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50 CFR Part 18

Marine Mammals; Incidental Take During Specified Activities; Proposed Rule

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 18

[Docket No. FWS–R7–ES–2012–0043; FF07CAMM00–FXFR133707PB000]

RIN 1018–AY67

Marine Mammals; Incidental Take During Specified Activities

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule; availability of draft environmental assessment; request for comments.

SUMMARY: In accordance with the Marine Mammal Protection Act of 1972, as amended (MMPA), and its implementing regulations, we, the U.S. Fish and Wildlife Service (Service or we), propose regulations that authorize the nonlethal, incidental, unintentional take of small numbers of Pacific walruses (*Odobenus rosmarus divergens*) and polar bears (*Ursus maritimus*) during oil and gas industry (Industry) exploration activities in the Chukchi Sea and adjacent western coast of Alaska. If adopted as proposed, this rule would be effective for 5 years from the date of issuance of the final rule.

We propose a finding that the total expected takings of Pacific walruses (walruses) and polar bears during Industry exploration activities will impact small numbers of animals, will have a negligible impact on these species, and will not have an unmitigable adverse impact on the availability of these species for subsistence use by Alaska Natives. The proposed regulations include: Permissible methods of nonlethal taking; measures to ensure that Industry activities will have the least practicable adverse impact on the species and their habitat, and on the availability of these species for subsistence uses; and requirements for monitoring and reporting of any incidental takings which may occur, to the Service. If this rule is made final, the Service will issue Letters of Authorization (LOAs), upon request, for activities proposed to be conducted in accordance with the regulations.

DATES: We will consider comments we receive on or before February 8, 2013.

ADDRESSES:

Document Availability: You can view this proposed rule and the associated draft environmental assessment (EA) on *http://www.regulations.gov* under Docket No. FWS–R7–ES–2012–0043.

Written Comments: You may submit comments on the proposed rule and associated draft EA by one of the following methods:

- *U.S. mail or hand-delivery:* Public Comments Processing, Attn: Docket No. FWS–R7–ES–2012–0043, Division of Policy and Directives Management, U.S. Fish and Wildlife Service, 4401 N. Fairfax Drive, MS 2042–PDM, Arlington, VA 22203.
- *Federal eRulemaking Portal: http://www.regulations.gov.* Follow the instructions for submitting comments to Docket No. FWS–R7–ES–2012–0043.

Please indicate to which document, the proposed rule or the draft EA, your comments apply. We will post all comments on *http://www.regulations.gov.* This generally means that we will post any personal information you provide us (see the Public Comments section below for more information).

FOR FURTHER INFORMATION CONTACT: Craig Perham, Marine Mammals Management Office, U.S. Fish and Wildlife Service, Region 7, 1011 East Tudor Road, Anchorage, AK 99503; telephone 907–786–3800. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 1–800–877–8339, 24 hours a day, 7 days a week.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why We Need To Publish a Proposed Rule

Incidental take regulations (ITRs), under section 101(a)(5)(A) of the MMPA, allow for incidental, but not intentional, take of small numbers of marine mammals that may occur during the conduct of otherwise lawful activities within a specific geographical region. Prior to issuing ITRs, if requested to do so by the public, the Service must first determine that the total of such taking during each 5-year (or less) period concerned will have a negligible impact on marine mammals and will not have an unmitigable adverse impact on the availability of marine mammals for taking for subsistence uses by Alaska Natives. The Service has considered a request from the oil and gas industry to issue ITRs in the Chukchi Sea for a 5-year period to allow for the nonlethal, incidental taking of polar bears or walruses during their open water oil and gas exploration activities. The Service is proposing issuance of ITRs based on our considerations of potential impacts to polar bears and Pacific walrus as well as potential impacts to subsistence use of polar bears and Pacific walruses.

What is the effect of this proposed rule?

The ITRs provide a mechanism for the Service to work with Industry to minimize the effects of Industry activity on marine mammals through appropriate mitigation and monitoring measures, which provide important information on marine mammal distribution, behavior, movements, and interactions with Industry.

The Basis for Our Action

Based upon our review of the nature, scope, and timing of the proposed oil and gas exploration activities and mitigation measures, and in consideration of the best available scientific information, it is our determination that the proposed activities will have a negligible impact on walruses and on polar bears and will not have an unmitigable adverse impact on the availability of marine mammals for taking for subsistence uses by Alaska Natives.

Public Comments

We intend that any final action resulting from this proposal will be as accurate and as effective as possible. Therefore, we request comments or suggestions on this proposed rule.

You may submit your comments and materials concerning this proposed rule by one of the methods listed in the **ADDRESSES** section. We will not consider comments sent by email or fax, or to an address not listed in the **ADDRESSES** section.

If you submit a comment via *http://www.regulations.gov,* your entire comment—including any personal identifying information—will be posted on the Web site. If you submit a hardcopy comment that includes personal identifying information, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy comments on *http://www.regulations.gov.*

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on *http://www.regulations.gov,* or by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Marine Mammals Management Office (see **FOR FURTHER INFORMATION CONTACT**).

Background

Section 101(a)(5)(A) of the Marine Mammal Protection Act (MMPA) (16

U.S.C. 1371(a)(5)(A)) gives the Secretary of the Interior (Secretary), through the Director of the Service, the authority to allow the incidental, but not intentional, taking of small numbers of marine mammals, in response to requests by U.S. citizens [as defined in 50 CFR 18.27(c)] engaged in a specified activity (other than commercial fishing) in a specified geographic region. According to the MMPA, the Service shall allow this incidental taking if (1) we make a finding that the total of such taking for the 5-year timeframe of the regulations will have no more than a negligible impact on these species and will not have an unmitigable adverse impact on the availability of these species for taking for subsistence use by Alaska Natives, and (2) we issue regulations that set forth (i) permissible methods of taking, (ii) means of effecting the least practicable adverse impact on the species and their habitat and on the availability of the species for subsistence uses, and (iii) requirements for monitoring and reporting. If we issue regulations allowing such incidental taking, we can issue Letters of Authorization (LOAs) to conduct activities under the provisions of these regulations when requested by citizens of the United States.

The term ''take,'' as defined by the MMPA, means to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal. Harassment, as defined by the MMPA, for activities other than military readiness activities or scientific research conducted by or on behalf of the Federal Government, means ''any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild'' [the MMPA calls this 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'' [the MMPA calls this Level B harassment] (16 U.S.C. 1362).

The terms ''negligible impact'' and ''unmitigable adverse impact'' are defined at 50 CFR 18.27 (i.e., regulations governing small takes of marine mammals incidental to specified activities) as follows. ''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.'' ''Unmitigable adverse impact'' means ''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.'' The term ''small numbers'' is also defined in the regulations, but we do not rely on that definition here as it conflates the ''small numbers'' and ''negligible impact'' requirements, which we recognize as two separate and distinct requirements for promulgating ITRs under the MMPA. Instead, in our small numbers determination, we evaluate whether small numbers of marine mammals are relative to the overall population.

Industry conducts activities, such as oil and gas exploration, in marine mammal habitat that could result in the incidental taking of marine mammals. Although Industry is under no legal requirement under the MMPA to obtain incidental take authorization, since 1991, Industry has requested, and we have issued regulations for, incidental take authorization for conducting activities in areas of walrus and polar bear habitat. We issued incidental take regulations for walruses and polar bears in the Chukchi Sea for the period 1991 to 1996 (56 FR 27443; June 14, 1991) and 2008 to 2013 (73 FR 33212; June 11, 2008). These regulations are at 50 CFR part 18, subpart I (§§ 18.111 to 18.119). In the Beaufort Sea, incidental take regulations have been issued from 1993 to present: November 16, 1993 (58 FR 60402); August 17, 1995 (60 FR 42805); January 28, 1999 (64 FR 4328); February 3, 2000 (65 FR 5275); March 30, 2000 (65 FR 16828); November 28, 2003 (68 FR 66744); August 2, 2006 (71 FR 43926), and August 3, 2011 (76 FR 47010). These regulations are at 50 CFR part 18, subpart J (§§ 18.121 to 18.129).

Summary of Current Request

On January 31, 2012, the Alaska Oil and Gas Association (AOGA), on behalf of its members, and ConocoPhillips, Alaska, Inc. (CPAI), a participating party, requested that the Service promulgate regulations to allow the nonlethal, incidental take of small numbers of walruses and polar bears in the Chukchi Sea and the adjacent western coast of Alaska. AOGA requested that the regulations would be applicable to all persons conducting activities associated with oil and gas exploration as described in its Petition for a period of 5 years. AOGA is a private, nonprofit trade association representing companies active in the Alaskan oil and gas industry. AOGA's members include: Alyeska Pipeline Service Company, Apache Corporation, BP Exploration (Alaska) Inc., Chevron, Eni Petroleum, ExxonMobil Production Company, Flint Hills Resources, Inc., Hilcorp Alaska, LLC, Marathon Oil Company, Petro Star Inc., Pioneer Natural Resources Alaska, Inc., Repsol, Shell Gulf of Mexico, Inc., Statoil, Tesoro Alaska Company, and XTO Energy, Inc.

The request is for regulations to allow the incidental, nonlethal take of small numbers of walruses and polar bears in association with oil and gas activities in the Chukchi Sea and adjacent coastline for the period from June 11, 2013, to June 11, 2018. The information provided by the petitioners indicates that projected oil and gas activities over this timeframe will be limited to exploration activities. Development and production activities were not considered in the request. Within that time, oil and gas exploration activities could occur during any month of the year, depending on the type of activity. Most offshore activities, such as exploration drilling, seismic surveys, and shallow hazards surveys, are expected to occur only during the open water season (July–November). Onshore activities may occur during winter (e.g., geotechnical studies), spring (e.g., hydrological studies), or summer-fall (e.g., various fish and wildlife surveys). The petitioners have also specifically requested that these regulations be issued for nonlethal take. The petitioners have indicated that, through the implementation of appropriate mitigation measures, they are confident that no lethal take would occur.

Prior to issuing regulations in response to this request, we must evaluate the level of industrial activities, their associated potential impacts to walruses and polar bears, and their effects on the availability of these species for subsistence use. The Service is tasked with analyzing the impact that lawful oil and gas industry activities would have on polar bears and walruses during normal operating procedures.

All projected exploration activities described by CPAI and AOGA (on behalf of its members) in their petition, as well as projections of reasonably likely activities for the period 2013 to 2018, were considered in our analysis. The activities and geographic region specified in the request, and considered in these regulations, are described in the ensuing sections titled ''Description of

Geographic Region'' and ''Description of Activities.''

Description of Proposed Regulations

The regulations that we propose to issue include: Permissible methods of nonlethal taking; measures to ensure the least practicable adverse impact on the species and the availability of these species for subsistence uses; and requirements for monitoring and reporting. These regulations would not authorize, or ''permit,'' the actual activities associated with oil and gas exploration, e.g., seismic testing, drilling, or sea floor mapping. Rather, they would authorize the nonlethal, incidental, unintentional take of small numbers of polar bears and walruses associated with those activities based on standards set forth in the MMPA. The Bureau of Ocean Energy Management (BOEM), the Bureau of Safety and Environmental Enforcement (BSEE), the U.S. Army Corps of Engineers (COE), and the Bureau of Land Management (BLM) are responsible for permitting activities associated with oil and gas activities in Federal waters and on Federal lands. The State of Alaska is responsible for permitting activities on State lands and in State waters.

If we finalize these regulations, persons seeking taking authorization for particular projects would be able to apply for an LOA to the Service for the incidental, nonlethal take associated with exploration activities pursuant to the regulations. Each group or individual conducting an oil and gas industry-related activity within the area covered by these regulations would be able to request an LOA. Applicants for LOAs would have to submit an Operations Plan for the activity, a marine mammal (Pacific walrus and polar bear) interaction plan, and a site specific marine mammal monitoring and mitigation plan to monitor any effects of authorized activities on walruses and polar bears. An after-action report on exploration activities and marine mammal monitoring activities would have to be submitted to the Service within 90 days after completion of the activity. Details of monitoring and reporting requirements are further described in ''Potential Effects of Oil and Gas Industry Activities on Pacific Walruses and Polar Bears.''

Applicants would also have to include a Plan of Cooperation (POC) describing the availability of these species for subsistence use by Alaska Native Communities and how that availability may be affected by Industry operations. The purpose of the POC is to ensure that oil and gas activities would not have an unmitigable adverse impact on the availability of the species or the stock for subsistence uses. The POC must provide the procedures on how Industry will work with the affected Alaska Native Communities, including a description of the necessary actions that will be taken to: (1) Avoid or minimize interference with subsistence hunting of polar bears and walruses; and (2) ensure continued availability of the species for subsistence use. The POC is further described in ''Potential Effects of Oil and Gas Industry Activities on Subsistence Uses of Pacific Walruses and Polar Bears.''

If these proposed regulations are implemented, we would evaluate each request for an LOA based on the specific activity and specific location, and may condition the LOA depending on specific circumstances for that activity and location. More information on applying for and receiving an LOA can be found at 50 CFR 18.27(f).

Description of Geographic Region

These regulations would allow Industry operators to incidentally take small numbers of walruses and polar bears within the same area, hereafter referred to as the Chukchi Sea Region (Figure 1; see Proposed Regulation Promulgation section). The geographic area covered by the request is the Outer Continental Shelf (OCS) of the Arctic Ocean adjacent to western Alaska. This area includes the waters (State of Alaska and OCS waters) and seabed of the Chukchi Sea, which encompasses all waters north and west of Point Hope (68°20′20″ N, -166°50′40″ W, BGN 1947) to the U.S.-Russia Convention Line of 1867, west of a north-south line through Point Barrow (71°23′29″ N, -156°28′30″ W, BGN 1944), and up to 200 miles north of Point Barrow. The region includes that area defined as the BOEM/BSEE OCS oil and gas Lease Sale 193 in the Chukchi Sea Planning Area. The Region also includes the terrestrial coastal land 25 miles inland between the western boundary of the south National Petroleum Reserve-Alaska (NPR–A) near Icy Cape (70°20′00″ -148°12′00″) and the north–south line from Point Barrow. The specified geographic region encompasses an area of approximately 240,000 square kilometers (km) (approximately 92,644 square miles). This terrestrial region encompasses a portion (i.e., approximately 10,000 km^2 (3,861 mi^2)) of the Northwest and South Planning Areas of the National Petroleum Reserve-Alaska (NPR–A). It is noteworthy that the north-south line at Point Barrow is the western border of the geographic region in the Beaufort Sea incidental take regulations (August 3, 2011; 76 FR 47010).

Description of Activities

These proposed ITRs examine exploratory drilling, seismic surveys, geotechnical surveys, and shallow hazards surveys to be conducted in the Chukchi Sea from June 11, 2013, to June 11, 2018. This time period includes the entire open water seasons of 2013 through 2017, when activities such as exploration drilling, seismic surveys, geotechnical surveys, and shallow hazards surveys are likely to occur, but terminates before the start of the 2018 open water season.

This section reviews the types and scale of oil and gas activities projected to occur in the Chukchi Sea Region over the specified time period (2013 to 2018). Activities covered in these regulations include Industry exploration operations of oil and gas reserves, as well as environmental monitoring associated with these activities, on the western coast of Alaska and the Outer Continental Shelf of the Chukchi Sea. This information is based upon activity descriptions provided by the petitioners (sections 2.2 and 2.3 of the AOGA *Petition for Incidental Take Regulations for Oil and Gas Activities in the Chukchi Sea and Adjacent Lands in 2013 to 2018,* January 31, 2012). If LOAs are requested for activities that exceed the scope of activities analyzed under these proposed regulations, the LOAs would not be issued, and the Service would reevaluate its findings before further LOAs are issued.

The ITRs requested are for the period from June 11, 2013, to June 11, 2018. Within that time, oil and gas exploration activities could occur during any month of the year, depending on the type of activity. Most offshore activities, such as exploration drilling, seismic surveys, and shallow hazards surveys, are expected to occur only during the open-water season (July–November). Onshore activities may occur during winter (e.g., geotechnical studies), spring (e.g., hydrological studies), or summer-fall (e.g., various fish and wildlife surveys).

The Service does not know the specific locations where oil and gas exploration would occur over the proposed timeframe of the regulations. The location and scope of specific activities would be determined based on a variety of factors, including the outcome of future Federal and State oil and gas lease sales and information gathered through subsequent rounds of exploration discovery. The information provided by the petitioners indicates that offshore exploration activities

would be carried out during the open water season to avoid seasonal pack ice. Onshore activities would be limited and are not expected to occur in the vicinity of known polar bear denning areas or coastal walrus haulouts.

These ITRs would not authorize the execution, placement, or location of Industry activities; they could only authorize incidental, nonlethal take of walruses and polar bears. Authorizing the activity at particular locations is part of the permitting process that is authorized by the lead permitting agency, such as BOEM/BSEE, the COE, or BLM. The specific dates and durations of the individual operations and their geographic locations would be provided to the Service in detail when requests for LOAs are submitted.

Oil and gas activities anticipated and considered in our analysis of the proposed incidental take regulations include: (1) Offshore exploration drilling; (2) offshore 3D and 2D seismic surveys; (3) shallow hazards surveys; (4) other geophysical surveys, such as ice gouge, strudel scour, and bathymetry surveys; (5) geotechnical surveys; (6) onshore and offshore environmental studies; and (7) associated support activities for the afore-mentioned activities. Of these, offshore drilling and seismic surveys are expected to have the greatest effects on Pacific walruses, polar bears, and subsistence. A summary description of the anticipated activities follows, while detailed descriptions provided by the petitioners are available on the Service's Marine Mammals Management Web page at: *http://alaska.fws.gov/fisheries/mmm/itr.htm.*

Offshore Exploration Drilling

Offshore exploration drilling would be conducted from either a floating drilling unit, such as a drillship or conical drilling unit, or a jack-up drilling platform. Exploration drilling with these types of drilling units would occur during the open water season, generally July through November, when the presence of ice is at a minimum. Petitioners indicate that bottom-founded platforms would not be used during exploration activities due to water depths greater than 30 meters (m) (100 feet [ft]) and possible pack ice incursions. Drilling operations are expected to range between 30 and 90 days at individual well sites, depending on the depth to the target formation, and difficulties during drilling. The drilling units and any support vessels would enter the Chukchi Sea at the beginning of the season and exit the sea at the end of the season. Drillships are generally self-propelled, whereas jack-up rigs must be towed to the drill site. These drilling units are largely self-contained with accommodations for the crew, including quarters, galleys, and sanitation facilities. The operating season is expected to be limited to the open water season from July 1 to November 30.

Drilling operations would include multiple support vessels in addition to the drillship or platform, including ice management vessels, survey vessels, and on and offshore support facilities. For example, each drillship is likely to be supported by one to two ice breakers, a barge and tug, one to two helicopter flights per day, and one to two supply ships per week. Ice management is expected to be required for only a small portion of the drilling season, if at all, given the lack of sea ice observed over most current lease holdings in the Chukchi Sea Region in recent years. Most ice management would consist of actively pushing the ice off its trajectory with the bow of the ice management vessel, but some icebreaking could be required. One or more ice management vessels (ice breakers) generally support drillships to ensure ice does not encroach on operations. Geophysical surveys referred to as vertical seismic profiles (VSPs) will likely be conducted at many of the Chukchi Sea Region drill sites where and when an exploration well is being drilled. The purpose of the survey is to ground truth existing seismic data with geological information from the wellbore. A small airgun array is deployed at a location near or adjacent to the drilling unit, and receivers are placed (temporarily anchored) in the wellbore. Exploration drilling programs may entail both onshore support facilities for air support where aircraft serving crew changes, search and rescue, and/or re-supply functions where support facilities would be housed and marine support where vessels may access the shoreline. For offshore support purposes, a barge and tug typically accompany the vessels to provide a standby safety vessel, oil spill response capabilities, and refueling support. Most supplies (including fuel) necessary to complete drilling activities are stored on the drillship and support vessels. Helicopter servicing of drillships can occur as frequently as one to two times per day.

Since 1989, five exploration wells have been drilled in the Chukchi Sea. Based upon information provided by the petitioners, we estimate that up to three operators would drill a total of three to eight wells per year in the Chukchi Sea Region during the 5-year timeframe of these proposed regulations (June 2013 to June 2018).

Offshore 2D and 3D Seismic Surveys

Seismic survey equipment includes sound energy sources (airguns) and receivers (hydrophones/geophones). The airguns store compressed air that upon release forms a bubble that expands and contracts in a predictable pattern, emitting sound waves. The sound energy from the source penetrates the seafloor and is reflected back to the surface where it is recorded and analyzed to produce graphic images of the subsurface features. Differences in the properties of the various rock layers found at different depths reflect the sound energy at different positions and times. This reflected energy is received by the hydrophones housed in submerged streamers towed behind the survey vessel.

