take by Incidental Harassment

Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as: any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment]. Only take by Level B behavioral harassment is

anticipated as a result of the proposed ice overflight surveys.

As discussed earlier in this document, potential noise impacts to marine mammals from ice overflight surveys would be limited in a 26° cone under the flight path. The intensity of noise enters the water depends on the altitude of the aircraft (Richardson et al. 1995). Scattering and absorption, however, will limit lateral propagation in the shallow water (Greene and Moore 1995).

Basis for Estimating "Take by Harassment"

Exposures were calculated in the following sections for cetaceans and seals. The methods used to estimate exposure for each species group was fundamentally the same with minor differences as described below. Exposure estimates for cetaceans were calculated by multiplying the anticipated area to be flown over open water each season (winter and spring) by the expected densities of cetaceans that may occur in the survey area.

Exposures of seals were calculated by multiplying the anticipated area to be flown over open water and ice in each season (winter and spring) by the expected densities of seals that may occur in the survey area by the proportion of seals on ice that may actually show a disturbance reaction to each type of aircraft (Born et al. 1999).

Marine Mammal Density Estimates

Marine mammal density estimates in the Chukchi and Beaufort Seas have been derived for two time periods: the winter period covering November through April, and the spring period including May through early July.

There is some uncertainty about the representativeness of the data and assumptions used in the calculations. To provide some allowance for uncertainties, "average" as well as "maximum" estimates of the numbers of marine mammals potentially affected have been

derived. For a few species, several density estimates were available. In those cases, the mean and maximum estimates were determined from the reported densities or survey data. In other cases, only one or no applicable estimate was available, so correction factors were used to arrive at "average" and "maximum" estimates. These are described in detail in the following sections.

In Polar Regions, most pinnipeds are associated with sea ice and typical census methods involve counting pinnipeds when they are hauled out on ice. In the Beaufort Sea, abundance surveys typically occur in spring when ringed seals emerge from their lairs (Frost et al. 2004). Depending on the species and study, a correction factor for the proportion of animals hauled out at any one time may or may not have been applied (depending on whether an appropriate correction factor was available for the particular species, area, and time period). By applying a correction factor, the density of the pinniped species in an area can be estimated.

Detectability bias, quantified in part by f(0), is associated with diminishing sightability with increasing lateral distance from the survey trackline. Availability bias, g(0), refers to the fact that there is <100 percent probability of sighting an animal that is present along the survey trackline. Some sources below included these correction factors in the reported densities (e.g. ringed seals in Bengtson et al. 2005) and the best available correction factors were applied to reported results when they had not already been included (e.g. bearded seals in Bengtson et al. 2005).

(1) Cetaceans: Winter

(A) Beluga Whales

Beluga whale density estimates were calculated based on aerial survey data collected in October in the eastern Alaskan Beaufort Sea by the NMML (as part of the BWASP program funded by BOEMRE) in 2007–2010. They reported 31 sightings of 66 individual whales during

1597 km of on-transect effort over waters 200–2000 m deep. An f(0) value of 2.326 was applied and it was calculated using beluga whale sightings data collected in the Canadian Beaufort Sea (Innes et al. 2002). A g(0) value of 0.419 was used that represents a combination of ga(0) = 0.55 (Innes et al. 2002) and gd(0) = 0.762 (Harwood et al. 1996). The resulting densities were then multiplied by 0.10 because the Beaufort Sea and north-eastern Chukchi Sea is believed to be at the edge of the species' range in by November. Belugas typically migrate into the Bering Sea for the winter (Allen and Angliss 2014) and are not expected to be present in the study area in the winter. Satellite tagging data support this and indicate belugas migrate out of the Beaufort Sea in the October–November period (Suydam et al. 2005).

(B) Bowhead Whales

Bowhead whale density estimates in the winter in the planned ice overflight area are expected to be quite low. Miller et al. (2002) presented a 10-day moving average of bowhead whale abundance in the eastern Beaufort Sea using data from 1979–2000 that showed a decrease of ~90% from early to late October. Based on these data, it is expected that almost all whales that had been in the Chukchi Sea during early October would likely have migrated beyond the survey areas by November–December. In addition, kernel density estimates and animal tracklines generated from satellite-tagged bowhead whales, along with acoustic monitoring data, suggest that few bowhead whales are present in the proposed survey area in November (near Point Barrow), and no whales were present in December (ADFG 2010; Moore et al. 2010). Therefore, minimal density estimates (0.0001whales/km^2) were used.

(C) Gray whales

Gray whales may be encountered as they have been detected near Pt. Barrow throughout the winter (Moore et al. 2006, Stafford et al. 2007), but they are expected to be very rare. Thus

no density estimate is available.

(2) Cetaceans: Spring

(A) Beluga Whales

Spring densities of beluga whales in offshore waters are expected to be low, with somewhat higher densities in ice-margin and nearshore areas. Past aerial surveys have recorded few belugas in the offshore Chukchi Sea during the summer months and belugas are most likely encountered in offshore waters of the eastern Alaskan Beaufort Sea (Moore et al. 2000). More recent aerial surveys from 2008-2012 flown by the National Marine Mammal Laboratory (NMML) as part of the Chukchi Offshore Monitoring in Drilling Area (COMIDA) project, now part of the Aerial Surveys of Arctic Marine Mammals (ASAMM) project, reported 10 beluga sightings (22 individuals) in offshore waters during 22,154 km of on-transect effort. Larger groups of beluga whales were recorded in nearshore areas, especially in June and July during the spring migration (Clarke and Ferguson in prep; Clarke et al. 2012, 2013). Effort and sightings reported by Clarke and Ferguson (in prep.) and Clarke et al. (2012, 2013) were used to calculate the average open-water density estimate.