The two general types of offshore seismic surveys, 2D and 3D surveys, use similar technology but differ in survey transect patterns, number of transects, number of sound sources and receptors, and data analysis. For both types, a group of air guns is usually deployed in an array to produce a downward focused sound signal. Air gun array volumes for both 2D and 3D seismic surveys are expected to range from 49,161 to 65,548 cm^3 (3,000 to 4,000 in^3) operated at about 2,000 pounds per square inch (psi) (13,789.5 kilopascal [kPa]). The air guns are fired at short, regular intervals, so the arrays emit pulsed rather than continuous sound. While most of the energy is focused downward and the short duration of each pulse limits the total energy into the water column, the sound can propagate horizontally for several kilometers.

Marine streamer 2D surveys use similar geophysical survey techniques as 3D surveys, but both the mode of operation and general vessel type used are different. The primary difference between the two survey types is that a 3D survey has a denser grid for the transect pattern. The 2D surveys provide a less detailed subsurface image because the survey lines are spaced farther apart, but they are generally designed to cover wider areas to image geologic structure on more of a regional basis. Large prospects are easily identified on 2D seismic data, but detailed images of the prospective areas within a large prospect can only be seen using 3D data. The 2D seismic survey vessels generally are smaller than 3D survey vessels, although larger 3D survey vessels are also capable of conducting 2D surveys. The 2D source array typically consists of three or more sub-arrays of six to eight air gun sources each. The sound source level (zero-to-peak) associated with 2D

marine seismic surveys are the same as 3D marine seismic surveys (233 to 240 dB re 1 μPa at 1 m). Typically, a single hydrophone streamer cable approximately 8 to 12 km (~5 to 7.5 mi) long is towed behind the survey vessel. The 2D surveys acquire data along single track lines that are spread more widely apart (usually several km) than are track lines for 3D surveys (usually several hundred meters).

A 3D source array typically consists of two to three sub-arrays of six to nine air guns each, and is about 12.5 to 18 m (41 to 59 ft) long and 16 to 36 m (52.5 to 118 ft) wide. The size of the source array can vary during the seismic survey to optimize the resolution of the geophysical data collected at any particular site. Most 3D operations use a single source vessel; however, in a few instances, more than one source vessel may be used. The sound source level (zero-to-peak) associated with typical 3D seismic surveys ranges between 233 and 240 decibels (dB) at 1 m (dB re 1 μPa at 1 m).

The receiving arrays could include multiple (4 to 16) streamer receiver cables towed behind the source array. The survey vessel may tow up to 12 cables, or streamers, of up to 8.0 km (5.0 mi) in length, spaced 50 to 150 m (164 to 492 ft) apart. Streamer cables contain numerous hydrophone elements at fixed distances within each cable. Each streamer can be 3 to 8 km (2 to 5 mi) long with an overall array width of up to 1,500 m (1,640 yards) between outermost streamer cables. The wide extent of this towed equipment limits both the turning speed and the area a vessel covers with a single pass over a geologic target. It is, therefore, common practice to acquire data using an offset racetrack pattern. Adjacent transit lines for a survey generally are spaced several hundred meters apart and are parallel to each other across the survey area. Seismic surveys are conducted day and night when ocean conditions are favorable, and one survey effort may continue for weeks or months throughout the open water season, depending on the size of the survey. Data acquisition is affected by the arrays towed by the survey vessel and weather conditions. Typically, data are only collected between 25 and 30 percent of the time (or 6 to 8 hours a day) because of equipment or weather problems. In addition to downtime due to weather, sea conditions, turning between lines, and equipment maintenance, surveys could be suspended to avoid interactions with biological resources. In the past, BOEM/BSEE has estimated that individual surveys could last between 20 to 30 days (with downtime) to cover a 322-km^2 (200-mi^2) area.

Both 3D and 2D seismic surveys require a largely ice-free environment to allow effective operation and maneuvering of the air gun arrays and long streamers. In the Chukchi Sea Region, the timing and areas of the surveys would be dictated by ice conditions. Given optimal conditions, the data acquisition season in the Chukchi Sea could start sometime in July and end sometime in early November. Even during the short summer season, there are periodic incursions of sea ice; hence there is no guarantee that any given location will be ice-free throughout the survey.

In our analysis of the previous 5-year Chukchi Sea regulations (2008–2013), we estimated that up to three seismic programs operating annually, totaling up to 15 surveys over the span of the regulations, would have negligible effects on small numbers of animals. Since 2006, only seven seismic surveys have been actually conducted in total in the Chukchi Sea. During the 2006 open water season, three seismic surveys were conducted, while only one seismic survey was conducted during the 2007, 2008, 2010, and 2011 open water seasons, respectively. For the 5-year time period of the regulations proposed here (2013 to 2018), based upon information provided by the petitioners, the Service estimates that, in any given year during the specified time period of the proposed regulations (2013 to 2018), one seismic survey program (2D or 3D) could operate in the Chukchi Sea Region during the open water season. We estimate that each seismic survey vessel would be accompanied or serviced by one to three support vessels. Helicopters may also be used, when available, for vessel support and crew changes.

Shallow Hazards Surveys

Shallow hazards surveys in the Chukchi Sea Region are expected to be conducted for all OCS leases in the Chukchi Sea Planning Area. Shallow hazards surveys, also known as site clearance or high resolution surveys, are conducted to collect bathymetric data and information on the shallow geology down to depths of about 450 m (1,500 ft) below the seafloor at areas identified as potential drill sites. Detailed maps of the seafloor surface and shallow sub-surface are produced with the resulting data in order to identify potential hazards in the area. Shallow hazards surveys must be conducted at all exploration drill sites in the OCS before drilling can be approved by BOEM/BSEE. Specific requirements for these shallow hazards surveys are presented in BOEM/BSEE's Notice to Lessee (NTL) 05–A01. Potential hazards may include: Shallow faults; shallow gas; permafrost; hydrates; and/or archaeological features, such as shipwrecks. Drilling permits will only be issued by the BOEM/BSEE for locations that avoid or minimize any risks of encountering these types of features.

Equipment used in past surveys included sub-bottom profilers, multi-beam bathymetric sonar, side scan sonar, high resolution seismic (airgun array or sparker), and magnetometers. Equipment to be used in future surveys in 2013 to 2018 would be expected to be these and similar types of equipment as required by the BOEM/BSEE NTLs.

Shallow hazards surveys are conducted from vessels during the summer or open water season along a series of transects, with different line spacing depending on the proximity to the proposed drill site and geophysical equipment to be used. Generally, a single vessel is required to conduct the survey, but in the Chukchi Sea an additional vessel is often used as a marine mammal monitoring platform. The geophysical equipment is either hull mounted or towed behind the vessel, and sometimes is located on an autonomous underwater vehicle (AUV). Small airgun arrays with a total volume of 258 cm^3 (40 in^3) and pressured to about 2,000 psi (13,789.5 kPa) have been used as the energy source for past high resolution seismic surveys and would be expected to be used in future surveys in 2013 to 2018, but larger or smaller airguns under more or lesser pressure may be used. Sparkers have also been used in the Chukchi Sea in the past and may be used in the future. The magnetometer is used to locate and identify any human-made ferrous objects that might be on the seafloor.

From the beginning of the previous regulations (2008 to 2012), four shallow hazards and site clearance surveys were actually conducted. Based upon information provided by the petitioners, we estimate that during the timeframe of the proposed regulations (2013 to 2018), up to two operators would conduct from four to seven shallow hazards surveys annually.

Marine Geophysical Surveys

Other types of geophysical surveys are expected to occur during the proposed regulatory timeframe from 2013 to 2018. These include ice gouge surveys, strudel scours surveys, and other bathymetric surveys (e.g., platform and pipeline surveys). These surveys use the same types of remote sensing geophysical equipment used in shallow hazards

surveys, but they are conducted for different purposes in different areas and often lack a seismic (airgun) component. Each of these types of surveys is briefly described below.

Ice Gouge Surveys

Ice gouging is the creation of troughs and ridges on the seafloor caused by the contact of the keels of moving ice floes with unconsolidated sediments on the seafloor. Oil and gas operators conduct these surveys to gain an understanding of the distribution, frequency, size, and orientation of ice gouging in their areas of interest in order to predict the location, size, and frequency of future ice gouging. The surveys may be conducted from June through October when the area is sufficiently clear of ice and weather permits. Equipment to be used in ice gouge surveys during this time may include, but may not be limited to, sub-bottom profilers, multi-beam bathymetric sonar, and side scan sonar.

Strudel Scour Surveys

Strudel scours are formed in the seafloor during a brief period in the spring when river discharge commences the breakup of the sea ice. The ice is bottom fast, with the river discharge flowing over the top of the ice. The overflow spreads offshore and drains through the ice sheet at tidal cracks, thermal cracks, stress cracks, and seal breathing holes reaching the seafloor with enough force to generate distinctive erosion patterns. Oil and gas operators conduct surveys to identify locations where this phenomenon occurs and to understand the process. Nearshore areas (State waters) by the larger rivers are first surveyed from the air with a helicopter at the time when rivers are discharging on to the sea ice (typically in May), to identify any locations where the discharge is moving through the ice. The identified areas are revisited by vessel during the open water season (typically July to October), and bathymetric surveys are conducted along a series of transects over the identified areas. Equipment to be used in the surveys in 2013 to 2018 would likely include, but may not be limited to, multi-beam bathymetric sonar, side scan sonar, and single beam bathymetric sonar.

Bathymetry Surveys

Some surveys would be conducted to determine the feasibility of future development. This effort would include siting such things as pipeline and platform surveys. These surveys use geophysical equipment to delineate the bathymetry/seafloor relief and characteristics of the surficial seafloor sediments. The surveys are conducted from vessels along a series of transects. Equipment deployed on the vessel for these surveys would likely include, but may not be limited to, sub-bottom profilers, multi-beam bathymetric sonar, side scan sonar, and magnetometers.

Based upon information provided by the petitioners, we estimate that up to two operators would conduct as many as two geophysical surveys, including ice gouge, strudel scour, and bathymetry surveys, in any given year during the 5-year timeframe of the proposed regulations (2013 to 2018).

Geotechnical Surveys

Geotechnical surveys expected to occur within the Chukchi Sea Region would take place offshore on leases in federal waters of the OCS and adjacent onshore areas. Geotechnical site investigations are performed to collect detailed data about seafloor sediments, onshore soil, and shallow geologic structures. During site investigations, boreholes are drilled to depths sufficient to characterize the soils within the zone of influence. The borings, cores, or cone penetrometer data collected at the site define the stratigraphy and geotechnical properties at that specific location. These data are analyzed and used in determining optimal facility locations. Site investigations that include archaeological, biological, and ecological data assist in the development of foundation design criteria for any planned structure. Methodology for geotechnical surveys may vary between those conducted offshore and onshore. Onshore geotechnical surveys would likely be conducted in winter when the tundra is frozen. Rotary drilling equipment would be wheeled, tracked, or sled mounted. Offshore geotechnical studies would be conducted from dedicated vessels or support vessels associated with other operations such as drilling.

Based upon information provided by the petitioners, we estimate that as many as two operators would conduct up to two geotechnical surveys in any given year during the 5-year timeframe of the proposed regulations (2013 to 2018).

Offshore Environmental Studies

Offshore environmental studies are likely to include: Ecological surveys of the benthos, plankton, fish, bird, and marine mammal communities and use of Chukchi Sea waters; acoustical studies of marine mammals; sediment and water quality analysis; and physical oceanographic investigations of sea ice movement, currents, and meteorology. Most bird and marine mammal surveys would be conducted from vessels. The vessels would travel along series of transects at slow speeds while observers on the vessels identify the number and species of animals. Ecological sampling and marine mammal surveys would also be conducted from fixed wing aircraft as part of the mandatory marine mammal monitoring programs associated with seismic surveys and exploration drilling. Various types of buoys would likely be deployed in the Chukchi Sea for data collection.

Onshore Environmental Studies

Various types of environmental studies would likely be conducted onshore in the Chukchi Sea Region in 2013 to 2018, in support of offshore oil and gas exploration. These could include, but may not be limited to, hydrology studies; habitat assessments; fish and wildlife surveys; and archaeological resource surveys. These studies would generally be conducted by small teams of scientists that would base their operations in Chukchi Sea communities and travel to study sites by helicopter. Most surveys would be conducted on foot or from the air. Small boats may be used for hydrology studies, fish surveys, and other studies in aquatic environments.

During the last 5-year time period of the regulations (2008–2012), a total of six environmental studies were conducted, with one to two conducted per year. Based upon information provided by the petitioners, we estimate that as many as two environmental studies may be conducted in any given year during the 5-year timeframe of the proposed regulations (2013 to 2018).

Additional Onshore Activities

Additional onshore activities may occur as well. The North Slope Borough (NSB) operates the Barrow Gas Fields located south and east of the city of Barrow. The Barrow Gas Fields include the Walakpa, South, and East Gas Fields. The East Barrow Gas Field is accessible via exiting gravel roads. The Walakpa Gas Field operation is currently accessed by helicopter and/or a rolligon trail. The South Gas Field is accessible by gravel road or dirt trail depending on the individual well. Access to this field during the winter would require ice road construction. Ice/snow road access and ice pads are proposed where needed. The Walakpa Gas Field and a portion of the South Gas Field are located within the boundaries of the Chukchi Sea geographical region. In 2007, ConocoPhillips conducted an exploration program south of Barrow near the Walakpa Gas Field. The NSB

conducted drilling activities in 2007, including drilling new gas wells, and plugged and abandoned depleted wells in the Barrow Gas Fields. During the 5-year timeframe of the proposed regulations (2013 to 2018), we expect the NSB to maintain an active presence in the gas fields with the potential for additional maintenance of the fields.

Biological Information

Pacific Walrus (Odobenus rosmarus divergens)

The Pacific walrus is the largest pinniped species (aquatic carnivorous mammals with all four limbs modified into flippers) in the Arctic. Walruses are readily distinguished from other Arctic pinnipeds by their enlarged upper canine teeth, which form prominent tusks. Males, which have relatively larger tusks than females, also tend to have broader skulls (Fay 1982).

Two modern subspecies of walruses are generally recognized (Wozencraft 2005, p. 525; Integrated Taxonomic Information System, 2010): The Atlantic walrus (*O. r. rosmarus*), which ranges from the central Canadian Arctic eastward to the Kara Sea (Reeves 1978) and the Pacific walrus (*O. r. divergens*), which ranges across the Bering and Chukchi seas (Fay 1982). The small, geographically isolated population of walruses in the Laptev Sea (Heptner *et al.* 1976; Vishnevskaia and Bychkov 1990; Andersen *et al.* 1998; Wozencraft 2005; Jefferson *et al.* 2008), which was previously known as the Laptev walrus (Lindqvist *et al.* 2009), is now considered part of the Pacific walrus population. Atlantic and Pacific walruses are genetically and morphologically distinct from each other (Cronin *et al.* 1994), likely because of range fragmentation and differentiation during glacial phases of extensive Arctic sea ice cover (Harington 2008).

Stock Definition, Range, and Abundance

Pacific walrus are represented by a single stock of animals that inhabit the shallow continental shelf waters of the Bering and Chukchi seas (Sease and Chapman 1988). Though some heterogeneity in the populations has been documented by Jay *et al.* (2008) from differences in the ratio of trace elements in the teeth, Scribner *et al.* (1997) found no difference in mitochondrial or nuclear DNA among Pacific walruses sampled from different breeding areas. The population ranges across the international boundaries of the United States and Russian Federation, and both nations share common interests with respect to the conservation and management of this species. Pacific walruses are identified and managed in the United States and the Russian Federation as a single population (Service 2010).

Pacific walruses range across the continental shelf waters of the northern Bering Sea and Chukchi Sea, relying principally on broken pack ice habitat to access feeding areas of high benthic productivity (Fay 1982). Pacific walruses migrate up to 1,500 km (932 mi) between summer foraging areas in the Arctic (primarily the offshore continental shelf of the Chukchi Sea) and highly productive, seasonally ice covered waters in the sub-Arctic (northern Bering Sea) in winter. Although many adult male Pacific walruses remain in the Bering Sea during the ice free season, where they forage from coastal haulouts, most of the population migrates north in summer and south in winter following seasonal patterns of ice advance and retreat. Walruses are rarely spotted south of the Aleutian archipelago; however, migrant animals (mostly males) are occasionally reported in the North Pacific. Pacific walruses are presently identified and managed as a single panmictic population (Service 2010, unpublished data).

Fossil evidence suggests that walruses occurred in the northwest Pacific during the last glacial maximum (20,000 YBP) with specimens recovered as far south as northern California (Gingras *et al.* 2007; Harrington 2008). More recently, commercial harvest records indicate that Pacific walruses were hunted along the southern coast of the Russian Federation in the Sea of Okhotsk and near Unimak Pass (Aleutian Islands) and the Shumigan Islands (Alaska Peninsula) of Alaska during the 17th Century (Elliott 1882).

Pacific walruses are highly mobile, and their distribution varies markedly in response to seasonal and annual variations in sea ice cover. During the January to March breeding season, walruses congregate in the Bering Sea pack ice in areas where open leads (fractures in sea ice caused by wind drift or ocean currents), polynyas (enclosed areas of unfrozen water surrounded by ice) or thin ice allow access to water (Fay 1982; Fay *et al.* 1984). The specific location of winter breeding aggregations varies annually depending upon the distribution and extent of ice. Breeding aggregations have been reported southwest of St. Lawrence Island, Alaska; south of Nunivak Island, Alaska; and south of the Chukotka Peninsula in the Gulf of Anadyr, Russian Federation (Fay 1982; Mymrin *et al.* 1990; Figure 1 in Garlich-Miller *et al.* 2011a).

In spring, as the Bering Sea pack ice deteriorates, most of the population migrates northward through the Bering Strait to summer feeding areas over the continental shelf in the Chukchi Sea. However, several thousand animals, primarily adult males, remain in the Bering Sea during the summer months, foraging from coastal haulouts in the Gulf of Anadyr, Russian Federation, and in Bristol Bay, Alaska (Figure 1 in Garlich-Miller *et al.* 2011a).

Summer distributions (both males and females) in the Chukchi Sea vary annually, depending upon the extent of sea ice. When broken sea ice is abundant, walruses are typically found in patchy aggregations over continental shelf waters. Individual groups may range from fewer than 10 to more than 1,000 animals (Gilbert 1999; Ray *et al.* 2006). Summer concentrations have been reported in loose pack ice off the northwestern coast of Alaska, between Icy Cape and Point Barrow, and along the coast of Chukotka, Russian Federation, and Wrangel Island (Fay 1982; Gilbert *et al.* 1992; Belikov *et al.* 1996). In years of low ice concentrations in the Chukchi Sea, some animals range east of Point Barrow into the Beaufort Sea; walruses have also been observed in the Eastern Siberian Sea in late summer (Fay 1982; Belikov *et al.* 1996). The pack ice of the Chukchi Sea usually reaches its minimum extent in September. In years when the sea ice retreats north beyond the continental shelf, walruses congregate in large numbers (up to several tens of thousands of animals in some locations) at terrestrial haulouts on Wrangel Island and other sites along the northern coast of the Chukotka Peninsula, Russian Federation, and northwestern Alaska (Fay 1982; Belikov *et al.* 1996; Kochnev 2004; Ovsyanikov *et al.* 2007; Kavry *et al.* 2008; MacCracken 2012).

In late September and October, walruses that summered in the Chukchi Sea typically begin moving south in advance of the developing sea ice. Satellite telemetry data indicate that male walruses that summered at coastal haulouts in the Bering Sea also begin to move northward towards winter breeding areas in November (Jay and Hills 2005). The male walruses' northward movement appears to be driven primarily by the presence of females at that time of year (Freitas *et al.* 2009).

Distribution in the Chukchi Sea

During the summer months, walruses are widely distributed across the shallow continental shelf waters of the Chukchi Sea. Significant summer concentrations include near Wrangel

and Herald Islands in Russian waters and at Hanna Shoal (northwest of Point Barrow) in U.S. waters (Jay *et al.* 2012). As the ice edge advances southward in the fall, walruses reverse their migration and re-group on the Bering Sea pack ice.

The distribution of walruses in the eastern Chukchi Sea where exploration activities would occur is influenced primarily by the distribution and extent of seasonal pack ice. In June and July, scattered groups of walruses are typically found in loose pack ice habitats between Icy Cape and Point Barrow (Fay 1982; Gilbert *et al.* 1992). Recent telemetry studies investigating foraging patterns in the eastern Chukchi Sea suggest that many walruses focus foraging efforts near Hanna Shoal, northwest of Point Barrow (Jay *et al.* in press). In August and September, concentrations of animals tend to be in areas of unconsolidated pack ice, usually within 100 km of the leading edge of the ice pack (Gilbert 1999). Individual groups occupying unconsolidated pack ice typically range from fewer than 10 to more than 1,000 animals. (Gilbert 1999; Ray *et al.* 2006). In August and September, the edge of the pack ice generally retreats northward to about 71° N latitude; however in light ice years, the edge can retreat north beyond the continental shelf (Douglas 2010). Sea ice normally reaches its minimum (northern) extent sometime in September, and ice begins to reform rapidly in October and November. Walruses typically migrate out of the eastern Chukchi Sea in October in advance of the developing sea ice (Fay 1982l; Jay *et al.* in press).

Population Status

The size of the Pacific walrus population has never been known with certainty. Based on large sustained harvests in the 18th and 19th centuries, Fay (1982) speculated that the pre-exploitation population was represented by a minimum of 200,000 animals. Since that time, population size is believed to have fluctuated in response to varying levels of human exploitation. Large scale commercial harvests are believed to have reduced the population to 50,000 to 100,000 animals by the mid-1950s (Fay *et al.* 1997). The population apparently increased rapidly in size during the 1960s and 1970s in response to harvest regulations that limited the take of females (Fay *et al.* 1989). Between 1975 and 1990, visual aerial surveys jointly conducted by the United States and Soviet Union at 5-year intervals produced population estimates ranging from 201,039 to 246,360 (Table 1). Efforts to survey the Pacific walrus population were suspended by both countries after 1990, due to unresolved problems with survey methods that produced population estimates with unknown bias and unknown, but presumably large, variances that severely limited their utility (Speckman *et al.* 2012).

In 2006, a joint United States-Russian Federation survey was conducted in the pack ice of the Bering Sea, using thermal imaging systems to detect walruses hauled out on sea ice and satellite transmitters to account for walruses in the water (Speckman *et al.* 2012). The number of walruses within the surveyed area was estimated at 129,000, with a 95 percent confidence interval of 55,000 to 507,000 individuals. This is a conservative minimum estimate, as weather conditions forced termination of the survey before much of the southwest Bering Sea was surveyed; animals were observed in that region as the surveyors returned to Anchorage, Alaska. Table 1 provides a summary of survey results.

TABLE 1—ESTIMATES OF PACIFIC WALRUS POPULATION SIZE, 1975 TO 2006

Year	Population size [a] (95% confidence interval)	Reference
1975	214,687 (−20,000 to 480,000) [b]	Udevitz *et al.* 2001.
1980	246,360 (−20,000 to 540,000)	Johnson *et al.* 1982; Fedoseev 1984.
1985	242,366 (−20,000 to 510,000)	Udevitz *et al.* 2001.
1990	201,039 (−19,000 to 460,000)	Gilbert *et al.* 1992.
2006	129,000 (55,000 to 507,000)	Speckman *et al.* 2011.

[a] due to differences in methods, comparisons of estimates across years (population trends) are subject to several caveats and not reliable.
[b] 95 percent confidence intervals for 1975 to 1990 are from Fig. 1 in Hills and Gilbert (1994).

These survey results suggest that the walrus population has declined; however, discrepancies among the survey methods and large confidence intervals that in some cases overlap zero do not support such a definitive conclusion. Resource managers in the Russian Federation have concluded that the population has declined and have reduced harvest quotas in recent years accordingly (Kochnev 2004; Kochnev 2005; Kochnev 2010, pers. comm.), based in part on the lower abundance estimate generated from the 2006 survey. However, past survey results are not directly comparable due to differences in survey methods, timing of surveys, segments of the population surveyed, and incomplete coverage of areas where walruses may have been present (Fay *et al.* 1997); thus, these results do not provide a basis for determining trends in population size (Hills and Gilbert 1994; Gilbert 1999). Whether prior estimates are biased low or high is unknown, because of problems with detecting individual animals on ice or land, and in open water, and difficulties counting animals in large, dense groups (Speckman *et al.* 2011). In addition, no survey has ever been completed within a time frame that could account for the redistribution of individuals (leading to double counting or undercounting), or before weather conditions either delayed the effort or completely terminated the survey before the entire area of potentially occupied habitat had been covered (Speckman *et al.* 2011). Due to these problems, as well as seasonal differences among surveys (fall or spring) and despite technological advancements that correct for some problems, we do not believe the survey results provide a reliable basis for estimating a population trend.

Changes in the walrus population have also been investigated by examining changes in biological parameters over time. Based on evidence of changes in abundance, distributions, condition indices, pregnancy rates, and minimum breeding age, Fay *et al.* (1989) and Fay *et al.* (1997) concluded that the Pacific walrus population increased greatly in size during the 1960s and 1970s, and postulated that the population was near, or had exceeded, the carrying capacity (K) of its environment by the early 1980s. We would expect the population to decline if K is exceeded. In addition, harvests increased in the 1980s. Changes in the size, composition, and productivity of the sampled walrus harvest in the Bering Strait Region of

Alaska over this time frame are consistent with this hypothesis (Garlich-Miller *et al.* 2006; MacCracken 2012). Harvest levels declined sharply in the early 1990s, and increased reproductive rates and earlier maturation in females occurred, suggesting that density dependent regulatory mechanisms had been relaxed and the population was likely below K (Garlich-Miller *et al.* 2006; MacCracken 2012). However, Garlich-Miller *et al.* (2006) also noted that there are no data concerning the trend in abundance of the walrus population or the status of its prey to verify this hypothesis, and that whether density dependent changes in life-history parameters might have been mediated by changes in population abundance or changes in the carrying capacity of the environment is unknown.

Habitat

The Pacific walrus is an ice-dependent species that relies on sea ice for many aspects of its life history. Unlike other pinnipeds, walruses are not adapted for a pelagic existence and must haul out on ice or land regularly. Floating pack ice serves as a substrate for resting between feeding dives (Ray *et al.* 2006), breeding behavior (Fay *et al.* 1984), giving birth (Fay 1982), and nursing and care of young (Kelly 2001). Sea ice provides access to offshore feeding areas over the continental shelf of the Bering and Chukchi seas, passive transportation to new feeding areas (Richard 1990; Ray *et al.* 2006), and isolation from terrestrial predators (Richard 1990; Kochnev 2004; Ovsyanikov *et al.* 2007). Sea ice provides an extensive substrate upon which the risk of predation and hunting is greatly reduced (Kelly 2001; Fay 1982).

Sea ice in the Northern Hemisphere is comprised of first year sea ice that formed in the most recent autumn/winter period, and multi-year ice that has survived at least one summer melt season. Sea ice habitats for walruses include openings or leads that provide access to the water and to food resources. Walruses generally do not use multi-year ice or highly compacted first year ice in which there is an absence of persistent leads or polynyas (Richard 1990). Expansive areas of heavy ice cover are thought to play a restrictive role in walrus distributions across the Arctic and serve as a barrier to the mixing of populations (Fay 1982; Dyke *et al.* 1999; Harington 2008). Walruses generally do not occur farther south than the maximum extent of the winter pack ice, possibly due to their reliance on sea ice for breeding and rearing young (Fay *et al.* 1984) and isolation from terrestrial predators (Kochnev 2004; Ovsyanikov *et al.* 2007), or because of the higher densities of benthic invertebrates in northern waters (Grebmeier *et al.* 2006a).

Walruses may utilize ice that is greater than 20 cm (~8 in), but generally require ice thicknesses of 50 cm (~20 in) or more to support their weight, and are not found in areas of extensive, unbroken ice (Fay 1982; Richard 1990). Thus, in winter they concentrate in areas of broken pack ice associated with divergent ice flow or along the margins of persistent polynyas (Burns *et al.* 1981; Fay *et al.* 1984; Richard 1990) in areas with abundant food resources (Ray *et al.* 2006). Females with young generally spend the summer months in pack ice habitats of the Chukchi Sea. Some authors have suggested that the size and topography of individual ice floes are important features in the selection of ice haulouts, noting that some animals have been observed returning to the same ice floe between feeding bouts (Ray *et al.* 2006). Conversely, walruses can and will exploit a broad range of ice types and ice concentrations in order to stay in preferred foraging or breeding areas (Freitas *et al.* 2009; Jay *et al.* 2010a; Ray *et al.* 2010). Walruses tend to make shorter foraging excursions when they are using sea ice rather than land haulouts (Udevitz *et al.* 2009), suggesting that it is more energetically efficient for them to haulout on ice than forage from shore. Fay (1982) notes that several authors reported that when walruses had the choice of ice or land for a resting place, ice was always selected. However, walrus occupancy of an area can be somewhat independent of ice conditions. Many walruses will stay over productive feeding areas even to the point when the ice completely melts out. It appears that adult females and younger animals can remain at sea for a week or two before coming to shore to rest.

When suitable sea ice is not available, walruses haul out on land to rest. A wide variety of substrates, ranging from sand to boulders, are used. Isolated islands, points, spits, and headlands are occupied most frequently. The primary consideration for a terrestrial haulout site appears to be isolation from disturbances and predators, although social factors, learned behavior, protection from strong winds and surf, and proximity to food resources also likely influence the choice of terrestrial haulout sites (Richard 1990). Walruses tend to use established haulout sites repeatedly and exhibit some degree of fidelity to these sites (Jay and Hills 2005), although the use of coastal haulouts appears to fluctuate over time, possibly due to localized prey depletion (Garlich-Miller and Jay 2000). Human disturbance is also thought to influence the choice of haulout sites; many historic haulouts in the Bering Sea were abandoned in the early 1900s when the Pacific walrus population was subjected to high levels of exploitation (Fay 1982; Fay *et al.* 1984).

Adult male walruses use land-based haulouts more than females or young, and consequently, have a greater geographical distribution through the ice-free season. Many adult males remain in the Bering Sea throughout the ice-free season, making foraging trips from coastal haulouts in Bristol Bay, Alaska, and the Gulf of Anadyr, Russian Federation (Figure 1 in Garlich-Miller *et al.* 2011a), while females and juvenile animals generally stay with the drifting ice pack throughout the year (Fay 1982). Females with dependent young may prefer sea ice habitats because coastal haulouts pose greater risk from trampling injuries and predation (Fay and Kelly 1980; Ovsyanikov *et al.* 1994; Kochnev 2004; Ovsyanikov *et al.* 2007; Kavry *et al.* 2008; Mulcahy *et al.* 2009). Females may also prefer sea ice habitats because they may have difficulty feeding while caring for a young calf that has limited swimming range (Cooper *et al.* 2006; Jay and Fischbach 2008).

The numbers of male walruses using coastal haulouts in the Bering Sea during the summer months, and the relative uses of different coastal haulout sites in the Bering Sea, have varied over the past century. Harvest records indicate that walrus herds were once common at coastal haulouts along the Alaska Peninsula and the islands of northern Bristol Bay (Fay *et al.* 1984). By the early 1950s, most of the traditional haulout areas in the Southern Bering Sea had been abandoned, presumably due to hunting pressure. During the 1950s and 1960s, Round Island was the only regularly used haulout in Bristol Bay, Alaska. In 1960, the State of Alaska established the Walrus Islands State Game Sanctuary, which closed Round Island to hunting. Peak counts of walruses at Round Island increased from 1,000 to 2,000 animals in the late 1950s (Frost *et al.* 1983) to more than 10,000 animals in the early 1980s (Sell and Weiss 2010), but subsequently declined to 2,000 to 5,000 over the past decade (Sell and Weiss 2010). General observations indicate that declining walrus counts at Round Island may, in part, reflect a redistribution of animals to other coastal sites in the Bristol Bay region. For example, walruses have been

observed increasingly regularly at the Cape Seniavin haulout on the Alaska Peninsula since the 1970s, and at Cape Pierce and Cape Newenham in northwest Bristol Bay since the early 1980s (Jay and Hills 2005; Winfree 2010; Figure 1 in Garlich-Miller *et al.* 2011a), and more recently at Hagemeister Island.

Traditional male summer haulouts along the Bering Sea coast of the Russian Federation include sites along the Kamchatka Peninsula, the Gulf of Anadyr (most notably Rudder and Meechkin spits), and Arakamchechen Island (Garlich-Miller and Jay 2000; Figure 1 in Garlich-Miller *et al.* 2011a). Walruses have not occupied several of the southernmost haulouts along the coast of Kamchatka in recent years, and the number of animals in the Gulf of Anadyr has also declined in recent years (Kochnev 2005). Factors influencing abundance at Bering Sea haulouts are poorly understood, but may include changes in prey densities near the haulouts, changes in population size, disturbance levels, and changing seasonal distributions (Jay and Hills 2005) (presumably mediated by sea ice coverage or temperature).

Historically, coastal haulouts along the Arctic (Chukchi Sea) coast have been used less consistently during the summer months than those in the Bering Sea because of the presence of pack ice for much of the year in the Chukchi Sea. Since the mid-1990s, reductions of summer sea ice coincided with a marked increase in the use of coastal haulouts along the Chukchi Sea coast of the Russian Federation during the summer months (Kochnev 2004; Kavry *et al.* 2008). Large, mixed (composed of various age and sex groups) herds of walruses, up to several tens of thousands of animals, began to use coastal haulouts on Wrangel Island, Russian Federation, in the early 1990s, and several coastal haulouts along the northern Chukotka coastline of the Russian Federation have emerged in recent years, likely as a result of reductions in summer sea ice in the Chukchi Sea (Kochnev 2004; Ovsyanikov *et al.* 2007; Kavry *et al.* 2008; Figure 1 in Garlich-Miller *et al.* 2011a).

In 2007, 2009, 2010, and 2011, walruses were also observed hauling out in large numbers with mixed sex and age groups along the Chukchi Sea coast of Alaska in late August, September, and October (Thomas *et al.* 2009; Service 2010, unpublished data; Garlich-Miller *et al.* 2011b; MacCracken 2012). Monitoring studies conducted in association with oil and gas exploration suggest that the use of coastal haulouts along the Arctic coast of Alaska during the summer months is dependent upon the availability of sea ice. For example, in 2006 and 2008, walruses foraging off the Chukchi Sea coast of Alaska remained with the ice pack over the continental shelf during the months of August, September, and October. However in 2007 and 2009, the pack ice retreated beyond the continental shelf and large numbers of walruses hauled out on land at several locations between Point Barrow and Cape Lisburne, Alaska (Ireland *et al.* 2009; Thomas *et al.* 2009; Service 2010, unpublished data; Figure 1 in Garlich-Miller *et al.* 2011a), and in 2010 and 2011, at least 20,000 to 30,000 walruses were observed hauled out approximately 4.8 km (3 miles[mi]) north of the Native Village of Point Lay, Alaska (Garlich-Miller *et al.* 2011b).

Transitory coastal haulouts have also been reported in late fall (October to November) along the southern Chukchi Sea coast, coinciding with the southern migration. Mixed herds of walruses frequently come to shore to rest for a few days to weeks along the coast before continuing on their migration to the Bering Sea. Cape Lisburne, Alaska, and Capes Serdtse-Kamen' and Dezhnev, Russian Federation, are the most consistently used haulouts in the Chukchi Sea at this time of year (Garlich-Miller and Jay 2000). Large mixed herds of walruses have also been reported in late fall and early winter at coastal haulouts in the northern Bering Sea at the Punuk Islands and Saint Lawrence Island, Alaska; Big Diomede Island, Russian Federation; and King Island, Alaska, prior to the formation of sea ice in offshore breeding and feeding areas (Fay and Kelly 1980; Garlich-Miller and Jay 2000; Figure 1 in Garlich-Miller *et al.* 2011a).

Life History

Walruses are long-lived animals with low rates of reproduction, much lower than other pinniped species. Walruses may live 35 to 40 years and some may remain reproductively active until relatively late in life (Garlich-Miller *et al.* 2006). Females give birth to one calf every 2 or more years. Breeding occurs between January and March in the pack ice of the Bering Sea. Calves are usually born in late April or May the following year during the northward migration from the Bering Sea to the Chukchi Sea. Calving areas in the Chukchi Sea extend from the Bering Strait to latitude 70°N (Fay *et al.* 1984).

At birth, walrus calves are approximately 65 kg (143 lb) and 113 cm (44.5 in) long (Fay 1982). Calves are capable of entering the water shortly after birth, but tend to haulout frequently, until their swimming ability and blubber layer are well developed. Females tend newborn calves closely and accompany their mother from birth until weaned after 2 years or more. Cows brood neonates to aid in their thermoregulation (Fay and Ray 1968), and carry them on their back or under their flipper while in the water (Gehnrich 1984). Females with newborns often join to form large ''nursery herds'' (Burns 1970). Summer distribution of females and young walruses is related to the movements of the pack ice relative to feeding areas.

After the first 7 years of life, the growth rate of female walruses declines rapidly, and they reach a maximum body size by approximately 10 years of age. Females reach sexual maturity at 4 to 9 years of age. Adult females can reach lengths of up to 3 m (9.8 ft) and weigh up to 1,100 kg (2,425 lb). Male walrus tend to grow faster and for a longer period than females. Males become fertile at 5 to 7 years of age; however, they are usually unable to compete for mates until they reach full adult body size at 15 to 16 years of age. Adult males can reach lengths of 3.5 m (11.5 ft) and can weigh more than 2,000 kg (4,409 lb) (Fay 1982).

Behavior

Walruses are social and gregarious animals. They tend to travel in groups and haul out of the water to rest on ice or land in densely packed groups. On land or ice, in any season, walruses tend to lie in close physical contact with each other. Young animals often lie on top of adults. Group size can range from a few individuals up to several thousand animals (Gilbert 1999; Kastelein 2002; Jefferson *et al.* 2008). At any time of the year, when groups are disturbed, stampedes from a haulout can result in injuries and mortalities. Calves and young animals are particularly vulnerable to trampling injuries (Fay 1980; Fay and Kelly 1980). The reaction of walruses to disturbance ranges from no reaction to escape into the water, depending on the circumstances (Fay *et al.* 1984). Many factors play into the severity of the response, including the age and sex of the animals, the size and location of the group (on ice, in water, Fay *et al.* 1984). Females with calves appear to be most sensitive to disturbance, and animals on shore are more sensitive than those on ice (Fay *et al.* 1984). A fright response caused by disturbance can cause stampedes on a haulout, resulting in injuries and mortalities (Fay and Kelly 1980).

Mating occurs primarily in January and February in broken pack ice habitat

in the Bering Sea. Breeding bulls follow herds of females and compete for access to groups of females hauled out onto sea ice. Males perform visual and acoustical displays in the water to attract females and defend a breeding territory. Sub-dominant males remain on the periphery of these aggregations and apparently do not display. Intruders into display areas are met with threat displays and physical attacks. Individual females leave the resting herd to join a male in the water where copulation occurs (Fay *et al.* 1984; Sjare and Stirling 1996).

The social bond between the mother and calf is very strong, and it is unusual for a cow to become separated from her calf (Fay 1982). The calf normally remains with its mother for at least 2 years, sometimes longer, if not supplanted by a new calf (Fay 1982). After separation from their mother, young females tend to remain with groups of adult females, whereas young males gradually separate from the females and begin to associate with groups of other males. Walruses appear to base their individual social status on a combination of body size, tusk size, and aggressiveness. Individuals do not necessarily associate with the same group of animals and must continually reaffirm their social status in each new aggregation (Fay 1982; NAMMCO 2004).

Walruses produce a variety of sounds (barks, knocks, grunts, rasps, clicks, whistles, contact calls, etc.; Miller 1985; Stirling *et al.* 1987), which range in frequency from 0.1 to 4000 Hz (Miller 1985; Richardson *et al.* 1995). Airborne vocalizations accompany nearly every social interaction that occurs on land or ice (Miller 1985; Charrier *et al.* 2011) and facilitate kin recognition, male breeding displays, recognition of conspecifics, and female mate choice (Insley *et al.* 2003; Charrier *et al.* 2011). Miller (1985) indicated that barks and other calls were used to promote group cohesion and prompted herd members to attend to young distressed animals. Walruses also vocalize extensively while underwater, which has been used to track movements, study behavior, and infer relative abundance (Stirling *et al.* 1983; Hannay *et al.* 2012, Mouy *et al.* 2012). The purposes of underwater vocalizations are not explicitly known but are associated with breeding (Ray and Watkins 1975; Stirling *et al.* 1987; Sjare *et al.* 2003), swimming, and diving (Hannay *et al.* 2012). Stirling *et al.* (1987) suggested that variation among individuals in stereotyped underwater calls may be used to identify individuals. Mouy *et al.* (2012) opined that knocks made while diving may be used to locate the bottom and identify bottom substrates associated with prey. Underwater vocalizations may also be used to communicate with other walruses.

Because of walrus grouping behavior, all vocal communications occur within a short distance (Miller 1985). Walrus' underwater vocalizations can be detected for only a few kilometers (Mouy *et al.* 2012) and likely do not act as long distance communication.

Prey

Walruses consume mostly benthic (region at the bottom of a body of water) invertebrates and are highly adapted to obtain bivalves (Fay 1982; Bowen and Siniff 1999; Born *et al.* 2003; Dehn *et al.* 2007; Boveng *et al.* 2008; Sheffield and Grebmeier 2009). Fish and other vertebrates have occasionally been found in their stomachs (Fay 1982; Sheffield and Grebmeier 2009). Walruses root in the bottom sediment with their muzzles and use their whiskers to locate prey items. They use their fore flippers, nose, and jets of water to extract prey buried up to 32 cm (12.6 in) (Fay 1982; Oliver *et al.* 1983; Kastelein 2002; Levermann *et al.* 2003). The foraging behavior of walruses is thought to have a major impact on benthic communities in the Bering and Chukchi seas (Oliver *et al.* 1983; Klaus *et al.* 1990). Ray *et al.* (2006) estimate that walruses consume approximately 3 million metric tons (3,307 tons) of benthic biomass annually, and that the area affected by walrus foraging is in the order of thousands of square (sq) km (thousands of sq mi) annually. Consequently, walruses play a major role in benthic ecosystem structure and function, which Ray *et al.* (2006) suggested increased nutrient flux and productivity.