Those aerial surveys recorded 10 on-transect beluga sightings (22 individuals) during 22,154 km of on transect effort in waters 36-50 m deep in the Chukchi Sea during July and August. The mean group size of the sightings was 2.2. An f(0) value of 2.841 and g(0) value of 0.58 from Harwood et al. (1996) were also used in the density calculation resulting in an average open-water density of 0.0024 belugas/km^2. Specific data on the relative abundance of beluga whales in open-water versus ice-margin habitat during the summer in the Chukchi Sea is not available. However, belugas are commonly associated with ice, particularly ice edges and adjacent polynyas, so an inflation factor of 4 was used to estimate the ice-margin densities from

the open-water densities.

(B) Bowhead Whales

Eastward migrating bowhead whales were recorded during industry aerial surveys of the continental shelf near Camden Bay in 2008 until 12 July (Christie et al. 2010). No bowhead sightings were recorded again, despite continued flights, until 19 August. Aerial surveys by industry operators did not begin until late August of 2006 and 2007, but in both years bowheads were also recorded in the region before the end of August (Lyons et al. 2009). The late August sightings were likely of bowheads beginning their fall migration so the densities calculated from those surveys were not used to estimate summer densities in this region. The three surveys in July of 2008 resulted in density estimates of 0.0099, 0.0717, and 0.0186 bowhead whales/km^2, respectively (Christie et al. 2010). The estimate of 0.0186 whales/km^2 was used as the average nearshore density and the estimate of 0 0.0717 whales/km2 was used as the maximum. Sea ice was not present during these surveys. Moore et al. (2000) reported that bowhead whales in the Alaskan Beaufort Sea were distributed uniformly relative to sea ice.

(C) Gray Whales

Gray whales are expected to be present in the Chukchi Sea but are unlikely in the Beaufort Sea. Moore et al. (2000) found the distribution of gray whales in Chukchi Sea was scattered and limited to nearshore areas where most whales were observed in water less than 35m deep. The average open-water summer density (Table 2) was calculated from 2008–2012 aerial survey effort and sightings in Clarke and Ferguson (in prep) and Clarke et al. (2012, 2013) for water depths 36-50 m including 98 sightings (137 individuals) during 22,154 km of on-transect effort. The average group size of those sightings was 1.4. Correction factors f(0) = 2.49 (Forney and Barlow 1998) and g(0) = 0.30 (Forney and Barlow 1998, Mallonee 1991) were used

to calculate and average open-water density of 0.0253 gray whales/km^2 (Table 2). The highest density from the survey periods reported in Clarke and Ferguson (in prep) and Clarke et al. (2012, 2013) was 0.0268 gray whales/km^2 in 2012 and this was used as the maximum open-water density.

(3) Pinnipeds: Winter

(A) Ringed Seals

Ringed seal densities were taken from offshore aerial surveys of the pack ice zone conducted in spring 1999 and 2000 (Bengtson et al. 2005). Seal distribution and density in spring, prior to break-up, are thought to reflect distribution patterns established earlier in the year (i.e., during the winter months; Frost et al. 2004). The average density from those two years (weighted by survey effort) was 0.4892 seals/km^2. This value served as the average density while the highest density from the two years (0.8100 seals/km^2 in 1999) was used as the maximum density.

(B) Other Seal Species

Other seal species are not expected to be present in the ice overflight survey area in large numbers during the winter period of the ice overflights. Bearded, spotted, and ribbon seals would be present in the area in smaller numbers than ringed seals during spring through fall summer, but these less common seal species generally migrate into the southern Chukchi and Bering Seas during fall and remain there through the winter (Allen and Angliss 2014). Few satellite-tagging studies have been conducted on these species in the Beaufort Sea, winter surveys have not been conducted, and a few bearded seals have been reported over the continental shelf in spring prior to general break-up. However, the tracks of three bearded seals tagged in 2009 moved south into the Bering Sea along the continental shelf by November

(Cameron and Boveng 2009). These species would be more common in the area during spring through fall, but it is possible that some individuals, bearded seals in particular, may be present in the area surveyed in winter. Ribbon seals are unlikely to be present in the survey area during winter as they also migrate southward from the northeastern Chukchi Sea during this period. In the absence of better information from the published literature or other sources that would indicate that significant numbers of any of these species might be present during winter, minimal density estimates were used for these species. Estimates for bearded seals were assumed to be slightly higher than those for spotted and ribbon seals.

(4) Pinnipeds: Spring

Three species of pinnipeds under NMFS' jurisdiction are likely to be encountered in the Chukchi and Beaufort Seas during planned ice overflights in spring of 2015: ringed, bearded, and spotted seals. Ringed and bearded seals are associated with both the ice margin and the nearshore open water area during spring. Spotted seals are often considered to be predominantly a coastal species except in the spring when they may be found in the southern margin of the retreating sea ice. However, satellite tagging has shown that some individuals undertake long excursions into offshore waters during summer (Lowry et al. 1994, 1998). Ribbon seals have been reported in very small numbers within the Chukchi Sea by observers on industry vessels (Patterson et al. 2007, Hartin et al. 2013).

(A) Ringed Seal and Bearded Seal

Ringed seal and bearded seal "average" and "maximum" spring densities were available in Bengtson et al. (2005) from spring surveys in the offshore pack ice zone (zone 12P) of the northern Chukchi Sea. However, corrections for bearded seal availability, g(0), based on haulout and diving patterns were not available.

(B) Spotted Seal

Little information on spotted seal densities in offshore areas of the Alaskan Arctic is available. Spotted seal densities in the spring were estimated by multiplying the ringed seal densities by 0.02. This was based on the ratio of the estimated occurrence of the two species during ice overflight surveys and the assumption that the vast majority of seals present in areas of pack ice would be ringed seals (Funk et al., 2010; 2013).

(C) Ribbon Seal

Four ribbon seal sightings were reported during industry vessel operations in the Chukchi Sea in 2006-2010 (Hartin et al. 2013). The resulting density estimate of 0.0007/km^2 was used as the average density and 4 times that was used as the maximum for the spring season.

Estimated Areas Where Cetaceans May be Encountered by Aircraft

Encounters that may result in potential disturbance of cetaceans will likely occur only in open water. Flight paths over open water and adjacent ice edges will be minimized by the objectives of the program as an effort to reduce encounters with cetaceans. It is estimated that five to ten percent of distance flown in winter will be over open water, and ten to twenty percent of distance flown in spring will be over open water. We applied the most conservative of these percentages to the proposed tracklines in winter and spring to estimate the area of open water exposed by planned ice overflights.

The potential disturbance area for each season was based on flight altitude and lateral distance of cetaceans from the center trackline. Based on known air-to-water propagation paths, cetaceans may be exposed to sounds produced by the aircraft when individuals are up to 13 degrees from the aircraft's center (Snell's law; Urick 1972 in Richardson et al. 1995). It was assumed that cetaceans in open water could be disturbed within 13 degrees of vertical (i.e., a 26-

degree cone) from the location of an aircraft when aircraft are 305 m (1,000 ft) or lower. NMFS considers aircraft above this altitude would not appreciably disturb cetaceans in open water below. This 305-m maximum disturbance altitude and Snell's law results in a maximum potential disturbance radius of approximately 70 m. Based on Snell's law (Richardson et al. 1995) and a 305 m flight altitude, we used a conservative radius of 75 m to calculate the potential disturbance area beneath an aircraft for cetaceans in open-water conditions.

Table 2 summarizes potential disturbance radii, maximum flight distances over open water, and potential disturbance areas for cetaceans from fixed wing aircraft and helicopters during Shell's proposed ice overflights program in winter (November through April) and spring (May through early July). Maximum percentage of total trackline over open water, as based on previous surveys, is 10% and 20% of the total trackline for winter and spring, respectively. Based on maximum flight distances, percent open water, and a potential disturbance radius of 75 m for fixed wing aircraft and helicopters, a total of 169 km2 of open-water could be disturbed. Approximately 45% of this total estimated open-water area would be surveyed in winter and the remaining 55% would be surveyed during spring.

Table 2. Potential disturbance radii, maximum flight distances over open water, and potential disturbance areas for cetaceans in open water from fixed wing aircraft and helicopters in the Chukchi and Beaufort Seas, Alaska, during the proposed 2015-2016 ice overflight survey program

	Potential Disturbance Radius (km)	Maximum Open Water Flight Distance (km)		Potential Disturbance Area (km^2)	
Aircraft		Winter	Spring	Winter	Spring
Fixed Wing	0.075	463	556	69	83
Helicopter	0.075	37	74	6	11
Grand Totals		***500***	***630***	***75***	***94***

Estimated Areas Where Seals May be Encountered by Aircraft

Fixed wing and helicopter flights over ice at ice overflight survey altitudes have the potential to disturb seals hauled out on ice, although the flight altitude and lateral distances at which seals may react to aircraft are highly variable (Born et al. 1999; Burns et al. 1982; Burns and Frost 1979). The probability of a seal hauled out on ice reacting to a fixed wing aircraft or helicopter is influenced by a combination of variables such as flight altitude, lateral distance from the aircraft, ambient conditions (e.g., wind chill), activity, and time of day (Born et al. 1999). Evidence from flyover studies of ringed and bearded seals suggests that a reaction to helicopters is more common than to fixed wing aircraft, all else being equal (Born et al. 1999; Burns and Frost 1979).

Born et al. (1999) investigated the reactions of ringed seals hauled out on ice to aircraft. The threshold lateral distances from the aircraft trackline out to which the vast majority of reactions were observed were 600 and 1500 m for fixed wing aircraft and helicopters, respectively. Many individual ringed seals within these distances; however, did not react (Born et al. 1999). Results indicated ~6% and ~49% of total seals observed reacted to fixed wing aircraft and helicopters, respectively, by entering the water when aircraft were flown over ice at altitudes similar to those proposed for Shell's ice overflight surveys as described in the Description of the Specific Activity section. These lateral distances and reaction probabilities were used as guidelines for estimating the area of sea ice habitat within which hauled out seals may be disturbed by aircraft and the number of seals that might react. Born et al. 1999, also was used as a guideline in a similar fashion for estimating the numbers of seals that would react to helicopters during US Fish and Wildlife Service polar bear tagging in 2011 and 2012, in which

an IHA was issued by NMFS (NMFS 2011).