The earliest studies of food habits were based on examination of stomachs from walruses killed by hunters. These reports indicated that walruses were primarily feeding on bivalves (clams), and that non-bivalve prey was only incidentally ingested (Fay 1982; Sheffield *et al.* 2001). However, these early studies did not take into account the differential rate of digestion of prey items (Sheffield *et al.* 2001). Additional research indicates that stomach contents include over 100 taxa of benthic invertebrates from all major phyla (Fay 1982; Sheffield and Grebmeier 2009), and while bivalves remain the primary component, walruses are not adapted to a diet solely of clams. Other prey items have similar energetic benefits (Wacasey and Atkinson 1987). Based on analysis of the contents from fresh stomachs of Pacific walruses collected between 1975 and 1985 in the Bering Sea and Chukchi Sea, prey consumption likely reflects benthic invertebrate composition (Sheffield and Grebmeier 2009). Of the large number of different types of prey, statistically significant differences between males and females from the Bering Sea were found in the occurrence of only two prey items, and there were no statistically significant differences in results for males and females from the Chukchi Sea (Sheffield and Grebmeier 2009). Although these data are for Pacific walrus stomachs collected 25 to 35 years ago, we have no reason to believe there has been a change in the general pattern of prey use described here.

Walruses typically swallow invertebrates without shells in their entirety (Fay 1982). Walruses remove the soft parts of mollusks from their shells by suction, and discard the shells (Fay 1982). Born *et al.* (2003) reported that Atlantic walruses consumed an average of 53.2 bivalves (range 34 to 89) per dive. Based on caloric need and observations of captive walruses, walruses require approximately 29 to 74 kg (64 to 174 lbs) of food per day (Fay 1982). Adult males forage little during the breeding period (Fay 1982; Ray *et al.* 2006), while lactating females may eat two to three times that of non-pregnant, non-lactating females (Fay 1982). Calves up to 1 year of age depend primarily on their mother's milk (Fay 1982) and are gradually weaned in their second year (Fisher and Stewart 1997).

Although walruses are capable of diving to depths of more than 250 m (820 ft) (Born *et al.*), they usually forage in waters of 80 m (262 ft) or less (Fay and Burns 1988, Born *et al.* 2003; Kovacs and Lydersen 2008), presumably because of higher productivity of their benthic foods in shallow waters (Fay and Burns 1988; Carey 1991; Jay *et al.* 2001; Grebmeier *et al.* 2006b; Grebmeier *et al.* 2006a). Walruses make foraging trips from land or ice haulouts that range from a few hours up to several days and up to 100 km (60 mi) (Jay *et al.* 2001; Born *et al.* 2003; Ray *et al.* 2006; Udevitz *et al.* 2009). Walruses tend to make shorter and more frequent foraging trips when sea ice is used as a foraging platform compared to terrestrial haulouts (Udevitz *et al.* 2009). Satellite telemetry data for walruses in the Bering Sea in April of 2004, 2005, and 2006 showed they spent an average of 46 hours in the water between resting bouts on ice, which averaged 9 hours (Udevitz *et al.* 2009). Because females and young travel with the retreating pack ice in the spring and summer, they are passively transported northward over feeding grounds across the continental shelves of the Bering and Chukchi seas. Male

walruses appear to have greater endurance than females, with foraging excursions from land haulouts that can last up to 142 hours (about 6 days) (Jay *et al.* 2001).

Mortality

Polar bears are known to prey on walrus calves, and killer whales (*Orcinus orca*) have been known to take all age classes of walruses. Predation levels are thought to be highest near terrestrial haulout sites where large aggregations of walruses can be found; however, few observations exist for offshore environs. Pacific walruses have been hunted by coastal Natives in Alaska and Chukotka for thousands of years. Exploitation of the Pacific walrus population by Europeans has also occurred in varying degrees since the late 17th century. Currently only Native Alaskans and Chukotkans can hunt Pacific walruses to meet subsistence needs. The Service, in partnership with the Eskimo Walrus Commission (EWC) and the Association of Traditional Marine Mammal Hunters of Chukotka, administered subsistence harvest monitoring programs in Alaska and Chukotka in 2000 to 2005. Harvests from 2006–2010 averaged 4,854 walruses per year (Service, unpubl. data). These mortality estimates include corrections for under-reported harvest and struck and lost animals.

Intra-specific trauma is also a known source of injury and mortality. Disturbance events can cause walruses to stampede into the water and have been known to result in hundreds to thousands of injuries and mortalities. The risk of stampede-related injuries increases with the number of animals hauled out. Calves and young animals at the perimeter of these herds are particularly vulnerable to trampling injuries.

Polar Bears (Ursus maritimus)

Stock Definition and Range

Polar bears are circumpolar in their distribution in the northern hemisphere. In Alaska, polar bears have historically been observed as far south in the Bering Sea as St. Matthew Island and the Pribilof Islands (Ray 1971). Two subpopulations, or stocks, occur in Alaska: The Chukchi/Bering seas stock (CS), and the Southern Beaufort Sea stock (SBS). This proposed rule primarily discusses the CS stock. A detailed description of the CS and SBS polar bear stocks can be found in the Polar Bear (*Ursus maritimus*) Stock Assessment Reports at *http://alaska.fws.gov/fisheries/mmm/stock/final_sbs_polar_bear_sar.pdf* and *http://alaska.fws.gov/fisheries/mmm/stock/final_cbs_polar_bear_sar.pdf*. A summary of the CS polar bear stock is described below.

The CS stock is widely distributed on the pack ice in the Chukchi Sea and northern Bering Sea and adjacent coastal areas in Alaska, United States and Chukotka, Russian Federation. The northeastern boundary of the Chukchi/Bering seas stock is near the Colville Delta in the central Beaufort Sea (Garner *et al.*1990; Amstrup 1995; Amstrup *et al.* 2005), and the western boundary is near Chauniskaya Bay in the Eastern Siberian Sea. The stock's southern boundary is determined by the extent of annual sea ice. It is important to note that the eastern boundary of the CS stock constitutes a large overlap zone with bears in the SBS stock (Amstrup *et al.* 2004). In this large overlap zone, roughly north of Barrow, Alaska, it is thought that polar bears are approximately 50 percent from the CS stock and 50 percent from the SBS stock (Amstrup *et al.* 2004; Obbard *et al.* 2010). Currently, capture-based studies are being conducted by the Service in the U.S. portion of the Chukchi Sea to provide updated information on population delineation and habitat use.

Distribution in the Chukchi Sea

Polar bears are common in the Chukchi Sea and their distribution is influenced by the movement of the seasonal pack ice. Polar bears in the Chukchi Sea migrate seasonally with the pack ice but are typically dispersed throughout the region anywhere sea ice and prey may be found (Garner *et al.* 1990; Amstrup 2003). The distance between the northern and southern extremes of the seasonal pack ice in the Chukchi/Bearing seas is approximately 1,300 km (~807 mi). There may be, however, significant differences year to year. Sea ice throughout the Arctic is changing rapidly and dramatically due to climate change (Douglas 2010). In May and June, polar bears are likely to be encountered over relatively shallow continental shelf waters associated with ice as they move northward from the northern Bering Sea, through the Bering Strait into the southern Chukchi Sea. During the fall and early winter period polar bears are likely to be encountered in the Chukchi Sea during their southward migration in late October and November. Polar bears are dependent upon the sea ice for foraging, and the most productive areas seem to be near the ice edge, leads, or polynyas where the ocean depth is minimal (Durner *et al.* 2004). In addition, polar bears may be present along the shoreline in this area, as they will opportunistically scavenge on marine mammal carcasses washed up along the shoreline (Kalxdorff and Fischbach 1998).

Population Status

The global population estimate of polar bears is approximately 20,000 to 25,000 individuals (Obbard *et al.* 2010). Polar bears typically occur at low densities throughout their circumpolar range (DeMaster and Stirling 1981). The CS stock likely increased after the level of harvest in the United States was reduced subsequent to passage of the MMPA in 1972; however, its status is now considered uncertain (Obbard *et al.* 2010). Polar bears in the CS stock are classified as depleted under the MMPA and listed as threatened under the Endangered Species Act of 1973, as amended (ESA) (16 U.S.C. 1531 et seq.). It has been difficult to obtain a reliable population estimate for this stock due to the vast and inaccessible nature of the habitat, movement of bears across international boundaries, logistical constraints of conducting studies in Russian Federation territory, and budget limitations (Amstrup and DeMaster 1988; Garner *et al.* 1992; Garner *et al.* 1998; Evans *et al.* 2003). The recent estimate of the CS stock is approximately 2,000 animals, based on extrapolation of aerial den surveys (Lunn *et al.* 2002). Past estimates of the stock have been derived from observations of dens and aerial surveys (Chelintsev 1977; Stishov 1991a; Stishov 1991b; Stishov *et al.* 1991); however, these estimates have wide confidence intervals, are considered to be of little value for management, and cannot be used to evaluate status and trends for this stock. Reliable estimates of population size based upon traditional wildlife research methods such as capture-recapture or aerial surveys are not available for this region, and measuring the population size remains a research challenge (Evans *et al.* 2003). Current and new research studies in the United States and Russian Federation are aimed at monitoring population status via ecological indicators (e.g., recruitment rates and body condition) and reducing uncertainty associated with estimates of survival and population size.

Habitat

Polar bears depend on the sea-ice-dominated ecosystem for survival. Polar bears of the Chukchi Sea are subject to the movements and coverage of the pack ice and annual ice as they are dependent on the ice as a platform for hunting, feeding, and mating. Historically, polar bears of the Chukchi Sea have spent most of their time on the

annual ice in near-shore, shallow waters over the productive continental shelf, which is associated with the shear zone and the active ice adjacent to the shear zone. Sea ice and food availability are two important factors affecting the distribution of polar bears and their use of habitat. During the ice-covered season, bears use the extent of the annual ice. The most extensive north–south movements of polar bears are associated with the spring and fall ice movement. For example, during the 2006 ice-covered season, six bears radio-collared in the Beaufort Sea were located in the Chukchi and Bering Seas as far south as 59° latitude, which was the farthest extent of the annual ice during 2006. In addition, a small number of bears sometimes remains on the Russian and Alaskan coasts during the initial stages of ice retreat in the spring.

Polar bear distribution during the open-water season in the Chukchi Sea, where maximum open water occurs in September, is dependent upon the location of the ice edge as well. The summer ice pack can be unconsolidated, and segments move great distances by wind, carrying polar bears with them. Recent telemetry movement data are lacking for bears in the Chukchi Sea; however, an increased trend by polar bears to use coastal habitats in the fall during open-water and freeze-up conditions has been noted by researchers since 1992. Recently, during the minimum sea ice extents, which occurred in 2005 and 2007, polar bears exhibited this coastal movement pattern as observations from Russian biologists and satellite telemetry data of bears in the Beaufort Sea indicated that bears were found on the sea ice or along the Chukotka coast during the open-water period.

Changes in sea ice are occurring in the Chukchi Sea because of climate change (Service 2010). With sea ice decreasing, scientists are observing effects of climate change on polar bear habitat, such as an increased amount of open water for longer periods; a reduction in the stable, multi-year ice; and a retraction of sea ice away from productive continental shelf areas (Service 2010). Polar bears using the Chukchi Sea are currently experiencing the initial effects of changes in the sea-ice conditions (Rode and Regehr *et al.* 2007) and would be vulnerable to seasonal changes in sea ice that could limit their access to prey.

As a measure to protect polar bears and their habitat from the effects of climate change, the Service designated critical habitat for polar bear populations in the United States effective January 6, 2011 (75 FR 76086; December 7, 2010). Critical habitat identifies geographic areas that contain features essential for the conservation of an endangered or threatened species, and that may require special management or protection.

The Service designated critical habitat in three areas or units: Barrier island habitat, sea ice habitat (both described in geographic terms), and terrestrial denning habitat (a functional determination). Barrier island habitat includes coastal barrier islands and spits along Alaska's coast, and is used for denning, refuge from human disturbance, access to maternal dens and feeding habitat, and travel along the coast. Sea ice habitat is located over the continental shelf, and includes water 300 m (~984 ft) or less in depth. Terrestrial denning habitat includes lands within 32 km (~20 mi) of the northern coast of Alaska between the Canadian border and the Kavik River, and within 8 km (~5 mi) between the Kavik River and Barrow. The total area designated covers approximately 484,734 sq km (~187,157 sq mi), and is entirely within the lands and waters of the United States.

Polar bear habitat is described in detail in the final rule that designated polar bear critical habitat (75 FR 76086; December 7, 2010). A detailed description of polar bear habitat can be found at *http://alaska.fws.gov/fisheries/mmm/polarbear/pdf/federal_register_notice.pdf.*

Life History

Polar bears are specially adapted for life in the Arctic and are distributed throughout most ice-covered seas of the circumpolar Northern Hemisphere (Amstrup 2003). They are generally limited to areas where the sea is ice-covered for much of the year; however, polar bears are not evenly distributed throughout their range. They are most abundant near the shore in shallow water areas, and in other areas where currents and ocean upwelling increase marine productivity and maintain some open water during the ice covered season (Stirling and Smith 1975; Stirling *et al.* 1981; Amstrup and DeMaster 1988; Stirling 1990; Stirling and Øritsland 1995; Stirling and Lunn 1997; Amstrup *et al.* 2000; Amstrup 2003). Over most of their range, polar bears remain on the sea ice year-round, or spend only short periods on land (Amstrup 2003).

Denning and Reproduction

Female polar bears without dependent cubs breed in the spring. Females can produce their first litter of cubs at 5 to 6 years of age (Stirling *et al.* 1976; Stirling *et al.* 1977; Lentfer and Hensel 1980; Lentfer *et al.* 1980; Ramsay and Stirling 1982, 1988; Furnell and Schweinsburg 1984; Amstrup 2003). Pregnant females typically enter maternity dens from November through December, and the young are usually born in late December or early January (Lentfer and Hensel 1980; Amstrup 2003). Only pregnant females den for an extended period during the winter; other polar bears may excavate temporary dens to escape harsh winter conditions, but otherwise remain active year-round (Amstrup 2003). Each pregnancy can result in up to three cubs, an average pregnancy results in two cubs being born. The average reproductive interval for a polar bear is 3 to 4 years, and a female polar bear can produce about 8 to 10 cubs in her lifetime. In healthy populations, 50 to 60 percent of the cubs may survive through their first year of life after leaving the den (Amstrup 2003). In late March or early April, the female and cubs emerge from their den. Polar bears have extended maternal care and most dependent young remain with their mother for approximately 2.3 years (Amstrup 2003). If the mother moves young cubs from the den before they can walk or withstand the cold, mortality of the cubs may result. Therefore, it is thought that successful denning, birthing, and rearing activities require a relatively undisturbed environment. Amstrup (2003), however, observed that polar bear females in a den can display remarkable tolerance for a variety of human disturbance.

Radio and satellite telemetry studies indicate that denning can occur in multi-year pack ice and on land. Recent studies of the SBS indicate that the proportion of dens on pack ice have declined from approximately 60 percent from 1985 to 1994, to 40 percent from 1998 to 2004 (Fischbach *et al.* 2007). In Alaska, areas of maternal polar bear dens of both the CS and SBS stocks appear to be less concentrated than stocks located in Canada and the Russian Federation. Though some variations in denning occurs among polar bears from various stocks, there are significant similarities. A common trait of polar bear denning habitat is topographic features that accumulate enough drifted snow for females to excavate a den (Amstrup 2003; Durner *et al.* 2003; Durner *et al.* 2006). Certain areas, such as barrier islands (linear features of low elevation land adjacent to the main coastline that are separated from the mainland by bodies of water), river bank drainages, much of the North

Slope coastal plain, and coastal bluffs that occur at the interface of mainland and marine habitat receive proportionally greater use for denning than other areas by bears from the SBS stock (Durner *et al.* 2003; Durner *et al.* 2006). Maternal denning occurs on tundra-bearing barrier islands along the Beaufort Sea and in the large river deltas, such as the Colville and Canning Rivers. Denning of bears from the CS stock occurs primarily on Wrangel and Herald Islands, and on the Chukotka coast in the Russian Federation. Maternal denning on land for the U.S. portion of the CS stock is rare, though anecdotal reports and traditional knowledge of Alaska Natives indicate that it does happen.

Prey

Ringed seals (*Pusa hispida*) are the primary prey of polar bears in most areas. Bearded seals (*Erignathus barbatus*) are also common prey for polar bears in the CS stock. Pacific walrus calves are hunted occasionally, and walrus carcasses are scavenged at haulouts where trampling occurs. Polar bears will occasionally feed on bowhead whale (*Balaena mysticetus*) carcasses opportunistically wherever they may wash ashore and at Point Barrow, Cross, and Barter islands, which are areas where bowhead whales are harvested for subsistence purposes. There are also reports of polar bears killing beluga whales (*Delphinapterus leucas*) trapped in the ice.

Utilization of sea ice is a vital component of polar bear predatory behavior. Polar bears use sea ice as a platform to hunt seals, travel, seek mates, and rest, among other things. They may hunt along leads, polynyas, and other areas of open water associated with sea ice. Polar bears employ a diverse range of methods and tactics to hunt prey. They may wait motionless for extended periods at a seal breathing hole, or may use scent to locate a seal lair then break through the roof; seal lairs are excavated in snow drifts on top of the ice. Polar bears may ambush seals along an ice edge from the ice or from the water. Polar bears also stalk seals hauled out on the ice during warmer weather in the spring. These are just few examples of the predatory methods of polar bears. The common factor is the presence of sea ice in order for polar bears to access prey. Due to changing sea ice conditions, the area and time period of open water and proportion of marginal ice has increased. On average, ice in the Chukchi Sea is melting sooner and retreating farther north each year, and re-forming later. The annual period of time that sea ice is over the shallow, productive waters of the continental shelf is also diminishing. These effects may limit the availability of seals to polar bears, as the most productive areas for seals appear to be over the shallow waters of the continental shelf.

Mortality

Natural causes of mortality among polar bears are not well understood (Amstrup 2003). Polar bears are long-lived (up to 30 years in captivity); have no natural predators, except other polar bears; and do not appear prone to death by diseases or parasites (Amstrup 2003). Accidents and injuries incurred in the dynamic and harsh sea ice environment, injuries incurred while fighting other bears, starvation (usually during extreme youth or old age), freezing (also more common during extreme youth or old age), and drowning are all known natural causes of polar bear mortality (Derocher and Stirling 1996; Amstrup 2003). Cannibalism by adult males on cubs and other adult bears is also known to occur; however, it is not thought that this is a common or significant cause of mortality. After natural causes and old age, the most significant source of polar bear mortality is from humans hunting polar bears (Amstrup 2003). Other sources of polar bear mortality related to human activities, though few and very rare, include research activities, euthanasia of sick or injured bears, and defense of life kills by non-Natives (Brower *et al.* 2002).

Subsistence Use and Harvest Patterns of Pacific Walruses and Polar Bears

The Alaska Native communities most likely to be impacted by oil and gas activities projected to occur in the Chukchi Sea during the 5-year timeframe of the proposed regulations are: Barrow, Wainwright, Point Lay, Point Hope, Kivalina, Kotzebue, Shishmaref, Little Diomede, Gambell, and Savoonga. However, all communities that harvest Pacific walruses or polar bears in the Chukchi Sea region could be affected by Industry activities. Pacific walruses and polar bears are harvested by Alaska Natives for subsistence purposes. The harvest of these species plays an important role in the culture and economy of many villages throughout northern and western coastal Alaska. Walrus meat is consumed by humans while the ivory is used to manufacture traditional handicrafts. Alaska Natives hunt polar bears primarily for their fur, which is used to manufacture cold weather clothing and handicrafts, but also for their meat.

Under section 101(b) of the MMPA, Alaska Natives who reside in Alaska and dwell on the coast of the North Pacific Ocean or the Arctic Ocean are allowed to harvest walruses and polar bears if such harvest is for subsistence purposes or for purposes of creating and selling authentic Native articles of handicrafts and clothing, as long as the harvest is not done in a wasteful manner. Additionally, and similar to the exemption under the MMPA, section 10(e) of the ESA allows for the continued harvest of species listed as endangered or threatened in Alaska for subsistence purposes.

The sale of handmade clothing and handicrafts made of walrus or polar bear parts is an important source of income in these remote Alaska Native communities. Fundamentally, the production of handicrafts is not a commercial activity, but rather a continuation and adaptation to a market economy of an ancient Alaska Native tradition of making and then bartering handicrafts and clothing for other needed items. The limited cash that Alaska Native villagers can make from handmade clothing and handicrafts is vital to sustain their subsistence hunting and fishing way of life (Pungowiyi 2000).