Table 3 summarizes potential disturbance radii, maximum flight distances, and potential disturbance areas for seals from fixed wing aircraft and helicopters during Shell's proposed ice overflights program in winter (November through April) and spring (May through early July). Based on maximum flight distances and potential disturbance radii of 600 and 1500 m for fixed wing aircraft and helicopters, respectively, a total of 11,112 km^2 (of sea ice could be disturbed. Based on Born et al.'s (1999) observations, however, it is estimated that only ~6 and ~49% of seals in these areas will exhibit a notable reaction to fixed wing aircraft and helicopters, respectively, by entering the water. Approximately 60% of this total area would be surveyed in winter and the remaining 40% would be surveyed during spring.

Table 3. Potential disturbance radii, maximum flight distances over open water, and potential disturbance areas for seals in open water from fixed wing aircraft and helicopters in the Chukchi and Beaufort Seas, Alaska, during the proposed 2015-2016 ice overflight survey program

Aircraft	Potential Disturbance Radius (km)	Maximum Flight Distance (km)		Potential Disturbance Area (km^2)	
		Winter	Spring	Winter	Spring
Fixed Wing	0.6	4,630	2,778	5,557	3,335
Helicopter	1.5	370	370	1,110	1,110
Grand Totals		***5,000***	***3,148***	***6,667***	***4,445***

Potential Number of "Takes by Harassment"

(1) Cetaceans

This subsection provides estimates of the number of individual cetaceans that could

potentially be disturbed by aircraft during Shell's proposed ice overflights. The estimates are based on an estimate of the anticipated open-water area that could be subjected to disturbance from overflights, proximity of cetaceans in open water to the aircraft, and expected cetacean densities in those areas during each season.

The number of individuals of each cetacean species potentially disturbed by fixed wing aircraft or helicopters was estimated by multiplying:

- The potential disturbance area from each aircraft (fixed wing and helicopter) for each season (winter and spring), by
- The percentage of survey area expected to be over open water as opposed to ice in each season, by
- The expected cetacean density for each season.

The numbers of individual cetaceans potentially disturbed were then summed for each species across the two seasons.

Estimates of the average and maximum number of individual cetaceans that may be disturbed are shown by season in Table 4. Less than one individual of each cetacean species was estimated to be disturbed in winter. This was due to the low density of cetaceans in the survey area in winter and extensive ice cover during this period. In spring, a few beluga whales, bowhead whales, and gray whales are estimated to potentially be disturbed during ice overflights when aircraft transit over open water for short periods. The numbers of individuals exposed represent very small proportions of their populations.

(2) Pinnipeds

This subsection provides estimates of the number of individual ice seals that could

potentially be disturbed by aircraft during Shell's proposed ice overflights. The estimates are based on a consideration of the proposed flight distances, proximity of seals to the aircraft trackline, and the proportion of ice seals present that might actually be disturbed appreciably (i.e. moving from the ice into the water) by flight operations in the Chukchi and Beaufort Seas and the anticipated area that could be subjected to disturbance from overflights.

The number of individuals of each ice seal species potentially disturbed by fixed wing aircraft or helicopters was estimated by multiplying:

- The potential disturbance area from each aircraft (fixed wing and helicopter) for each season (winter and spring), by
- The expected seal density in each season, and by
- The expected proportion of seals expected to react to each type of aircraft in a way that could be interpreted as disturbance.

The numbers of individuals potentially disturbed were then summed for each species across the two seasons.

Estimates of the average number of individual seals that may be disturbed are shown by season in Table 4. The estimates shown represent proportions of the total number of seals encountered that may actually demonstrate a disturbance reaction to each type of aircraft. Estimates shown in Table 4 were based on Born et al. 1999, which assumed that ~6 and ~49% of seals would react within lateral distances of 600 and 1,500 m of fixed wing aircraft and helicopters, respectively.

Ringed seal is by far the most abundant species expected to be encountered during the planned ice overflights. The best (average) estimate of the numbers of ringed seals potentially

disturbed during ice overflights is 793 individuals, which represents only a small proportion of the estimated population of ringed seals in the Chukchi and Beaufort Seas. Fewer individuals of other pinniped species are estimated to be encountered during ice overflights, also representing very small proportions of their populations.

Table 4. The total number of potential exposures of marine mammals during the Shell's proposed ice overflight surveys in the Chukchi and Beaufort Seas, Alaska, 2015-2016. Estimates are also shown as a percent of each population

Species	Abundance	Number potential exposure	% Estimated population
Beluga (E. Chukchi Sea)	3,710	1	0.027
Beluga whale (Beaufort Sea)	39,258	1	0.003
Bowhead whale	19,534	2	0.010
Gray whale	19,126	2	0.010
Bearded seal	155,000	11	0.007
Ribbon seal	49,000	1	0.002
Ringed seal	300,000	793	0.264
Spotted seal	141,479	7	0.005

Analysis and Preliminary Determinations

Negligible Impact

Negligible impact is "an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival" (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (i.e., population-level effects). An estimate of the number of Level B harassment takes, alone, is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through behavioral harassment, NMFS must consider other factors, such as the likely nature of any responses (their intensity, duration, etc.), the context of any responses (critical reproductive time or location, migration, etc.), as well as the number and nature of estimated Level A harassment takes, the number of estimated mortalities, effects on habitat, and the status of the species.

No injuries or mortalities are anticipated to occur as a result of Shell's proposed ice overflight surveys in the Beaufort and Chukchi Seas, and none are proposed to be authorized. Additionally, animals in the area are not expected to incur hearing impairment (i.e., TTS or PTS) or non-auditory physiological effects. Instead, any impact that could result from Shell's activities is most likely to be behavioral harassment and is expected to be of brief duration and the aircraft flies by. Although it is possible that some individuals may be exposed to sounds from aircraft overflight more than once, during the migratory periods it is less likely that this will occur since animals will continue to move across the Chukchi Sea towards their wintering grounds.

Aircraft flyovers are not heard underwater for very long, especially when compared to how long they are heard in air as the aircraft approaches an observer. Very few cetaceans are expected to be encountered during ice overflights due to the low density of cetacean species in the winter survey area and small area to be flown over open water during spring. Long-term or population level effects are not expected. The majority of seals encountered by fixed wing aircraft will unlikely show a notable disturbance reaction, and approximately half of the seals encountered by helicopters may react by moving from ice into the water. Any potential disturbance from aircraft to seals in the area of ice overflights will be localized and short-term in duration with no population level effects

Of the seven marine mammal species likely to occur in the proposed ice overflight survey area, only the bowhead whale and ringed seal are listed as endangered under the ESA. These two species are also designated as "depleted" under the MMPA. Despite these designations, the Bering-Chukchi-Beaufort stock of bowheads has been increasing at a rate of 3.4% annually for nearly a decade (Allen and Angliss, 2011), even in the face of ongoing industrial activity.

Additionally, during the 2001 census, 121 calves were counted, which was the highest yet recorded. The calf count provides corroborating evidence for a healthy and increasing population (Allen and Angliss, 2011). Certain stocks or populations of gray and beluga whales and spotted seals are listed as endangered or are proposed for listing under the ESA; however, none of those stocks or populations occur in the proposed activity area. Ringed seals were recently listed under the ESA as threatened species. On July 25, 2014 the U.S. District Court for the District of Alaska vacated the rule listing to the Beringia bearded seal DPS and remanded the rule to NMFS to correct the deficiencies identified in the opinion. None of the other species that may occur in the project area is listed as threatened or endangered under the ESA or designated as depleted under the MMPA. There is currently no established critical habitat in the proposed project area for any of these seven species.

Potential impacts to marine mammal habitat were discussed previously in this document (see the "Anticipated Effects on Habitat" section). Although some disturbance is possible to food sources of marine mammals, the impacts are anticipated to be minor. Based on the vast size of the Arctic Ocean where feeding by marine mammals occurs versus the localized area of the ice overflight surveys, any missed feeding opportunities in the direct project area would be of little consequence, as marine mammals would have access to other feeding grounds.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from Shell's proposed 2015 ice overflight surveys in the Chukchi and Beaufort Seas will have a negligible impact on the affected marine mammal species or stocks.

Small Numbers

The estimated takes proposed to be authorized represent less than 0.3% of the affected population or stock for all species in the survey area.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the mitigation and monitoring measures, NMFS preliminarily finds that small numbers of marine mammals will be taken relative to the populations of the affected species or stocks.

Impact on Availability of Affected Species or Stock for Taking for Subsistence Uses

Potential Impacts to Subsistence Uses

NMFS has defined "unmitigable adverse impact" in 50 CFR 216.103 as: "an impact resulting from the specified activity: (1) That is likely to reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by: (i) Causing the marine mammals to abandon or avoid hunting areas; (ii) Directly displacing subsistence users; or (iii) Placing physical barriers between the marine mammals and the subsistence hunters; and (2) That cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met.

Subsistence hunting continues to be an essential aspect of Inupiat Native life, especially in rural coastal villages. The Inupiat participate in subsistence hunting activities in and around the Beaufort and Chukchi Seas. The animals taken for subsistence provide a significant portion of the food that will last the community through the year. Marine mammals represent on the order of 60-80% of the total subsistence harvest. Along with the nourishment necessary for survival, the subsistence activities strengthen bonds within the culture, provide a means for educating the younger generation, provide supplies for artistic expression, and allow for important celebratory events.

Bowhead Whale

Activities associated with Shell's planned ice overflight survey program is not likely to have an un-mitigable adverse impact on the availability of bowhead whales for taking for subsistence uses. Ice overflight surveys that may occur near Point Lay, Wainwright, Barrow, Nuiqsut, and Kaktovik would traverse bowhead subsistence areas. Most flights would take place after the date of fall and prior to spring bowhead whale hunting from the villages. The most commonly observed reactions of bowheads to aircraft traffic are hasty dives, but changes in orientation, dispersal, and changes in activity are sometimes noted. Such reactions could potentially affect subsistence hunts if the flights occurred near and at the same time as the hunt. Shell has developed and proposes to implement a number of mitigation measures to avoid such impacts. These mitigation measures include minimum flight altitudes, use of Village Community Liaison Officers (CLOs), Subsistence Advisors (SAs), and Communication Centers in order to avoid conflicts with subsistence activities. SA calls will be held while subsistence activities are underway during the ice overflight survey program and are attended by operations staff, logistics staff, and CLOs. Aircraft flights are adjusted as needed and planned in a manner that avoids potential impacts to bowhead whale hunts and other subsistence activities. With these mitigation measures any effects on the bowhead whale as a subsistence resource, or effects on bowhead subsistence hunts would be minimal.

Beluga Whale

Activities associated with Shell's planned ice overflight survey program will not have an un-mitigable adverse impact on the availability of beluga whales for taking for subsistence uses.