The Service collects information on the subsistence harvest of Pacific walruses and polar bears in Alaska through the Walrus Harvest Monitor Program (WHMP) and the Marking, Tagging and Reporting Program (MTRP). The WHMP is an observer-based program focused on the harvest of Pacific walruses from the St. Lawrence Island communities Gambell and Savoonga. The MTRP program is administered through a network of ''taggers'' employed in subsistence hunting communities. The marking and tagging rule requires that hunters report harvested walruses and polar bears to MTRP taggers within 30 days of the harvest. Taggers also certify (tag) specified parts (ivory tusks for walruses, hide and skull for polar bears) to help control illegal take and trade. The MTRP reports are thought to underestimate total U.S. Pacific walrus and polar bear subsistence harvest. Harvest levels of polar bears and walruses can vary considerably between years, presumably in response to differences in animal distribution, sea ice conditions, and hunter effort.

In 2010, the Native Villages of Gambell and Savoonga adopted local ordinances that limit the number of walruses harvested to four and five per hunting trip, respectively, which likely influences the total number of animals harvested each year. No Chukchi Sea

villages have adopted anything similar, but they harvest comparatively few walruses. Information on subsistence harvests of walruses and polar bears in selected communities derived from MTRP harvest reports from 2007 to 2011 is summarized in Table 2.

TABLE 2—NUMBER OF PACIFIC WALRUSES AND POLAR BEARS HARVESTED FROM 2007 TO 2011 IN 12 ALASKA COMMUNITIES, AS REPORTED THROUGH THE U.S. FISH AND WILDLIFE SERVICE (SERVICE) MTRP

[Walrus harvest numbers presented here are not corrected for MTRP compliance rates or struck-and-lost estimates]

	Pacific walrus	Polar bear
Barrow	24	49
Gambell	3,069	9
Kivalina	4	3
Kotzebue	2	3
Little Diomede	166	14
Nome	24	1
Point Hope	25	51
Point Lay	10	2
Savoonga	2,918	16
Shishmaref	52	6
Wainwright	71	4
Wales	41	5

Pacific Walrus

Barrow

Barrow is the northernmost community within the geographical region of the proposed regulations. Most walrus hunting from Barrow occurs in June and July when the landfast ice breaks up and hunters can access walruses by boat as they migrate north on the retreating pack ice. Walrus hunters from Barrow sometimes range up to 60 miles from shore; however, most harvests reported through the MTRP have occurred within 30 miles of the community.

Wainwright

Wainwright hunters have typically harvested more walruses than other mainland coastal subsistence communities on the North Slope. Walruses are thought to represent approximately 40 percent of this communities' annual subsistence diet of marine mammals. Wainwright residents hunt walruses from June through August as the ice retreats northward. Walruses can be plentiful in the pack ice near the village this time of year. Most of the harvest from Wainwright occurs in June and July. Most walrus hunting is thought to occur within 20 miles of the community, in all seaward directions.

Point Hope

Point Hope hunters typically begin their walrus hunt in late May and early June as walruses migrate north into the Chukchi Sea. The sea ice is usually well off shore of Point Hope by July and does not bring animals back into the range of hunters until late August and September. Most of the reported walrus harvest at Point Hope occurs in the months of June and September. Point Hope harvest occurs mostly within 5 miles of the coast, or near coastal haulout sites at Cape Lisburne.

Point Lay

Point Lay walrus hunting peaks in June and July. Historically, harvests have occurred primarily within 40 miles north and south along the coast from Point Lay and approximately 30 miles offshore. Beginning in 2010, walruses started hauling out on the barrier island about 4 miles north of Point Lay in August and remain there until late September to early October. This provides Point Lay hunters with new opportunities to harvest walrus, and reports indicate that from two to five animals are harvested at that time of year. Hunters harvest during the early stages of haulout formation and as the haulout begins to dissipate to avoid creating a disturbance resulting in a large stampede.

St. Lawrence Island

St. Lawrence Island is located in the Bering Sea south of the Bering Strait. The two communities on the island are Gambell, on western tip, and Savoonga on the north central shore. These two subsistence hunting communities account for the majority of the Pacific walrus harvest in Alaska. Most of the walrus harvest from Gambell and Savoonga takes place in the spring, but some harvest also takes place in the fall and winter, depending on ice and weather conditions. Hunters from Gambell typically use areas north and east of the island while hunters from Savoonga traditionally utilize areas north, west, and south of the island. St. Lawrence Island hunters will typically travel from 40 to 60 miles, and as much as 90 miles, out to sea to find walruses. The consumption of traditional subsistence foods, such as marine mammals, and the economic value of marine mammal parts, such as walrus ivory, is thought to be more significant in Gambell and Savoonga than in communities on the mainland coast of Alaska.

Polar Bears

Polar bears are harvested by Alaska Natives for subsistence and handicraft purposes. This species plays an important role in the culture and economy of many villages throughout western and northern coastal Alaska, where the polar bear figures prominently in Alaska Native stories, art, traditions, and cultural activities. In these northern and western coastal Alaskan Native villages, the taking and use of the polar bear is a fundamental part of Alaska Native culture. For Alaska Natives engaged in subsistence uses, the very acts of hunting, fishing, and gathering, coupled with the seasonal cycle of these activities and the sharing and celebrations that accompany them, are intricately woven into the fabric of their social, psychological, and religious life (Pungowiyi 2000).

Polar Bear Harvest Patterns in Alaska

The following summary is excerpted from the *Report of the Scientific working group to the US-Russian Federation Polar Bear Commission (May 2010),* which describes the history of the polar bear harvest during the last century. A more detailed description can be found at: *http://alaska.fws.gov/fisheries/mmm/polarbear/bilateral.htm:*

Prior to the 20th century Alaska's polar bears were hunted primarily by Alaska Natives for subsistence purposes although commercial sales of hides occurred primarily as a result of Yankee whaling and arctic exploration ventures. During the 20th century, polar bears were harvested for subsistence, handicrafts, and recreational sport hunting. Based on records of skins shipped from Alaska for 1925 to 1953, the estimated annual statewide harvest averaged 120 bears and this take was primarily by Native hunters. Recreational hunting by non-Native sport hunters using aircraft became popular from 1951 to 1972, increasing the statewide annual harvest to 150 during 1951 to 1960 and to 260 during 1960 to 1972 (Amstrup *et al.* 1986). During the late 1960s and 1970s the size of the Beaufort Sea stock declined substantially (Amstrup *et al.* 1986) due to excessive sport harvest. Hunting by non-Natives was prohibited in 1973 when provisions of the Marine Mammal Protection Act (MMPA) went into effect. The prohibition of non-Native sport hunting led to a reduction in the annual harvest of polar bears from the Alaska-Chukotka population from 189 ± 50 bears/year for the period 1961 to 1972 to 80 ± 54 bears/year for the period 1973 to 1984 (Amstrup *et al.* 1986; Fig. 1). According to Service harvest records, from 1980 through the present, harvest of the Alaska-Chukotka population in the U.S. portion has declined. Reasons for a decline in the Alaska native subsistence harvest are currently unknown, but are currently being investigated. Possible causes include decreased hunter effort, decreased polar bear numbers, changes in polar bear distribution, and environmental conditions that make polar bears less available to hunters.

As stated previously, harvest levels of polar bears can vary considerably between years for a variety of reasons, including annual variations in animal distribution, sea ice conditions, and hunter effort. Table 2 summarizes MTRP harvest reports for polar bears for selected western Alaska communities from 2007 to 2011, the most recent five-year period for which complete data are available. The harvest information in Table 2 provides an insight into the level of polar bear harvest by western Alaska communities during the previous five-year period of Chukchi Sea ITRs. Average polar bear harvest levels in Alaska have remained relatively stable over the past 20 years in the Southern Beaufort Sea, but have declined in the Chukchi/Bering seas. Over these past 20 years, six communities (Barrow, Point Hope, Savoonga, Gambell, Little Diomede, and Wainwright) consistently account for the majority of all polar bears harvested in Alaska. The reason for the decline in harvest in western Alaska is unknown, but could be a result of reduced hunter effort, changing distribution of bears, and/or a decline in the number of bears in the population.

Polar bears are harvested throughout the calendar year, depending on availability. Hunters in western Alaska, from Point Lay to St. Lawrence Island, usually harvest bears after December, since bears moving southward with advancing pack ice are not available in this area until later in the season. The number of polar bears harvested from Barrow is thought to be influenced by ice conditions and the number of people out on the ice. Most polar bear harvests reported by Barrow occurred in February and March. Polar bears are harvested from Wainwright throughout much of the year, with peak harvests reported in May and December within 10 miles of the community. Polar bears are typically harvested from Point Hope from January to April within 10 miles of the community; however, Point Hope hunters reported taking polar bears as far away as Cape Thompson and Cape Lisburne.

Although few people are thought to hunt specifically for polar bears, those that do hunt primarily between October and March. Polar bears are often harvested coincidentally with beluga and bowhead whale harvests. Hunting areas for polar bears overlap strongly with areas of bowhead subsistence hunting, particularly the area from Point Barrow South to Walakpa Lagoon where walrus and whale carcasses are known to concentrate polar bears.

Harvest Management of Polar Bears in Alaska

The Service works through existing co-management agreements with Alaska Natives to address future actions that affect polar bears and polar bear hunting. This includes working with the Alaska Nanuuq Commission (ANC), the NSB and its Native-to-Native Agreement with the Inuvialuit Game Council of Canada (Beaufort Sea region), and the Joint Commission formed with the Russian Federation under the Bilateral Agreement (Chukchi/Bering seas region).

The ANC was formed in 1994, to represent the villages in North and Northwest Alaska on matters concerning the conservation and sustainable subsistence use of the polar bear. The mission of ANC is to ''conserve Nanuuq and the Arctic ecosystem for present and future generations of Arctic Alaska Natives.'' The tribal council of each member village has passed a resolution to become a member and to authorize the ANC to represent them on matters concerning the polar bear at regional and international levels. Fifteen villages are currently members: Barrow; Wainwright; Kotzebue; Nuiqsut; Savoonga; Kaktovik; Point Lay; Point Hope; Brevig Mission; Shishmaref; Gambell; King Island; Wales; Little Diomede; and Kivalina.

Polar bears harvested from the communities of Barrow, Nuiqsut, Kaktovik, Wainwright, and Atqasuk are currently considered part of the SBS stock and thus are subject to the terms of the Inuvialuit-Inupiat Polar Bear Management Agreement (Inuvialuit-Inupiat Agreement).

The Inuvialuit-Inupiat Agreement establishes quotas and recommendations concerning protection of denning females, family groups, and methods of harvest. Adherence to the quota is voluntary in the United States, and it has generally been followed since implementation of the Inuvialuit-Inupiat Agreement (Brower *et al.* 2002). Under the Inuvialuit-Inupiat Agreement, quotas are recommended by technical advisors based on estimates of population size and age specific estimates of survival and recruitment. The current quota of 70 total bears per year was established in July 2010, and represents a decrease from the previous quota of 80 total bears per year (Brower *et al.* 2002). The quota is allocated to Canadian Inuvialuit and to Alaskan Inupiat, with 35 bears each. The Inuvialuit-Inupiat Agreement and its quotas are voluntary between the Inupiat and Inuvialuit, and are not enforceable by any law or authority of the governments of the United States or Canada.

The ''*Agreement Between the Government of the United States of America and the Government of the Russian Federation on the Conservation and Management of the Alaska–Chukotka Polar Bear Population,*'' signed in Washington, DC, on October 16, 2000 (the 2000 Agreement), provides legal protections for the population of polar bears found in the Chukchi—Northern Bering Sea. The 2000 Agreement is implemented in the United States through Title V of the Marine Mammal Protection Act (MMPA) (16 U.S.C. 1361 et seq.) and builds upon those protections already provided to this population of polar bears through the ''Agreement on the Conservation of Polar Bears,'' executed in Oslo, Norway on November 13, 1973 (the 1973 Agreement), which was a significant early step in the international conservation of polar bears.

The 1973 Agreement is a multilateral treaty to which the United States and Russia are parties with other polar bear range states: Norway, Canada, and Denmark. While the 1973 Agreement provides authority for the maintenance of a subsistence harvest of polar bears and provides for habitat conservation, the 2000 Agreement specifically establishes a common legal, scientific, and administrative framework for the conservation and management of the Alaska—Chukotka polar bear population between the United States and Russia.

The 2000 Agreement requires the United States and the Russian Federation to manage and conserve polar bears based on reliable science and to provide for subsistence harvest by native peoples. The U.S.—Russian Federation Polar Bear Commission (Commission), which functions as the bilateral managing authority, consists of a Native and Federal representative of each country. The Commission is advised by a 16-member Scientific Working Group (SWG), including experts on ice habitat, bear ecology and population dynamics, and traditional ecological knowledge.

Meetings of the Commission have occurred yearly since 2009. At the fourth meeting of the Commission, which took place from June 25 through 27, 2012, in Anchorage, Alaska, United States, the Commission, based on the recommendation of the SWG, agreed that no change was necessary to the sustainable harvest level identified in 2010. In 2012, the Commission adopted a 5-year sustainable harvest level of 290 polar bears with no more than one third

to be female, with the requirements that the 5-year sustainable harvest level be allocated over the 5-year period using methods recognized by the SWG as biologically sound, and that these methods include the identification of annual sustainable harvest levels, for consideration by the Commission in setting annual taking limits. This cooperative management regime for the subsistence harvest of bears is key to both providing for the long term viability of the population as well as addressing the social, cultural, and subsistence interests of Alaska Natives and the native people of Chukotka.

Potential Effects of Oil and Gas Industry Activities on Pacific Walruses and Polar Bears

Industry activities can affect individual walruses and polar bears in numerous ways. The petitioners in sections 6.1 and 6.2 of the AOGA Petition describe anticipated impacts *for Incidental Take Regulations for Oil and Gas Activities in the Chukchi Sea and Adjacent Lands in 2013 to 2018,* January 31, 2012. Potential effects, detailed below, from Industry activities could include: (1) Disturbance due to noise; (2) physical obstructions; (3) human encounters; and (4) effects on prey.

A thorough discussion of the impacts of Industry activities in the Chukchi Sea on marine mammals is found in the Chukchi Sea Final Environmental Impact Statement (EIS) at *http://www.boem.gov/uploadedFiles/BOEM/About_BOEM/BOEM_Regions/Alaska_Region/Environment/Environmental_Analysis/2007-026-Vol%20I.pdf* and the Chukchi Sea Final Supplemental EIS, Chukchi Sea Planning Area, Oil and Gas Lease Sale 193 at *http://www.boem.gov/About-BOEM/BOEM-Regions/Alaska-Region/Environment/Environmental-Analysis/OCS-EIS/EA-BOEMRE-2011-041.aspx.*

Pacific Walruses

Proposed oil and gas exploration activities in the Chukchi Sea Region include the operation of seismic survey vessels, drillships, icebreakers, supply boats, fixed wing aircrafts, and helicopters. These activities could disturb walruses. Walruses that are disturbed may experience insufficient rest, increased stress and energy expenditure, interference with feeding, and masking of communication. Cows with calves that experience disturbance may alter their care of calves, such as staying in the water longer or nursing less frequently. Calves that experience disturbance could spend an increased amount of time in the water, affecting their thermoregulation. Prolonged or repeated disturbances could potentially displace individuals or herds from preferred feeding or resting areas. Disturbance events could cause walrus groups to abandon land or ice haulouts.

The response of walruses to disturbance stimuli is highly variable. Observations by walrus hunters and researchers suggest that males tend to be more tolerant of disturbances than females and individuals tend to react less than groups. Females with dependent calves are considered the least tolerant of disturbances. Hearing sensitivity is assumed to be within the 13 Hz and 1,200 Hz range of their own vocalizations. Walrus hunters and researchers have noted that walruses tend to react to the presence of humans and machines at greater distances from upwind approaches than from downwind approaches, suggesting that odor is also a stimulus for a flight response. The visual acuity of walruses is thought to be less than for other species of pinnipeds (Kastelein et al. 1993).

Walruses must periodically haul out onto ice or land to rest between feeding bouts. Aerial surveys in the eastern Chukchi Sea found that 80 to 96 percent of walruses were closely associated with sea ice and that the number of walruses observed in open water decreased significantly with distance from the pack ice. Under minimal or no ice conditions, walruses either follow the ice out of the region, or relocate to coastal haulouts where their foraging trips are usually restricted to near shore habitats. However, in 2010 and 2011, more than 20,000 walruses hauled out near Point Lay and many traveled to the Hanna Shoal area to feed, returning to Point Lay. Therefore, in evaluating the potential impacts of exploration activities on walruses, the presence or absence of pack ice serves as one indicator of whether or not walruses are likely to be found in the area. In addition, if walruses are using coastal haulouts near Point Lay, or farther north, many walruses could be encountered in the water over or near Hannah Shoal as well as between the haul out area and Hanna Shoal (Jay *et al.* 2012; Delarue *et al.* 2012). Activities occurring in or near sea ice habitats or areas of high benthic productivity have the greatest potential for affecting walruses. Activities occurring during the open water period away from known feeding areas are expected to affect relatively small numbers of animals except as described above in regards to walruses moving between coastal haulouts and offshore feeding areas.

1. Disturbance From Noise

Noise generated by Industry activities, whether stationary or mobile, has the potential to disturb walruses. Potential impacts of Industry-generated noise include displacement from preferred foraging areas, increased stress and energy expenditure, interference with feeding, and masking of communications. Most impacts of Industry noise on walruses are likely to be limited to a few groups or individuals rather than the population due to their geographic range and seasonal distribution within the geographic region. Reactions of marine mammals to noise sources, particularly mobile sources such as marine vessels, vary. Reactions depend on the individuals' prior exposure to the disturbance source, their need or desire to be in the particular habitat or area where they are exposed to the noise, and visual presence of the disturbance sources.

Unobserved impacts to walruses due to aquatic and airborne noises may occur, but cannot be estimated. Airborne noises have the greatest potential to impact walruses occurring in large numbers at coastal haulouts or on ice floes near industry activities. However, restrictions on aircraft altitude and offset distances, as well as the 25-mile coastal exclusion zone enacted by BOEM, adequately mitigate this potential impact of Industry activities when walruses are on land. A detailed discussion of noise disturbance in the marine environment follows.

A. Stationary Sources

An exploratory drill rig is an example of a stationary source of sounds, odors, and visual stimuli. In estimating impacts, it is difficult to separate those stimuli. However, walruses appear to rely primarily on auditory and olfactory senses, and then sight when responding to potential predators or other stimuli (Kastelein *et al.* 1993). Industrial ambient noise associated with the drilling operations, such as generators and other equipment, is expected. Walruses may respond to sound sources by either avoidance or tolerance. Typically, walruses will avoid a disturbance by moving away.

In one reported observation in 1989 by Shell Western E & P, Inc., a single walrus actually entered the moon pool of a stationary drillship several times during a drilling operation. A moon pool is the opening to the sea on a drillship for a marine drill apparatus. The drill apparatus protrudes from the ship through the moon pool to the sea floor. Eventually, the walrus had to be

removed from the ship for its own safety. During the same time period, Shell Western E & P, Inc., also reported encountering multiple walruses close to their drillship during offshore drilling operations in the Chukchi Sea.

B. Mobile Sources

Seismic operations are expected to add significant levels of noise into the marine environment. Although the hearing sensitivity of walruses is poorly known, source levels associated with Marine 3D and 2D seismic surveys are thought to be high enough to cause temporary hearing loss in other pinniped species. Therefore, walruses found near source levels within the 180-decibel (dB re 1 μPa at 1 m) safety radius described by Industry for seismic activities could potentially suffer shifts in hearing thresholds and temporary hearing loss. Seismic survey vessels would be required to ramp up airguns slowly to allow marine mammals the opportunity to move away from potentially injurious sound sources. Marine mammal monitors would also be required to monitor seismic safety zones and call for the power down or shutdown of airgun arrays if any marine mammals are detected within the prescribed safety zone.

Geotechnical seismic surveys and high resolution site clearance seismic surveys are expected to occur primarily in open water conditions, at a sufficient distance from the pack ice and large concentrations of walruses to avoid most disturbances. Although most walruses are expected to be closely associated with sea ice or coastal haulouts during offshore exploration activities, animals may be encountered in open water conditions. Walruses swimming in open water would likely be able to detect seismic airgun pulses up to several kilometers from a seismic source vessel. The most likely response of walruses to noise generated by seismic surveys would be to move away from the source of the disturbance. Because of the transitory nature of the proposed seismic surveys, impacts to walruses exposed to seismic survey operations would are expected to be temporary in nature and have little or no effects on survival or recruitment.

Although concentrations of walruses in open water environments are expected to be low, groups of foraging or migrating animals transiting through the area may be encountered. Adaptive mitigation measures (e.g., avoidance distance guidelines, seismic airgun shutdowns) based upon monitoring information would be implemented to mitigate potential impacts to walrus groups feeding or traveling in offshore locations and ensure that these impacts would be limited to small numbers of animals.