Ice overflight surveys may occur near Point Lay, Wainwright, Barrow, Nuiqsut, and Kaktovik would and traverse beluga whale hunt subsistence areas. Most flights would take place

when belugas are not typically harvested. Survey activities could potentially affect subsistence hunts if the flights occurred near and at the same time as the hunt. Shell has developed and proposes to implement a number of mitigation measures to avoid such impacts. These mitigation measures include minimum flight altitudes, use of CLOs, SAs, and Communication Centers. SA calls will be held while subsistence activities are underway during the ice overflight survey program and are attended by operations staff, logistics staff, and CLOs. Aircraft flights are adjusted as needed and planned in a manner that avoids potential impacts to beluga whale hunts and other subsistence activities. With these mitigation measures any effects on the beluga whale as a subsistence resource, or effects on beluga subsistence hunts would be minimal.

Seals

Seals are an important subsistence resource with ringed and bearded seals making up the bulk of the seal harvest. The survey areas are far outside of areas reportedly utilized for the harvest of seals by the villages of Point Hope, thus the ice overflight surveys will not have an un-mitigable adverse impact on the availability of ice seals for taking for subsistence uses. The survey areas encompass some areas utilized by residents of Point Lay, Wainwright, Barrow, Nuiqsut and Kaktovik for the harvest of seals. Most ringed and bearded seals are harvested in the winter and a harvest of seals could possibly be affected by Shell's planned activities. Spotted seals are harvested during the summer and may overlap briefly with Shell's planned activities. Most seals are harvested in coastal waters, with available maps of recent and past subsistence use areas indicating that seal harvests have occurred only within 30-40 mi (48-64 km) off the coastline. Some of the planned ice overflight surveys would take place in areas used by the village residents for the harvest of seals. The survey aircraft could potentially travel over areas used by residents for seal hunting and could potentially disturb seals and, therefore, subsistence

hunts for seals. Any such effects from the survey activities would be minimal due to the infrequency of the planned surveys. Shell has developed and proposes to implement a number of mitigation measures which include a proposed 4MP, use of CLOs, SAs, operation of Communication Centers, and minimum altitude requirements. SA calls will be held while subsistence activities are underway during the ice overflight survey program and are attended by operations staff, logistics staff, and CLO's. Aircraft movements and activities are adjusted as needed and planned in a manner that avoids potential impacts to subsistence activities. With these mitigation measures any effects on ringed, bearded, and spotted seals as subsistence resources, or effects on subsistence hunts for seals, would be minimal.

Plan of Cooperation or Measures to Minimize Impacts to Subsistence Hunts

Regulations at 50 CFR 216.104(a)(12) require IHA applicants for activities that take place in Arctic waters to provide a Plan of Cooperation (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.

Shell is preparing to implement a POC in accordance with NMFS' regulations. The POC relies upon the Chukchi Sea Communication Plans to identify the measures that Shell has developed in consultation with North Slope subsistence communities and will implement during its planned 2015/2016 ice overflight surveys to minimize any adverse effects on the availability of marine mammals for subsistence uses. In addition, the POC will detail Shell's communications and consultations with local subsistence communities concerning its planned 2015/2016 program, potential conflicts with subsistence activities, and means of resolving any such conflicts (50 CFR 216.104(a) (12) (i), (ii), and (iv)). Shell continues to document its contacts with the North Slope subsistence communities, as well as the substance of its

communications with subsistence stakeholder groups.

The POC identifies and documents potential conflicts and associated measures that will be taken to minimize any adverse effects on the availability of marine mammals for subsistence use. Outcomes of POC meetings are typically included in updates attached to the POC as addenda and distributed to federal, state, and local agencies as well as local stakeholder groups that either adjudicate or influence mitigation approaches for Shell's activities.

Shell will engage with the villages potentially impacted by the 2015/2016 ice overflight surveys in the Chukchi and Beaufort Seas in 2014 and early 2015. Meetings were held in Barrow and Point Lay in early November 2014 and additional engagements are scheduled with other villages in early 2015. Throughout 2015, and 2016 Shell anticipates continued engagement with the marine mammal commissions and committees active in the subsistence harvests and marine mammal research.

Following the 2015/2016 season, Shell intends to have a post-season co-management meeting with the commissioners and committee heads to discuss results of mitigation measures and outcomes of the preceding season. The goal of the post-season meeting is to build upon the knowledge base, discuss successful or unsuccessful outcomes of mitigation measures, and possibly refine plans or mitigation measures if necessary.

In addition to the POC, the following subsistence mitigation measures will be implemented for Shell's proposed ice overflight surveys.

(1) Communications

- Shell has developed a Communication Plan and will implement this plan before initiating ice overflight survey operations to coordinate activities with local subsistence

users, as well as Village Whaling Captains' Associations, to minimize the risk of interfering with subsistence hunting activities, and keep current as to the timing and status of the bowhead whale hunt and other subsistence hunts.

- Shell will employ local CLOs and/or SAs from the Chukchi Sea villages that are potentially impacted by Shell's ice overflight surveys. The CLOs and SAs will provide consultation and guidance regarding the whale migration and subsistence activities. There will be one per village. The CLO and/or SA will use local knowledge (Traditional Knowledge) to gather data on the subsistence lifestyle within the community and provide advice on ways to minimize and mitigate potential negative impacts to subsistence resources during the survey season. Responsibilities include reporting any subsistence concerns or conflicts; coordinating with subsistence users; reporting subsistence-related comments, concerns, and information; and advising how to avoid subsistence conflicts.

(2) Aircraft Travel

- The aircraft will maintain a 1 mi (1.6 km) radius when flying over areas where seals appear to be concentrated in groups of ≥ 5 individuals.
- The aircraft will not land on ice within 0.5 mi (805 m) of hauled out pinnipeds.
- The aircraft will avoid flying over polynyas and along adjacent ice margins as much as possible to minimize potential disturbance to cetaceans.
- Aircraft shall not operate below 1,500 ft (457 m) in areas of active whale hunting; such areas to be identified through communications with the Com Centers and SAs.
- Shell will routinely engage with local communities and subsistence groups to ensure no disturbance of whaling or other subsistence activities.

Unmitigable Adverse Impact Analysis and Preliminary Determination

NMFS considers that these mitigation measures including measures to reduce overall impacts to marine mammals in the vicinity of the proposed ice overflight survey area and measures to mitigate any potential adverse effects on subsistence use of marine mammals are adequate to ensure subsistence use of marine mammals in the vicinity of Shell's proposed ice overflight surveys in the Chukchi and Beaufort Seas.

Based on the description of the specified activity, the measures described to minimize adverse effects on the availability of marine mammals for subsistence purposes, and the proposed mitigation and monitoring measures, NMFS has preliminarily determined that there will not be an unmitigable adverse impact on subsistence uses from Shell's proposed activities.

Endangered Species Act (ESA)

There are two marine mammal species listed as endangered under the ESA with confirmed or possible occurrence in the proposed project area: the bowhead whale and ringed seal. NMFS' Permits and Conservation Division will initiate consultation with NMFS' Endangered Species Division under section 7 of the ESA on the issuance of an IHA to Shell under section 101(a)(5)(D) of the MMPA for this activity. Consultation will be concluded prior to a determination on the issuance of an IHA.

National Environmental Policy Act (NEPA)

NMFS is preparing an Environmental Assessment (EA), pursuant to NEPA, to determine whether the issuance of an IHA to Shell for its 2015/2016 ice overflight surveys may have a significant impact on the human environment. NMFS has released a draft of the EA for public comment along with this proposed IHA.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to Shell for conducting ice overflight surveys in the Chukchi and Beaufort Seas during 2015/2016, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. The proposed IHA language is provided next.

This section contains a draft of the IHA itself. The wording contained in this section is proposed for inclusion in the IHA (if issued).

(1) This Authorization is valid from May 1, 2015, through April 30, 2016.

(2) This Authorization is valid only for activities associated with Shell's 2015/2016 Chukchi and Beaufort Seas ice overflight surveys. The specific areas where Shell's ice overflight surveys will be conducted are the Chukchi and Beaufort Seas, Alaska, as indicated in Figure 1-1 of Shell's IHA application.

(3)(a) The incidental taking of marine mammals, by Level B harassment only, is limited to the following species: bowhead whale; gray whale; beluga whale; ringed seal; bearded seal; spotted seal; and ribbon seal.

(3)(b) The taking by injury (Level A harassment), serious injury, or death of any of the species listed in Condition 3(a) or the taking of any kind of any other species of marine mammal is prohibited and may result in the modification, suspension or revocation of this Authorization.

(4) The authorization for taking by harassment is limited to the following activities:

> Ice overflight surveys during freeze-up, winter, and break-up periods in 2015 and 2016 by aircraft.

(5) The taking of any marine mammal in a manner prohibited under this Authorization must be reported immediately to the Chief, Permits and Conservation Division, Office of Protected Resources, NMFS or her designee.

(6) The holder of this Authorization must notify the Chief of the Permits and Conservation Division, Office of Protected Resources, at least 48 hours prior to the start of ice overflight surveys (unless constrained by the date of issuance of this Authorization in which case notification shall be made as soon as possible).

(7) Ice Overflight Mitigation and Monitoring Requirements: The Holder of this Authorization is required to implement the following mitigation and monitoring requirements when conducting the specified activities to achieve the least practicable impact on affected marine mammal species or stocks:

(a) A PSO will be aboard all flights recording all sightings/observations (e.g. including number of individuals, approximate age (when possible to determine)), and any type of potential reaction to the aircraft. Environmental information the observer will record includes weather, air temperature, cloud and ice cover, visibility conditions, and wind speed.

(b) The aircraft will maintain a 1 mi radius when flying over areas where seals appear to be concentrated in groups of ≥ 5 individuals;

(c) The aircraft will not land on ice within 0.5 mi of hauled out pinnipeds or polar bears; and

(d) The aircraft will avoid flying over polynyas and along adjacent ice margins as much as possible to minimize potential disturbance to cetaceans.

(8) Subsistence Mitigation Measures: To ensure no unmitigable adverse impact on subsistence uses of marine mammals, the Holder of this Authorization shall:

(a) Develop and implement a Communication Plan before initiating ice overflight survey operations to coordinate activities with local subsistence users,

as well as Village Whaling Captains' Associations, to minimize the risk of interfering with subsistence hunting activities, and keep current as to the timing and status of the bowhead whale hunt and other subsistence hunts.

(b) Employ local Community Liaison Officers (CLOs) and/or Subsistence Advisors (SAs) from the Chukchi Sea villages that are potentially impacted by the ice overflight surveys.

(A) The CLOs and SAs will provide consultation and guidance regarding the whale migration and subsistence activities.

(B) The CLOs and SAs will also report any subsistence concerns or conflicts; coordinate with subsistence users; report subsistence-related comments, concerns, and information; and advise how to avoid subsistence conflicts.