C. Vessel Traffic

Offshore drilling exploration activities are expected to occur primarily in areas of open water some distance from the pack ice; however, support vessels and/or aircraft may occasionally encounter aggregations of walruses hauled out onto sea ice. The sight, sound, or smell of humans and machines could potentially displace these animals from ice haulouts. The reaction of walruses to vessel traffic is dependent upon vessel type, distance, speed, and previous exposure to disturbances. Generally, walruses react to vessels by leaving the area, but we are aware of at least one occasion where an adult walrus used a vessel as a haulout platform in 2009. Walruses in the water appear to be less readily disturbed by vessels than walruses hauled out on land or sea ice, and it appears that low frequency diesel engines cause less of a disturbance than high frequency outboard engines. In addition, walrus densities within their normal distribution are highest along the edge of the pack ice, and Industry vessels typically avoid these areas. Furthermore, barges and vessels associated with Industry activities travel in open water and avoid large ice floes or land where walruses will be found.

Monitoring programs associated with exploratory drilling operations in the Chukchi Sea in 1989 and 1990 noted that 25 to 60 percent, respectively, of walrus groups encountered in the pack ice during icebreaking responded by ''escaping'' (Brueggeman *et al.* 1990, 1991). Escape was not defined, but we assume that walruses escaped by abandoning the ice and swimming away. Ice management operations are expected to have the greatest potential for disturbances since these operations typically require vessels to accelerate, reverse direction, and turn rapidly, activities that maximize propeller cavitations and resulting noise levels. Previous studies (Brueggeman *et al.* 1990, 1991) suggest that icebreaking activities can displace some walrus groups up to several miles away; however, most groups of walruses resting on the ice showed little reaction when they were beyond 805 m (0.5 mi) from the activity.

When walruses are present, underwater noise from any vessel traffic in the Chukchi Sea may ''mask'' ordinary communication between individuals and prevent them from locating each other. It may also prevent walruses from using potential habitats in the Chukchi Sea and may have the potential to impede movement. Vessel traffic would likely increase if offshore Industry expands and may increase if warming waters and seasonally reduced sea ice cover alter northern shipping lanes.

Impacts associated with transiting support vessels and aircrafts are likely to be widely distributed throughout the area. Therefore, noise and disturbance from aircraft and vessel traffic associated with exploration projects are expected to have localized, short-term effects. Nevertheless, the potential for disturbance events resulting in injuries, mortalities, or cow-calf separations is of concern. The potential for injuries, though unlikely, is expected to increase with the size of affected walrus aggregations. Adaptive mitigation measures (e.g., distance restrictions, reduced vessel speeds) designed to separate Industry activities from walrus aggregations at coastal haulouts and in sea ice habitats are expected to reduce the potential for animal injuries, mortalities, and cow-calf separations.

While drilling operations are expected to occur during open water conditions, the dynamic movements of sea ice could transport walruses hauled out on ice within range of drilling operations. Any potential disturbance to walrus in this condition would be through ice management practices, where ice management may displace walruses from ice in order to prevent displacement of the drill rig. Mitigation measures specified in an LOA may include: requirements for ice scouting; surveys for walruses and polar bears near active drilling operations and ice breaking activities; requirements for marine mammal observers onboard drillships and ice breakers; and operational restrictions near walrus and polar bear aggregations. These measures are expected to reduce the potential for interactions between walruses and drilling operations.

Ice floes that threaten drilling operations may have to be intercepted and moved with a vessel, and those floes could be occupied by resting walruses. Observations by icebreaker operators suggest that most walruses will abandon drifting ice floes long before they reach drilling rigs and before ice management vessels need to intercept a floe that has to be deflected or broken. Ice management activities that cause walruses to flush from or abandon ice would be considered as intentional takes by the Service. Given the observations from previous operations (Brueggeman *et al.* 1990, 1991), we expect this to be a rare event and involve only small numbers of animals. In addition, Industry has

developed an adaptive ice management procedure that requires case-by-case approval by Service officials prior to managing ice occupied by walruses. If ice threatening drilling operations is too large and thick to be moved, drilling operations would be suspended, the well would be capped, and the drill vessel would be moved until the ice passes.

D. Aircraft Traffic

Aircraft overflights may disturb walruses. Reactions to aircraft vary with range, aircraft type, and flight pattern, as well as walrus age, sex, and group size. Adult females, calves, and immature walruses tend to be more sensitive to aircraft disturbance. Fixed wing aircraft are less likely to elicit a response than are helicopters. Walruses are particularly sensitive to changes in engine, propeller, or rotor noise and are more likely to stampede when aircraft turn sharply while accelerating or fly low overhead. Researchers conducting aerial surveys for walruses in sea ice habitats have observed less reaction to fixed wing aircraft above 457 m (1,500 ft) (Service unpubl. data). Although the intensity of the reaction to noise is variable, walruses are probably most susceptible to disturbance by fast-moving and low-flying aircraft, with helicopters usually causing the strongest reactions.

2. Physical Obstructions

It is unlikely that walrus movements would be displaced by offshore stationary facilities, such as an exploratory drill rig. Vessel traffic could temporarily interrupt the movement of walruses, or displace some animals when vessels pass through an area. This displacement would probably have minimal or no effect on animals and would last no more than a few hours.

3. Human Encounters

Human encounters with walruses could occur during Industry operations. These types of encounters would most likely be associated with support activities in the coastal environments near walrus coastal haulouts. Disturbance events could result in trampling injuries or cow-calf separations, both of which are potentially fatal. Calves and young animals at the perimeter of the herds appear particularly vulnerable to trampling injuries. Mortalities from trampling are most severe when large numbers of walruses resting on land are disturbed and flee *en masse* to the ocean. In 2007, more than 3,000 calves died along the Chukotka coast due to stampedes caused by humans and polar bears. Since then, mortalities in the Russian Federation and the United States have been less than 700 per year. This type of disturbance from Industry activity is considered highly unlikely. Areas where and when walrus coastal haulouts form in the United States would be protected with additional mitigation measures, such as activity exclusion zones, airspace restrictions, and close monitoring.

4. Effect on Prey Species

Walruses feed primarily on immobile benthic invertebrates. The effect of Industry activities on benthic invertebrates most likely would be from oil discharged into the environment. Oil has the potential to impact walrus prey species in a variety of ways including, but not limited to, mortality due to smothering or toxicity, perturbations in the composition of the benthic community, and altered metabolic and growth rates. The low likelihood of an oil spill large enough to affect prey populations (see analysis in the section titled Potential Impacts of Waste Product Discharge and Oil Spills on Pacific Walruses and Polar Bears, Pacific Walrus subsection) indicates that Industry activities would likely have limited effects on walruses through effects on prey species.

Evaluation of Anticipated Effects on Walruses

Based on our review of the proposed activities; existing and proposed operating conditions and mitigation measures; information on the biology, ecology, and habitat use patterns of walruses in the Chukchi Sea; information on potential effects of oil and gas activities on walruses; and the results of previous monitoring efforts associated with Industry activity in the Chukchi as well as the Beaufort Sea, we conclude that, while the incidental take (by harassment) of walruses is reasonably likely to or reasonably expected to occur as a result of the proposed activities, most of the anticipated takes would be limited to minor behavioral modifications due to temporary, nonlethal disturbances. These behavioral changes are not outside the subspecies' normal range of activity and are not reasonably expected to, or likely to, affect rates of overall population recruitment or survival. Our review of the nature and scope of the proposed activities, when considered in light of the observed impacts of past exploration activities by Industry, indicates that it is unlikely that there would be any lethal take of walruses associated with these activities or any impacts on survival or reproduction.

Polar Bears

In the Chukchi Sea, polar bears will have a limited presence during the open water season associated with Industry operations. This is because most bears move with the ice to the northern portion of the Chukchi Sea and distribute along the pack ice during this time, which is outside of the geographic region of the proposed regulations. Additionally, they are found more frequently along the Chukotka coastline in the Russian Federation. This would limit the probability of major impacts on polar bears from offshore Industry activities in the Alaskan portion of the Chukchi Sea. Although polar bears have been observed in open water, miles from the ice edge or ice floes, this has been a relatively rare occurrence.

Polar bears will be present in the region of activity in limited numbers and, therefore, oil and gas activities could affect polar bears in various ways during both offshore and onshore activities. (1) Impacts from offshore activities; (2) impacts from onshore activities; (3) impacts from human encounters; (4) effects on prey species; and (5) effects on polar bear critical habitat are described below.

1. Offshore Activities

In the open water season, Industry activities would be limited to vessel-based exploration activities, such as exploratory drilling and seismic surveys. These activities avoid ice floes and the multi-year ice edge; however, they could contact a limited number of bears in open water and on ice floes.

A. Vessel Activities

Vessel-based activities, including operational support vessels, such as barges, supply vessels, oil spill response, and ice management vessels, in the Chukchi Sea could affect polar bears in a number of ways. Seismic ships, icebreakers, or the drilling rig may become physical obstructions to polar bear movements, although these impacts would be short-term and localized. Likewise, noise, sights, and smells produced by exploration activities could disrupt their natural behavior by repelling or attracting bears to human activities.

Polar bears are curious and tend to investigate novel sights, smells, and noises. If bears are present, noise produced by offshore activities could elicit several different responses in individual polar bears. Noise may act as a deterrent to bears entering the area of operation, or the noise could potentially attract curious bears.

In general, little is known about the potential for seismic survey sounds to

cause auditory impairment or other physical effects in polar bears. Researchers have studied the hearing sensitivity of polar bears to understand how noise can affect polar bears, but additional research is necessary to elaborate on potential negative effects of noise. Available data suggest that such effects, if they occur at all, would be limited to short distances from the sound source and probably to projects involving large airgun arrays. Polar bears swim predominantly with their heads above the surface, where underwater noises are weak or undetectable, and this behavior may naturally limit noise exposure to polar bears. There is no evidence that airgun pulses can cause serious injury or death to bears, even in the case of large airgun arrays. Additionally, the planned monitoring and mitigation measures include shutdowns of the airguns, which would reduce any such effects that might otherwise occur if polar bears are observed in the ensonification zones. Thus, it is doubtful that any single bear would be exposed to strong underwater seismic sounds long enough for significant disturbance, such as an auditory injury, to occur.

Though polar bears are known to be extremely curious and may approach sounds and objects to investigate, they are also known to move away from sources of noise and the sight of vessels, icebreakers, aircraft, and helicopters. The effects of retreating from vessels or aircraft may be minimal if the event is short and the animal is otherwise unstressed. For example, retreating from an active icebreaker may produce minimal effects for a healthy animal on a cool day; however, on a warm spring or summer day, a short run may be enough to overheat a well-insulated polar bear.

As already stated, polar bears spend the majority of their time on pack ice during the open water season in the Chukchi Sea or along the Chukotka coast, which limits the potential of impacts from human and Industry activities in the geographic region. In recent years, the Chukchi Sea pack ice has receded over the Continental Shelf during the open water season. Although this poses potential foraging ramifications, by its nature the exposed open water creates a barrier between the majority of the ice-pack-bound bear population and human activity occurring in open water, thereby limiting potential disturbance.

Bears in water may be in a stressed state if found near Industry sites. Researchers have recently documented that bears occasionally swim long distances during the open water period seeking either ice or land. They suspect that the bears may not swim constantly, but find solitary icebergs or remnants to haulout on and rest. The movement is becoming more common, but highlights the ice-free environment that bears are being increasingly exposed to that requires increased energy demands. In one study (between 2004 through 2009), researchers noted that 52 bears embarked on long-distance swim events. In addition, they documented 50 swims that had an average length of 96 miles. They noted that long-distance swim events are still uncommon, but 38 percent of collared bears took at least one long-distance swim.

The majority of vessels, such as seismic boats and barges, associated with Industry activities travel in open water and avoid large ice floes. Some, such as ice management vessels, operate in close proximity to the ice edge and unconsolidated ice during open-water activities. Vessel traffic could encounter an occasional bear swimming in the open water. However, the most likely habitat where bears would be encountered during the open-water season is on the pack ice edge or on ice floes in open water. During baseline studies conducted in the Chukchi Sea between 2008 and 2010, 14 of 16 polar bears encountered by a research vessel were observed on the ice, while the remaining two bears were observed in the water swimming (Service unpublished data).

If there is an encounter between a vessel and a polar bear, it would most likely result in temporary behavioral disturbance only. In open water, vessel traffic could result in short-term behavioral responses to swimming polar bears through ambient noise produced by the vessels, such as underwater propeller cavitation, or activities associated with them, such as on-board machinery, where a bear would most likely swim away from the vessel. Indeed, observations from monitoring programs report that when bears are encountered in open water swimming, bears have been observed retreating from the vessel as it passes (Service unpublished data).

Polar bears could be encountered if a vessel is operating in ice or near ice floes, where the response of bears on ice to vessels is varied. Bears on ice have been observed retreating from vessels; exhibiting few reactions, such as a cessation in activity or turning their head to watch the vessel; and exhibiting no perceived reaction at all to the vessel. Bears have also been observed approaching vessels in the ice.

B. Aircraft

Routine, commercial aircraft traffic flying at high altitudes (approximately 10,000 to 30,000 feet above ground level (AGL)) appears to have little to no effect on polar bears; however, extensive or repeated over-flights of fixed wing aircraft or helicopters could disturb polar bears. A minimum altitude requirement of 1,500 feet for aircraft associated with Industry activity would help mitigate disturbance to polar bears. Behavioral reactions of polar bears are expected to be limited to short-term changes in behavior that would have no long-term impact on individuals and no identifiable impacts on the polar bear population.

In summary, while offshore, open water seismic exploration activities could encounter polar bears in the Chukchi Sea during the latter part of the operational period, it is unlikely that exploration activities or other geophysical surveys during the open water season would result in more than temporary behavioral disturbance to polar bears. Any disturbance would be visual and auditory in nature, and likely limited to deflecting bears from their route. Seismic surveys are unlikely to cause serious impacts to polar bears as they normally swim with their heads above the surface, where noises produced underwater are weak, and polar bears rarely dive below the surface. Ice management activities in support of the drilling operation have the greatest potential to disturb bears by flushing bears off ice floes when moving ice out of the path of the drill rig.

Monitoring and mitigation measures required for open water, offshore activities would include, but would not be limited to: (1) A 0.5-mile operational exclusion zone around polar bear(s) on land, ice, or swimming; (2) marine mammal observers (MMOs) on board all vessels; (3) requirements for ice scouting; (4) surveys for polar bears in the vicinity of active operations and ice breaking activities; and (5) operational restrictions near polar bear aggregations. We expect these mitigation measures would further reduce the potential for interactions between polar bears and offshore operations.

2. Onshore Activities

While no large exploratory programs, such as drilling or seismic surveys, are currently being developed for onshore sites in the Chukchi Sea geographic area, land-based support facilities, maintenance of the Barrow Gas Fields, and onshore baseline studies may contact polar bears. Bear-human interactions at onshore activities are

expected to occur mainly during the fall and ice-covered season when bears come ashore to feed, den, or travel. Noise produced by Industry activities during the open water and ice-covered seasons could potentially result in takes of polar bears at onshore sites. Noise disturbance could originate from either stationary or mobile sources. Stationary sources include support facilities. Mobile sources can include vehicle and aircraft traffic in association with Industry activities, such as ice road construction. The effects for these sources are described below.

A. Noise

Noise produced by onshore Industry activities could elicit several different responses in polar bears. The noise may act as a deterrent to bears entering the area, or the noise could potentially attract bears. Noise attracting bears to Industry activities, especially activities in the coastal or nearshore environment, could result in bear-human interactions, which could result in unintentional harassment, deterrence (under a separate authorization), or lethal take of the bear. Unintentional harassment would most likely be infrequent, short-term, and temporary by either attracting a curious bear to the noise or causing a bear to move away. Deterrence by non-lethal harassment to move a bear away from humans would be much less likely, infrequent, short-term, and temporary. Lethal take of a polar bear from bear-human interaction related to Industry activity is extremely unlikely (discussed in the *Analysis of Impacts of the Oil and Gas Industry on Pacific Walruses and Polar Bears in the Chukchi Sea*).

During the ice-covered season, noise from onshore activities could deter females from denning in the surrounding area, given the appropriate conditions, although a few polar bears have been known to den in proximity to industrial activity. Only a minimal amount of denning by polar bears has been recorded on the western coast of Alaska; however, onshore activities could affect potential den habitat and den site selection if they were located near facilities. However, with limited onshore denning, proposed activities impacts to onshore denning are expected to be minimal.

Known polar bear dens around the oil and gas activities are monitored by the Service, when practicable. Only a small percentage of the total active den locations are known in any year. Industry routinely coordinates with the Service to determine the location of Industry's activities relative to known dens and den habitat. Implementation of mitigation measures, such as the one-mile operational exclusion area around known dens or the temporary cessation of Industry activities, would ensure that disturbance is minimized.

B. Aircraft

As with offshore activities, routine high altitude aircraft traffic would likely have little to no effect on polar bears; however, extensive or repeated low altitude over-flights of fixed wing aircraft for monitoring purposes or helicopters used for re-supply of Industry operations could disturb polar bears on shore. Behavioral reactions of non-denning polar bears are expected to be limited to short-term changes in behavior and would have no long-term impact on individuals and no impacts on the polar bear population. Mitigation measures, such as minimum flight elevations over polar bears or areas of concern and flight restrictions around known polar bear dens, would be required, as appropriate, to reduce the likelihood that bears are disturbed by aircraft.

3. Human Encounters

While more polar bears transit through the coastal areas than inland, we do not anticipate many bear-human interactions due to the limited amount of human activity that has occurred on the western coast of Alaska. Near-shore activities could potentially increase the rate of bear-human interactions, which could result in increased incidents of harassment of bears. Industry currently implements company policies, implements interaction plans, and conducts employee training to reduce and mitigate such encounters under the guidance of the Service. The history of the effective application of interaction plans has shown reduced interactions between polar bears and humans and no injuries or deaths to humans since the implementation of incidental take regulations.

Industry has developed and uses devices to aid in detecting polar bears, including human bear monitors, remote cameras, motion and infrared detection systems, and closed circuit TV systems. Industry also takes steps to actively prevent bears from accessing facilities using safety gates and fences. The types of detection and exclusion systems are implemented on a case-by-case basis with guidance from the Service.

Bear-human interactions would be mitigated through conditions in LOAs, which require the applicant to develop a polar bear interaction plan for each operation. These plans outline the steps the applicant would take, such as garbage disposal, attractant management, and snow management procedures, to minimize impacts to polar bears by reducing the attraction of Industry activities to polar bears. Interaction plans also outline the chain of command for responding to a polar bear sighting.

4. Effect on Prey Species

Ringed seals are the primary prey of polar bears and bearded seals are a secondary prey source. Both species are managed by the U.S. National Marine Fisheries Service (NMFS), which will evaluate the potential impacts of oil and gas exploration activities in the Chukchi Sea through their appropriate authorization process and will identify appropriate mitigation measures for those species, if a negligible impact finding is appropriate. Industry would mainly have an effect on seals through the potential for industrial noise disturbance and contamination (oil spills). The Service does not expect prey availability to be significantly changed due to Industry activities. Mitigation measures for pinnipeds required by BOEM and NMFS would reduce the impact of Industry activities on ringed and bearded seals. A detailed description of potential Industry effects on pinnipeds in the Chukchi Sea can be found in the NMFS biological opinion, ''*Endangered Species Act—Section 7 Consultation, Biological Opinion; Issuance of Incidental Harassment Authorization Under Section 101(a)(5)(a) of the Marine Mammal Protection Act to Shell Offshore, Inc. for Exploratory Drilling in the Alaskan Chukchi Sea in 2012*'' (*http://www.nmfs.noaa.gov/pr/pdfs/permits/shell_chukchi_opinion.pdf*).

5. Polar Bear Critical Habitat

Industry activities could also have potential impacts to polar bear habitat, which in some cases could lead to impacts to bears. The proposed regulations may only authorize incidental take within a specified geographic area (Figure 1). The geographic area covered by the proposed regulations includes polar bear critical habitat. The discussion of potential impacts to polar bear habitat is therefore focused on areas identified as polar bear critical habitat. In the final rule that established polar bear critical habitat (75 FR 76086; December 7, 2010), the Service identified three critical habitat units for polar bear critical habitat, these are: (1) Sea ice, used for feeding, breeding, denning, and movements; (2) barrier island habitat, used for denning, refuge from human disturbance, and transit corridors; and (3) terrestrial denning habitat for

denning. Industry activities may affect this described habitat as discussed below.

A. Sea Ice Habitat

The proposed regulations would only allow exploratory oil and gas activities to occur during the open water season. However, support activities can occur throughout the year and may interact with sea ice habitat on a limited basis. Ice reconnaissance flights to survey ice characteristics and ice management operations using vessels to deflect ice floes from drill rigs are two types of activities that have the potential to affect sea ice. Support activities outside of the open water season would be limited in scope and would likely have limited effects on sea ice habitat during the ice-covered seasons within the timeframe of the proposed regulations (2013 to 2018).

B. Barrier Island Habitat

Proposed support activities near communities, such as Wainwright and Point Lay, for seismic, shallow hazard surveys; open water marine survey; or terrestrial environmental studies are the types of exploration activities requested that may affect polar bear barrier island habitat. Vessels associated with marine activities operating in the Chukchi Sea may use barrier island habitat to ''wait out a storm.'' Bears using the islands to rest and travel may encounter temporarily beached vessels. Past observations reported to the Service indicate that bears will walk by such vessels, but may not rest near them. This is a temporary effect associated with the beached vessel and once the vessel is removed from the beach, the bears return to travelling or resting on the beach.

Aerial transport activities in support of Industry programs may also encounter barrier island habitat while transiting to and from communities. Air operations would have regulatory flight restrictions, but in certain circumstances, such as emergencies, flights could displace bears from barrier island habitat. Established mitigation measures described in the proposed regulations, such as minimum altitude restrictions, wildlife observers and adherence to company polar bear interaction plans, would further limit potential disturbances.

C. Terrestrial Denning Habitat

In western Alaska, mainland support facilities for offshore activities may occur within designated coastal polar bear critical habitat. Staging activities, remote camps, construction of ice roads, and aerial transport to support projects all have the potential to occur in coastal areas in or near denning habitat. If necessary, proactive and reactive mitigation measures set forth in the proposed regulations would minimize disturbance impacts within designated critical habitat and/or impacts to denning habitat. The Service encourages that all transit routes occur outside of critical habitat and may require den detection surveys in areas of denning habitat. At times, Industry may have to place ice roads or staging activities in coastal denning areas. Mitigation measures to minimize potential impacts include establishment of the 1-mile exclusion zone around known maternal dens, and the reduction of activity levels until the natural departure of the bears. Currently, what little is known about the denning habits of the Chukchi-Bering Sea population suggests that the majority of maternal dens occur in the Russian Federation, predominantly on Wrangel Island (DeBruyn *et al.* 2010). While denning habitat exists in western Alaska, no confirmed polar bear dens have been recorded in western Alaska since 2006 (Durner *et al.* 2010). A more detailed description of den detection techniques required by the Service and employed by exploration activities to limit disturbance and minimize impacts to maternal polar bear den sites has been discussed in the Service's Beaufort Sea regulations (76 FR 47010; August 3, 2011). The Service would implement these techniques if active polar bear dens are recorded during Industry activities.

Although Industry activities may temporarily reduce site-specific availability of small portions of polar bear critical habitat primary constituent elements (PCEs) for feeding, mating, movements, denning, and access to prey, these actions would be temporary and not result in long-term effects on the PCE's capabilities to support biological functions of polar bears. Based on the information provided by the petitioners, the Service concludes that effects from Industry activity to polar bear critical habitat and the associated PCEs would be insignificant, due to the limited magnitude and temporary nature of the proposed activities.

Evaluation of Anticipated Effects on Polar Bears

The Service anticipates that potential impacts of seismic noise, physical obstructions, human encounters, changes in distribution or numbers of prey species in the offshore and onshore environments on polar bears would be limited to short-term changes in behavior that would have no long-term impact on individuals or identifiable impacts to the polar bear population during the 5-year timeframe of the proposed regulations. Individual polar bears may be observed in the open water during offshore activities in Alaska waters, but the vast majority of the bear populations will be found on the pack ice or along the Chukotka coastline in the Russian Federation during this time of year. Onshore encounters with polar bears are expected to be minimal due to the limited activity planned along the coastline of Alaska during the timeframe of the regulations. We do not anticipate any lethal take due to Industry activities during the 5-year time period of the proposed regulations. We expect that specific mitigation measures, such as education of Industry personnel, would minimize bear-human interactions that could lead to lethal take of polar bears. Our experience in the Beaufort Sea similarly suggests that it is unlikely there would be any lethal take of bears due to Industry activity within the 5-year time period of the proposed regulations.

Potential impacts to bears would be mitigated through various requirements stipulated within LOAs. Mitigation measures that would be required for all projects include a polar bear interaction plan and a record of communication with affected villages that may serve as the precursor to a POC with the village to mitigate effects of the project on subsistence activities. Examples of mitigation measures that would be used on a case-by-case basis include: The use of trained marine mammal observers associated with offshore activities; bear monitors for onshore activities; and seismic shutdown procedures in ensonification zones. The Service implements an adaptive management approach where certain mitigation measures are based on need and effectiveness for specific activities based largely on timing and location. For example, the Service would implement different mitigation measures for an onshore baseline study 20 miles inland, than for an offshore drilling project. Based on past monitoring information, bears are more prevalent in the coastal areas than 20 miles inland. Therefore, the monitoring and mitigation measures that the Service deems appropriate must be implemented to limit the disturbance to bears, and the measures deemed necessary to limit bear-human interactions may differ depending on location and the timing of the activity.

Furthermore, mitigation measures imposed through BOEM/BSEE lease stipulations are designed to avoid Level A harassment (injury), reduce Level B

harassment, reduce the potential for population level significant adverse effects on polar bears, and avoid an unmitigable adverse impact on their availability for subsistence purposes. Additional measures described in the these incidental take regulations would help reduce the level of Industry impacts to polar bears during the exploration activities, and the issuance of LOAs with site specific operating restrictions and monitoring requirements would provide mitigation and protection for polar bears. Therefore, we conclude that the proposed exploration activities, as mitigated through the regulatory process, would impact small numbers of animals, are not expected to have more than negligible impacts on polar bears in the Chukchi Sea and would not have an unmitigable, adverse impact on the availability of polar bears for subsistence uses.

Potential Impacts of Waste Product Discharge and Oil Spills on Pacific Walruses and Polar Bears

In this section, we discuss the potential effects of oil spills from Industry activities on Pacific walruses and polar bears. We recognize that a wide range of potential effects from oil spills on these species could occur, from minimal effects to potentially substantial ones. We emphasize, however, that the only types of spills that could have significant effects on these species are large spills. Based on projections from BOEM/BSEE, the likelihood of large spills from Industry exploration activities are extremely remote, and thus, we consider impacts from such spills to be highly unlikely. Nevertheless, we provide a full discussion of oil spill risks and possible effects from oil spills, in the extremely unlikely event that such as spill could occur.

Effects of Waste Discharge and Potential Oil Spills on Pacific Walrus

The possibility of oil and waste product spills from Industry exploration activities and the subsequent impacts on walruses are a concern. Little is known about the effects of either on walruses as no studies have been conducted and no documented spills have occurred affecting walruses in their habitat. Depending on the extent of an oil spill, adult walruses may not be severely affected through direct contact, but they will be extremely sensitive to any disturbances created by spill response activities. In addition, due to the gregarious nature of walruses, a release of contaminants would most likely affect multiple individuals if it occurred in an area occupied by walruses. Walruses may repeatedly expose themselves to waste or oil that has accumulated at the edge of a shoreline or ice lead as they enter and exit the water.

Damage to the skin of pinnipeds can occur from contact with oil because some of the oil penetrates into the skin, causing inflammation and death of some tissue. The dead tissue is discarded, leaving behind an ulcer. While these skin lesions have only rarely been found on oiled seals, the effects on walruses may be greater because of a lack of hair to protect the skin. Like other pinnipeds, walruses are susceptible to oil contamination in their eyes. Direct exposure to oil could also result in conjunctivitis. Continuous exposure to oil would quickly cause permanent eye damage.

Inhalation of hydrocarbon fumes presents another threat to marine mammals. In studies conducted on pinnipeds, pulmonary hemorrhage, inflammation, congestion, and nerve damage resulted after exposure to concentrated hydrocarbon fumes for a period of 24 hours. If the walruses were also under stress from molting, pregnancy, etc., the increased heart rate associated with the stress would circulate the hydrocarbons more quickly, lowering the tolerance threshold for ingestion or inhalation.

Adult and sub-adult walruses have thick skin and blubber layers for insulation and very little hair. Thus, they exhibit no grooming behavior, which lessens their chance of ingesting oil. Heat loss is regulated by control of peripheral blood flow through the animal's skin and blubber. Direct exposure of adult walruses to oil is not believed to have any effect on the insulating capacity of their skin and blubber, although it is unknown if oil could affect their peripheral blood flow.

Walrus calves are also likely to suffer from the effects of oil contamination. Walrus calves can swim almost immediately after birth and will often join their mother in the water, increasing their risk of being oiled. However, calves have not yet developed enough insulating blubber to spend as much time in the water as adults. It is possible, but unknown, that oiled walrus calves may not be able to regulate heat loss and may be more susceptible to hypothermia. Another possibility is an oiled calf that is unable to swim away from the contamination and a cow that would not leave without the calf, resulting in the potential exposure of both animals. However, it is also possible that an oiled calf would be unrecognizable to its mother either by sight or by smell, and be abandoned.

Walruses are benthic feeders, and the fate of benthic prey contaminated by an oil spill is difficult to predict. In general, benthic invertebrates preferred by walruses (bivalves, gastropods, and polychaetes) may either decline or increase as the result of a spill (Sanders *et al.* 1980; Jacobs 1980; Elmgren *et al.* 1983; Jewett *et al.* 1999). Impacts vary among spills and species within a spill, but in general, benthic communities move through several successive stages of temporal change until the communities approach pre-disturbance conditions (Dauvin 1998), which may take 20 years. Much of the benthic prey contaminated by an oil spill or gas release, such as methane, may be killed immediately. Bivalve mollusks, a favorite prey species of the walrus, are not effective at processing hydrocarbon compounds, resulting in highly concentrated accumulations and long-term retention of the contamination within the organism. In addition, because walruses feed primarily on mollusks, they may be highly vulnerable to a loss of this prey species. However, epifaunal bivalves were one of the benthic community classes that increased following the *Exxon Valdez* spill in Alaska (Jewett *et al.* 1999).

Depending on the location and timing, oil spills could affect walruses in a number of ways. An offshore spill during open water may only affect a few walruses swimming through the affected area. However, spilled oil present along ice edges and ice leads in fall or spring during formation or breakup of ice presents a greater risk because of both the difficulties associated with cleaning oil in mixed, broken ice, and the presence of wildlife in prime feeding areas over the continental shelf during this period. Oil spills affecting areas where walruses and polar bears are concentrated, such as along off-shore leads, polynyas, preferred feeding areas, and terrestrial habitat used for denning or haul-outs would affect more animals than spills in other areas.

The potential impacts to Pacific walruses from a spill could be significant, particularly if subsequent cleanup efforts are ineffective. These potential impacts would be greatest when walrus are aggregated at coastal haulouts. For example, walruses would be most vulnerable to the effects of an oil spill at coastal haulouts if the oil comes within 60 km of the coast (Garlich-Miller *et al.* 2010, p. 87). Spilled oil during the ice-covered season not cleaned up could become part of the ice substrate and be eventually released back into the

environment during the following open-water season. During spring melt, oil would be collected by spill response activities, but it could eventually contact a limited number of walruses.

In the unlikely event there is an oil spill and walruses are in the same area, mitigation measures, especially those to deflect and deter animals from spilled areas, may minimize the associated risks. Fueling crews have personnel that are trained to handle operational spills and contain them. If a small offshore spill occurs, spill response vessels are stationed in close proximity and are required to respond immediately. A detailed discussion of oil spill prevention and response for walruses can be found at the following Web site: *http://www.fws.gov/Contaminants/FWS_OSCP_05/FWSContingencyTOC.htm.*

Although fuel and oil spills have the potential to cause adverse impacts to walruses and possibly some prey species, operational spills associated with the proposed exploration activities are not considered a major threat. Operational spills would likely be of a relatively small volume, and occur in areas of open water where walrus densities are expected to be low. Furthermore, blowout prevention technology would be required for all exploratory drilling operations in the Chukchi Sea by the permitting agencies, and the BOEM/BSEE considers the likelihood of a blowout occurring during exploratory drilling in the Chukchi Sea as negligible (OCS EIS/EA MMS 2007–026). The BOEM/BSEE operating stipulations, including oil spill prevention and response plans, reduce both the risk and scale of potential spills. For these reasons, any impacts associated with an operational spill are expected to be limited to a small number of animals.

Effects of Waste Discharge and Potential Oil Spills on Polar Bear

Individual polar bears can potentially be affected by Industry activities through waste product discharge and oil spills. In 1980, Canadian scientists performed experiments that studied the effects to polar bears of exposure to oil. Effects on experimentally oiled polar bears (where bears were forced to remain in oil for prolonged periods) included acute inflammation of the nasal passages, marked epidermal responses, anemia, anorexia, and biochemical changes indicative of stress, renal impairment, and death. Many effects did not become evident until several weeks after the experiment (Øritsland *et al.* 1981).

Oiling of the pelt causes significant thermoregulatory problems by reducing the insulation value. Irritation or damage to the skin by oil may further contribute to impaired thermoregulation. Experiments on live polar bears and pelts showed that the thermal value of the fur decreased significantly after oiling, and oiled bears showed increased metabolic rates and elevated skin temperature. Oiled bears are also likely to ingest oil as they groom to restore the insulation value of the oiled fur.

Oil ingestion by polar bears through consumption of contaminated prey, and by grooming or nursing, could have pathological effects, depending on the amount of oil ingested and the individual's physiological state. Death could occur if a large amount of oil is ingested or if volatile components of oil were aspirated into the lungs. Indeed, two of three bears died in the Canadian experiment, and it was suspected that the ingestion of oil was a contributing factor to the deaths. Experimentally oiled bears ingested much oil through grooming. Much of it was eliminated by vomiting and in the feces; some was absorbed and later found in body fluids and tissues.

Ingestion of sub-lethal amounts of oil can have various physiological effects on a polar bear, depending on whether the animal is able to excrete or detoxify the hydrocarbons. Petroleum hydrocarbons irritate or destroy epithelial cells lining the stomach and intestine, thereby affecting motility, digestion, and absorption.

Polar bears swimming in, or walking adjacent to, an oil spill could inhale petroleum vapors. Vapor inhalation by polar bears could result in damage to various systems, such as the respiratory and the central nervous systems, depending on the amount of exposure.

Oil may also affect food sources of polar bears. Seals that die because of an oil spill could be scavenged by polar bears. This would increase exposure of the bears to hydrocarbons and could result in lethal impact or reduced survival to individual bears. A local reduction in ringed seal numbers because of direct or indirect effects of oil could temporarily affect the local distribution of polar bears. A reduction in density of seals as a direct result of mortality from contact with spilled oil could result in polar bears not using a particular area for hunting. Possible impacts from the loss of a food source could reduce recruitment and/or survival.

The persistence of toxic subsurface oil and chronic exposures, even at sub-lethal levels, can have long-term effects on wildlife (Peterson *et al.* 2003). Although it may be true that small numbers of bears may be affected by an oil spill initially, the long-term impact could be much greater. Long-term oil effects could be substantial through interactions between natural environmental stressors and compromised health of exposed animals, and through chronic, toxic exposure because of bioaccumulation. Polar bears are biological sinks for pollutants because they are the apical predator of the Arctic ecosystem and are opportunistic scavengers of other marine mammals. Additionally, their diet is composed mostly of high-fat sealskin and blubber (Norstrom *et al.* 1988). The highest concentrations of persistent organic pollutants in Arctic marine mammals have been found in polar bears and seal-eating walruses near Svalbard (Norstrom *et al.* 1988; Andersen *et al.* 2001; Muir *et al.* 1999). As such, polar bears would be susceptible to the effects of bioaccumulation of contaminants associated with spilled oil, which could affect the bears' reproduction, survival, and immune systems. Sub-lethal, chronic effects of any oil spill may further suppress the recovery of polar bear populations due to reduced fitness of surviving animals.

In addition, subadult polar bears are more vulnerable than adults are to environmental effects (Taylor *et al.* 1987). Subadult polar bears would be most prone to the lethal and sub-lethal effects of an oil spill due to their proclivity for scavenging (thus increasing their exposure to oiled marine mammals) and their inexperience in hunting. Indeed, grizzly bear researchers in Katmai National Park suspected that oil ingestion contributed to the death of two yearling grizzly bears in 1989, after the *Exxon Valdez* oil spill. They detected levels of naphthalene and phenathrene in the bile of one of the bears. Because of the greater maternal investment a weaned subadult represents, reduced survival rates of subadult polar bears have a greater impact on population growth rate and sustainable harvest than reduced litter production rates (Taylor *et al.* 1987).

During the open water season (July to October), bears in the open water or on land may encounter and be affected by any such oil spill; however, given the seasonal nature of the Industry activities, the potential for direct negative impacts to polar bears would be minimized. During the ice-covered season (November to May), onshore Industry activities would have the greatest likelihood of exposing

transiting polar bears to potential oil spills. Although the majority of the Chukchi Sea polar bear population spends a large amount of time offshore on the annual or multi-year pack ice and along the Chukotka coastline, some bears could encounter oil from a spill regardless of the season and location.

Small spills of oil or waste products throughout the year by Industry activities on land could potentially affect small numbers of bears. The effects of fouling fur or ingesting oil or wastes, depending on the amount of oil or wastes involved, could be short-term or result in death. For example, in April 1988, a dead polar bear was found on Leavitt Island, in the Beaufort Sea, approximately 9.3 km (5 nautical miles) northeast of Oliktok Point. The cause of death was determined to be poisoning by a mixture that included ethylene glycol and Rhodamine B dye. While industrial in origin, the source of the mixture was unknown.

The major concern regarding large oil spills is the impact a spill would have on the survival and recruitment of the Chukchi Sea and southern Beaufort Sea polar bear populations that use the region. Currently, the Southern Beaufort Seas bear population is approximately 1,500 bears, and the Chukchi Sea bear population estimate is 2,000. These populations may be able to sustain the additional mortality caused by a large oil spill if a small number of bears are killed; however, the additive effect of numerous bear deaths due to the direct or indirect effects from a large oil spill are more likely to reduce population recruitment and survival. Indirect effects may occur through a local reduction in seal productivity or scavenging of oiled seal carcasses and other potential impacts, both natural and human-induced. The removal of a large number of bears from either population would exceed sustainable levels, potentially causing a decline in bear populations and affecting bear productivity and subsistence use.

The time of greatest impact from an oil spill to polar bears is most likely during the ice-covered season when bears use the ice. To access ringed and bearded seals, polar bears concentrate in shallow waters less that 300 m deep over the continental shelf and in areas with greater than 50 percent ice cover (Durner *et al.* 2004). At this time, bears may be exposed to any remnant oil from the previous open water season. Spilled oil also can concentrate and accumulate in leads and openings that occur during spring break-up and autumn freeze-up periods. Such a concentration of spilled oil would increase the chance that polar bears and their principal prey would be oiled.

Potential impacts of Industry waste products and oil spills suggest that individual bears could be impacted by this type of disturbance were it to occur. Depending on the amount of oil or wastes involved, and the timing and location of a spill, impacts could be short-term, chronic, or lethal. In order for bear population reproduction or survival to be impacted, a large-volume oil spill would have to take place. According to BOEM/BSEE, during exploratory activities, the probability of a large oil spill (defined as ≥ 1,000 barrels [bbls]) occurring throughout the duration of these proposed regulations (5 years) is very small. In addition, protocols for controlling waste products in project permits would limit exposure of bears to the waste products. Current management practices by Industry, such as requiring the proper use, storage, and disposal of hazardous materials, minimize the potential occurrence of such incidents. In the event of an oil spill, it is also likely that polar bears would be intentionally hazed to keep them away from the area, further reducing the likelihood of affecting the population. Oil spill contingency plans are authorized by project permitting agencies and, if necessary, would limit the exposure of bears to oil.

Description of Waste Product Discharge and Oil Spills

Waste products are substances that can be accidently introduced into the environment by Industry activities. Examples include ethyl glycol, drilling muds, or treated water. Generally, they are released in small amounts. Oil spills are releases of oil or petroleum products. In accordance with the National Pollutant Discharge Elimination System Permit Program, all oil companies must submit an oil spill contingency plan with their projects. It is illegal to discharge oil into the environment, and a reporting system requires operators to report even small spills. BOEM/BSEE classifies oil spills as either small (< 1,000 barrels [bbls]) or large (≥ 1,000 bbls). A volume of oil of 1,000 bbl equals 42,000 U.S. gallons (gal), or 158,987 liters (L). Reported small spills are those that have occurred during standard Industry operations. Examples include oil, gas, or hydraulic fluid spills from mechanized equipment or spills from pipelines or facilities. While oil spills are unplanned events, large spills are associated with oil platforms, such as drill rigs or pads and pipelines. There is generally some form of human error combined with faulty equipment, such as pipeline degradation, that causes a large spill.

Most regional oil spill information comes from the Beaufort Sea area, where oil and gas production has already been established. According to BOEM/BSEE, on the Beaufort and Chukchi OCS, Industry has drilled 35 exploratory wells, five of which occurred in the Chukchi Sea. The most recent drilling operation in the Chukchi Sea occurred in 1991. BOEM's most current data suggest that between 1977 and 1999, an average of 70 oil and 234 waste product spills occurred annually on the North Slope oil fields in the terrestrial and marine environment. Although most spills have been small (less than 50 bbl, 2,100 gal, or 7,950 L) by Industry standards, larger spills accounted for much of the annual volume. Historically, Industry has had 35 small spills totaling 26.7 bbl (1,121 gal, 4,245 L) in the Beaufort and Chukchi OCS. Of the 26.7 bbl spilled, approximately 24 bbl (1,008 gal, 3,816 L) were recovered or cleaned up. Seven large, terrestrial oil spills occurred between 1985 and 2009 on the Beaufort Sea North Slope. The largest oil spill occurred in the spring of 2006, where approximately 5,714 bbl (260,000 gal, 908,500 L) leaked from flow lines near a gathering center. In November 2009, a 1,095 bbl (46,000 gal, 174,129 L) oil spill occurred as well. Both of these spills occurred at production sites. More recently, in 2012, a gas blowout occurred at an exploration well where approximately 1,000 bbl (42,000 gal, 159,987 L) of drilling mud and an unknown amount of natural gas was expelled. These spills were terrestrial and posed minimal harm to polar bears and walruses. To date, no major exploratory offshore-related oil spills have occurred on the North Slope in either the Beaufort or Chukchi seas.