(c) Routinely engage with local communities and subsistence groups to ensure no disturbance of whaling or other subsistence activities.

(9) Monitoring Measures:

(a) Protected Species Observers:

(A) Aerial monitoring for marine mammals will be conducted by a trained protected species observer (PSO) aboard each flight.

(B) PSO duties will include watching for and identifying marine mammals, recording their numbers, distances from, and potential reactions to the presence of the aircraft, in addition to working with the helicopter pilots to identify areas for landings on ice that is clear of marine mammals.

(b) Observer Qualifications and Training

(A) Observers will have previous marine mammal observation experience in the Chukchi and Beaufort Seas.

(B) All observers will be trained and familiar with the marine mammals of the area, data collection protocols, reporting procedures, and required mitigation measures.

(c) Specialized Field Equipment:

(A) Fujinon 7 X 50 binoculars for visual monitoring,

(B) GPS unit to document the route of each ice overflight,

(C) Laptop computer for data entry,

(D) Voice recorder to capture detailed observations and data for post flight entry into the computer,

(E) Digital still cameras.

(d) Field Data-Recording

(A) The observer on the aircraft will record observations directly into computers using a custom software package.

(B) The accuracy of the data entry will be verified in the field by computerized validity checks as the data are entered, and by subsequent manual checking following the flight.

(C) Observers will capture the details of sightings and other observations with a voice recorder, which will maximize observation time and the collection of data.

(D) During the course of the flights, the observer will record information for each sighting including:

- Number of individuals,
- Approximate age (when possible to determine),
- Any type of potential reaction to the aircraft.
- Weather, air temperature, wind speed, cloud and ice cover, and
- Visibility conditions.

(10) Reporting Requirements:

(a) Final Report: The results of Shell's ice overflight monitoring report will be presented in the "90-day" final report, as required by NMFS under the proposed IHA. The initial final report is due to NMFS within 90 days after the expiration of the IHA. The report will include:

(A) Summaries of monitoring effort: total hours, total distances flown, and environmental conditions during surveys;

(B) Summaries of occurrence, species composition, and distribution of all marine mammal sightings including date, numbers, age/size/gender categories (when discernible), group sizes, ice cover and other environmental variables; data will be visualized by plotting sightings relative to the position of the aircraft; and

(C) Analyses of the potential effects of ice overflights on marine mammals and the number of individuals that may have been disturbed by aircraft.

(b) The "90-day" report will be subject to review and comment by NMFS. Any recommendations made by NMFS must be addressed in the final report prior to acceptance by

NMFS.

(11)(a) In the unanticipated event that the ice overflight surveys clearly cause the take of a marine mammal in a manner prohibited by this Authorization, such as an injury (Level A harassment), serious injury or mortality, Shell shall immediately cease operations and immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, by phone or email and the Alaska Regional Stranding Coordinators. The report must include the following information: (i) time, date, and location (latitude/longitude) of the incident; (ii) the name and type of vessel involved; (iii) the vessel's speed during and leading up to the incident; (iv) description of the incident; (v) status of all sound source use in the 24 hours preceding the incident; (vi) water depth; (vii) environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility); (viii) description of marine mammal observations in the 24 hours preceding the incident; (ix) species identification or description of the animal(s) involved; (x) the fate of the animal(s); (xi) and photographs or video footage of the animal (if equipment is available).

Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS shall work with Shell to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. Shell may not resume their activities until notified by NMFS via letter, email, or telephone.

(b) In the event that Shell discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (i.e., in less than a moderate state of decomposition as described in the next paragraph), Shell will immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, by phone or email and the NMFS Alaska Stranding

Hotline and/or by email to the Alaska Regional Stranding Coordinators. The report must include the same information identified in Condition 12(a) above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with Shell to determine whether modifications in the activities are appropriate.

(c) In the event that Shell discovers an injured or dead marine mammal, and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in Condition 2 of this Authorization (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), Shell shall report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, by phone or email and the NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinators, within 24 hours of the discovery. Shell shall provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network. Activities may continue while NMFS reviews the circumstances of the incident.

(12) The Plan of Cooperation outlining the steps that will be taken to cooperate and communicate with the native communities to ensure the availability of marine mammals for subsistence uses must be implemented.

(13) Shell is required to comply with the Terms and Conditions of the Incidental Take Statement (ITS) corresponding to NMFS's Biological Opinion issued to NMFS's Office of Protected Resources.

(14) A copy of this Authorization and the ITS must be in the possession of all contractors and PSOs operating under the authority of this Incidental Harassment Authorization.

(15) Penalties and Permit Sanctions: Any person who violates any provision of this

Incidental Harassment Authorization is subject to civil and criminal penalties, permit sanctions, and forfeiture as authorized under the MMPA.

(16) This Authorization may be modified, suspended or withdrawn if the Holder fails to abide by the conditions prescribed herein or if the authorized taking is having more than a negligible impact on the species or stock of affected marine mammals, or if there is an unmitigable adverse impact on the availability of such species or stocks for subsistence uses.

Request for Public Comment

As noted above, NMFS requests comment on our analysis, the draft authorization, and any other aspect of the Notice of Proposed IHA for Shell's 2015/2016 Chukchi and Beaufort Seas ice overflight surveys. Please include, with your comments, any supporting data or literature citations to help inform our final decision on Shell's request for an MMPA authorization.

Dated: February 25, 2015.

Donna S. Wieting,
Director,
Office of Protected Resources,
National Marine Fisheries Service.

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