Historical large spills (≥ 1,000 bbl, 42,000 gal, or 159,987 L) associated with Alaskan oil and gas activities on the North Slope have been production-related, and have occurred at production facilities or pipelines connecting wells to the Trans-Alaska Pipeline System. The BOEM/BSEE estimates the chance of a large (> 1,000 bbl, 42,000 gal, or 159,987 L) oil spill from exploratory activities in the Chukchi Sea to be low based on the types of spills recorded in the Beaufort Sea. The greatest risk potential for oil spills from exploration activities likely occurs with the marine vessels. From past experiences, BOEM/BSEE believes these would most likely be localized and relatively small. Spills in the offshore or onshore environments classified as small could occur during normal operations (e.g., transfer of fuel,

handling of lubricants and liquid products, and general maintenance of equipment). The likelihood of small spills occurring is higher than large spills. However, because small spills would likely be contained and remediated quickly, their potential impacts on walruses and polar bears are expected to be low. There is a greater potential for large spills in the Chukchi Sea region from drilling platforms. Exploratory drilling platforms are required to have containment ability in case of a blowout as part of their oil spill contingency plans, where the likelihood of a large release during the 5-year timeframe of the proposed regulations remains minimal.

Our analysis of oil and gas development potential and subsequent risks was based on the BOEM/BSEE analysis that they conducted for the Chukchi Sea lease sale (MMS 2007 and BOEMRE 2011), which is the best available information. Due to the *Deepwater Horizon* (DWH) incident in the Gulf of Mexico, offshore oil and gas activities are under increased scrutiny. As such, BOEM/BSEE developed a very large oil spill analysis (BOEMRE 2011–041; *http://www.boem.gov/uploadedFiles/BOEM/About_BOEM/BOEM_Regions/Alaska_Region/Environment/Environmental_Analysis/2011-041v1.pdf*), where the potential impacts of a very large oil spill to polar bears and Pacific walruses are described (sections IV.E.8 and IV.E.11, respectively).

Of the several potential impacts to Pacific walruses and polar bears from Industry activity in the Chukchi Sea, a very large oil spill is of the most concern during the duration of the proposed regulations. While not analyzed as part of standard operating conditions, we have addressed the analysis of a very large oil spill due to the potential that a spill of this magnitude could significantly impact Pacific walruses and polar bears. During the next 5 years, offshore exploratory drilling would be the predominant source of a very large oil spill in the unlikely event one occurred.

Multiple factors have been examined to compare and contrast an oil spill in the Arctic to that of *Deepwater Horizon.* In the event of a spill in the Chukchi Sea favorable factors that could limit the impact of a spill could include the drilling depth and the well pressures. The *Deepwater Horizon* blowout occurred in 5,000 ft (1,524 m) of water with well pressures of approximately 15,000 psi (approximately 103,421 kPa). (Schmidt 2012). The Chukchi Sea sites are calculated to have drilling depths of approximately 150 ft (46 m) and well pressures not to exceed 3,000 to 4,000 psi (approximately 20,684 to 27,579 kPa). With lower drilling depths and well pressures, well sites in the Chukchi Sea will be more accessible in the event of a spill. However, spill response and cleanup of an oil spill in the Arctic has not been fully vetted to the point where major concerns no longer remain.

The BOEM/BSEE has acknowledged difficulties in effectively responding to oil spills in broken ice conditions, and The National Academy of Sciences has determined that ''no current cleanup methods remove more than a small fraction of oil spilled in marine waters, especially in the presence of broken ice'' (NRC 2003). Current oil spill responses in the Chukchi Sea include three main response mechanisms, blowout prevention, *in-situ* burning, and chemical dispersants (*http://www.bsee.gov/OSRP/Shell-Chukchi-OSRP.aspx*.). Each response has associated strengths and weaknesses, where the success would be mostly dependent on weather conditions. The BOEM/BSEE advocates the use of non-mechanical methods of spill response, such as *in-situ* burning, during periods when broken ice would hamper an effective mechanical response (MMS 2008). An *in-situ* burn has the potential to rapidly remove large quantities of oil and can be employed when broken-ice conditions may preclude mechanical response. However, oil spill cleanup in the broken ice and open water conditions that characterize Arctic waters continues to be problematic.

In addition to the BOEM/BSEE analysis (BOEMRE 2011), policy and management changes have occurred within the Department of the Interior that are designed to increase the effectiveness of oversight activities and further reduce the probability and effects of an accidental oil spill (USDOI 2010). As a result, based on projections from BOEM/BSEE, we anticipate that the potential for a significant oil spill would remain small at the exploration stage; however, we recognize that should a large spill occur, effective strategies for oil spill cleanup in the broken ice and open-water conditions that characterize walrus and polar bear habitat in the Chukchi Sea are limited.

In the event of a large oil spill, Service-approved response strategies are in place to reduce the impact of a spill on walrus and polar bear populations. Service response efforts will be conducted under a 3-tier approach characterized as: (1) Primary response, involving containment, dispersion, burning, or cleanup of oil; (2) secondary response, involving hazing, herding, preventative capture/relocation, or additional methods to remove or deter wildlife from affected or potentially affected areas; and (3) tertiary response, involving capture, cleaning, treatment, and release of wildlife. If the decision is made to conduct response activities, primary and secondary response options will be most applicable, as little evidence exists that tertiary methods would be effective for cleaning oiled walruses or polar bears.

In 2012, the Service and representatives from oil companies operating in the Arctic conducted tests on polar bear fur to evaluate appropriate oil cleaning techniques specific to oil grades extracted from local Alaskan oil fields. The analysis is ongoing and will be reported in the future. In addition, capturing and handling of adult walruses is difficult and risky, as walruses do not react well to anesthesia, and calves have little probability of survival in the wild following capture and rehabilitation. In addition, many Alaska Native organizations are opposed to releasing rehabilitated marine mammals into the wild due to the potential for disease transmission.

All Industry projects would have project specific oil spill contingency plans that would be approved by the appropriate permitting agencies prior to the issuance of an LOA. The contingency plans have a wildlife component, which outlines protocols to minimize wildlife exposure, including exposure of polar bears and walruses, to oil spills. Operators in the OCS are advised to review the Service's *Oil Spill Response Plan for Polar Bears in Alaska* and the Pacific Walrus Response Plan at *http://www.fws.gov/Contaminants/FWS_OSCP_05/FWSContingencyTOC.htm* when developing spill-response tactics. Multiple factors will be considered when responding to an oil spill, including: The location of the spill; the magnitude of the spill; oil viscosity and thickness; accessibility to spill site; spill trajectory; time of year; weather conditions (i.e., wind, temperature, precipitation); environmental conditions (i.e., presence and thickness of ice); number, age, and sex of walruses and polar bears that are (or are likely to be) affected; degree of contact; importance of affected habitat; cleanup proposal; and likelihood of animal-human interactions.

As discussed above, large oil spills from Industry activities in the Chukchi and Beaufort seas and coastal regions that would impact walruses and polar bears have not yet occurred, although the exploration of oil and gas has increased the potential for large offshore oil spills. With limited background

information available regarding oil spills in the Arctic environment, the outcome of such a spill is uncertain. For example, the extent of impacts of a large oil spill as well as the types of equipment needed and potential for effective cleanup would be greatly influenced by seasonal weather and sea conditions, including temperature, winds, wave action, and currents. Based on the experiences of cleanup efforts following the *Deepwater Horizon* and *Exxon Valdez* oil spills, where logistical support was readily available and wildlife resources were nevertheless affected, spill response may be largely unsuccessful in open-water conditions. Arctic conditions and the remoteness of exploration activities would greatly complicate any spill response.

While it is extremely unlikely that a significant amount of oil would be discharged into the environment by an exploratory program during the proposed regulatory period, the Service is aware of the risk that hydrocarbon exploration entails and that a large spill could occur in the development and production of oil fields in the future, where multiple operations incorporating pads and pipelines would increase the possibility of oil spills and impacts to walruses and polar bears. The Service will continue to work to minimize impacts to walruses and polar bears from Industry activities, including reducing impacts of oil spills.

Potential Effects of Oil and Gas Industry Activities on Subsistence Uses of Pacific Walruses and Polar Bears

The open-water season for oil and gas exploration activities coincides with peak walrus hunting activities in the Chukchi Sea region. The subsistence harvest of polar bears can occur year-round in the Chukchi Sea, depending on ice conditions, with peaks usually occurring in spring and fall. Effects to subsistence harvests would be addressed in Industry POCs. The POCs are discussed in detail later in this section.

Noise and disturbances associated with oil and gas exploration activities have the potential to adversely impact subsistence harvests of walruses and polar bears by displacing animals beyond the hunting range (60 to 100 mi [96.5 to 161 km] from the coast) of these communities. Disturbances associated with exploration activities could also heighten the sensitivity of animals to humans with potential impacts to hunting success. Little information is available to predict the effects of exploration activities on the subsistence harvest of walruses and polar bears. Hunting success varies considerably from year to year because of variable ice and weather conditions. Changing walrus distributions due to declining sea ice and accelerated sea ice melt are currently affecting hunting opportunities.

Measures to mitigate potential effects of oil and gas exploration activities on marine mammal resources and subsistence use of those resources were identified and developed through previous BOEM/BSEE Lease Sale National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.) review and analysis processes. The Final Lease Stipulations for the Oil and Gas Lease Sale 193 in the Chukchi Sea identify several existing measures designed to mitigate potential effects of oil and gas exploration activities on marine mammal resources and subsistence use of those resources (*http://www.boem.gov/uploadedFiles/BOEM/Oil_and_Gas_Energy_Program/Leasing/Regional_Leasing/Alaska_Region/Alaska_Lease_Sales/Sale_193/Stips.pdf*).

Seven lease stipulations were selected by the Secretary of the Interior in the Final Notice of Sale for Lease 193. These are: Stipulation (1) Protection of Biological Resources; Stipulation (2) Orientation Program; Stipulation (3) Transportation of Hydrocarbons; Stipulation (4) Industry Site Specific Monitoring Program for Marine Mammal Subsistence Resources; Stipulation (5) Conflict Avoidance Mechanisms to Protect Subsistence Whaling and Other Marine Mammal Subsistence Harvesting Activities; Stipulation (6) Pre-Booming Requirements for Fuel Transfers; and Stipulation (7) Measures to Minimize Effects to Spectacled and Steller's Eiders during Exploration Activities.

Lease stipulations that would directly support minimizing impacts to walruses, polar bears and the subsistence use of those animals include Stipulations 1, 2, 4, 5, and 6. Stipulation 1 allows BOEM/BSEE to require the lessee to conduct biological surveys for previously unidentified biological populations or habitats to determine the extent and composition of the population or habitat. Stipulation 2 requires that an orientation program be developed by the lessee to inform individuals working on the project of the importance of environmental, social, and cultural resources, including how to avoid disturbing marine mammals and endangered species. Stipulation 4 provides for site-specific monitoring programs, which will provide information about the seasonal distributions of walruses and polar bears. The information can be used to improve evaluations of the threat of harm to the species and provides immediate information about their activities, and their response to specific events, where this stipulation applies specifically to the communities of Barrow, Wainwright, Point Lay, and Point Hope. This stipulation is expected to reduce the potential effects of exploration activities on walruses, polar bears, and the subsistence use of these resources. This stipulation also contributes important information to ongoing walrus and polar bear research and monitoring efforts.

Stipulation 5 will help reduce potential conflicts between subsistence hunters and proposed oil and gas exploration activities. This stipulation is meant to help reduce noise and disturbance conflicts from oil and gas operations during specific periods, such as peak hunting seasons. It requires that the lessee meet with local communities and subsistence groups to resolve potential conflicts. The consultations required by this stipulation ensure that the lessee, including contractors, consult and coordinate both the timing and sighting of events with subsistence users. The intent of these consultations is to identify any potential conflicts between proposed exploration activities and subsistence hunting opportunities in the coastal communities. Where potential conflicts are identified, BOEM/BSEE may require additional mitigation measures as identified by NMFS and the Service through MMPA authorizations. Finally, stipulation 6 will limit the potential of fuel spill into the environment by requiring the fuel barge to be surrounded by an oil spill containment boom during fuel transfer.

The BOEM/BSEE lease sale stipulations and mitigation measures will be applied to all exploration activities in the Chukchi Lease Sale Planning Area and the geographic region of the ITRs. The Service has incorporated these BOEM/BSEE lease sale stipulations into their analysis of impacts to walruses and polar bears in the Chukchi Sea.

In addition to the existing BOEM/BSEE Final Lease Stipulations described above, the Service has also developed additional mitigation measures that would be implemented through these ITRs. These stipulations are currently in place under our regulations published on June 11, 2008 (73 FR 33212), and will also apply if we adopt these proposed regulations. The following LOA stipulations, which would mitigate potential impacts to subsistence walrus and polar bear hunting from the proposed activities, apply to all incidental take authorizations:

(1) Prior to receipt of an LOA, applicants must contact and consult with the communities of Point Hope, Point Lay, Wainwright, and Barrow through their local government organizations to identify any additional measures to be taken to minimize adverse impacts to subsistence hunters in these communities. A POC will be developed if there is a general concern from the community that the proposed activities will impact subsistence uses of walruses or polar bears. The POC must address how applicants will work with the affected Native communities and what actions will be taken to avoid interference with subsistence hunting of walruses and polar bears. The Service will review the POC prior to issuance of the LOA to ensure that any potential adverse effects on the availability of the animals are minimized.

(2) Authorization will not be issued by the Service for activities in the marine environment that occur within a 40-mile (64 km) radius of Barrow, Wainwright, Point Hope, or Point Lay, unless expressly authorized by these communities through consultations or through a POC. This condition is intended to limit potential interactions between Industry activities and subsistence hunting in near shore environments.

(3) Offshore exploration activities will be authorized only during the open water season, which will not exceed the period of July 1 to November 30. This condition is intended to allow communities the opportunity to participate in subsistence hunts without interference and to minimize impacts to walruses during the spring migration. Exemption waivers to this operating condition may be issued by the Service on a case-by-case basis, based upon a review of seasonal ice conditions and available information on walrus and polar bear distributions in the area of interest.

(4) A 15-mile (24-km) separation must be maintained between all active seismic survey vessels and/or drilling rigs/vessels/platforms to mitigate cumulative impacts to resting, feeding, and migrating walruses.

Plan of Cooperation (POC)

As a condition of incidental take authorization, and to ensure that Industry activities do not impact subsistence opportunities for communities within the geographic region covered by the proposed regulations, any applicant requesting an LOA is required to present a record of communication that reflects discussions with the Alaska Native communities most likely affected by the activities. Prior to issuance of an LOA, Industry must provide evidence to the Service that an adequate POC has been coordinated with any affected subsistence community (or, as appropriate, with the EWC, the ANC, and the NSB) if, after community consultations, Industry and the community conclude that increased mitigation and monitoring is necessary to minimize impacts to subsistence resources. Where relevant, a POC will describe measures to be taken to mitigate potential conflicts between the proposed activity and subsistence hunting. If requested by Industry or the affected subsistence community, the Service will review these plans and provide guidance. The Service will reject POCs if they do not provide adequate safeguards to ensure that any taking by Industry would not have an unmitigable adverse impact on the availability of polar bears and walruses for taking for subsistence uses.

Included as part of the POC process and the overall State and Federal permitting process of Industry activities, Industry engages the Alaska Native communities in numerous informational meetings. During these community meetings, Industry must ascertain if community responses indicate that impact to subsistence uses would occur as a result of activities in the requested LOA. If community concerns suggest that Industry activities may have an impact on the subsistence uses of these species, the POC must provide the procedures on how Industry will work with the affected Native communities and what actions will be taken to avoid interfering with the availability of polar bears and walruses for subsistence harvest.

In making this finding, we considered the following: (1) Historical data regarding the timing and location of harvests; (2) effectiveness of mitigation measures stipulated by BOEM/BSEE-issued operational permits; (3) Service regulations proposed to be codified at 50 CFR 18.118 for obtaining an LOA, which include requirements for community consultations and POCs, as appropriate, between the applicants and affected Native communities; (4) effectiveness of mitigation measures stipulated by Service-issued LOAs; and (5) anticipated effects of the applicants' proposed activities on the distribution and abundance of walruses and polar bears. Based on the best scientific information available and the results of harvest data, including affected villages, the number of animals harvested, the season of the harvests, and the location of hunting areas, we find that the effects of the proposed exploration activities in the Chukchi Sea region would not have an unmitigable adverse impact on the availability of walruses and polar bears for taking for subsistence uses during the 5-year timeframe of the proposed regulations.

Analysis of Impacts of the Oil and Gas Industry on Pacific Walruses and Polar Bears in the Chukchi Sea

Pacific Walrus

Recent offshore activities in the Chukchi and Beaufort seas from the 1980s to the present highlight the type of documented impacts offshore activities can have on walruses. More oil and gas activity has occurred in the Beaufort Sea OCS than in the Chukchi Sea OCS. Many offshore activities required ice management (icebreaking), helicopter traffic, fixed wing aircraft monitoring, other support vessels, and stand-by barges. Although Industry has encountered walruses while conducting exploratory activities in the Beaufort and Chukchi seas, to date, no walruses are known to have been killed due to encounters associated with Industry activities.

1. Reported Observations

Aerial surveys and vessel based observations of walruses were carried out in 1989 and 1990, to examine the responses of walruses to drilling operations at three Chukchi Sea drill prospects (Brueggeman *et al.* 1990, 1991). Aerial surveys documented several thousand walruses in the vicinity of the drilling prospects; most of the animals (> 90 percent) were closely associated with sea ice. The observations demonstrated that: (1) Walrus distributions were closely linked with pack ice; (2) pack ice was near active drill prospects for short time periods; and (3) ice passing near active prospects contained relatively few animals. Thus, the effects of the drilling operations on walruses were short-term, temporary, and in a discrete area near the drilling operations, and the portion of the walrus population affected was small.

Between 2006 and 2011, monitoring by Industry during seismic surveys in the Chukchi Sea resulted in 1,801 observed encounters involving approximately 11,125 individual walruses (Table 3). We classified the behavior of walruses associated with these encounters as: (1) No reaction; (2) attention (watched vessel); (3) approach (moved toward vessel); (4) avoidance (moved away from vessel at normal speed); (5) escape or flee (moved away from vessel at high rate of speed); and (6) unknown. These classifications were

based on MMO on-site determinations or their detailed notes on walrus reactions that accompanied the observation. Data typically included the behavior of an animal or group when initially spotted by the MMO and any subsequent change in behavior associated with the approach and passing of the vessel. This monitoring protocol was designed to detect walruses far from the vessel and avoid and mitigate take, not to estimate the long-term impacts of the encounters on individual animals.

TABLE 3—SUMMARY OF PACIFIC WALRUS RESPONSES TO ENCOUNTERS WITH SEISMIC SURVEY VESSELS IN THE CHUKCHI SEA OIL AND GAS LEASE SALE AREA 193 IN 2006–2010 AS RECORDED BY ON-BOARD MARINE MAMMAL OBSERVERS

Walrus reaction	Number of encounters	Number of individuals	Mean (SE) individuals/ encounter	Mean (SE [a]) meters from vessel
None	955	7,310	8 (1.7)	710 (24)
Attention	285	1,419	5 (1.9)	446 (29)
Approach	47	89	2 (0.3)	395 (50)
Avoidance	435	940	2 (0.1)	440 (26)
Flee	47	170	4 (0.9)	382 (56)
Unknown	32	1,197	37 (29.0)	558 (78)
Total or overall mean	1,801	11,125	6 (1.1)	582 (15)

[a] Standard error.

Nonetheless, the data do provide insight as to the short-term responses of walruses to vessel encounters.

Descriptive statistics were estimated based on both the number of encounters and number of individuals involved (Table 3). For both metrics (encounters and individuals), the most prevalent behavioral response was no response (53 and 66 percent, respectively) (Table 3); followed by attention or avoidance (8 and 24 percent combined, respectively), with the fewest animals exhibiting a flight response (3 and 2 percent, respectively). Based on these observation data, it is likely that relatively few animals were encountered during these operations each year (less than 2 percent of a minimum population of 129,000) and that of those encountered, walrus responses to vessel encounters were minimal. The most vigorous observed reactions of walruses to the vessels was a flight response, which is within their normal range of activity. Walruses vigorously flee predators such as killer whales and polar bears. However, unlike a passing ship, those encounters are likely to last for some time causing more stress as predators often spend time pursuing, testing, and manipulating potential prey before initiating an attack. As most observed animals exhibited minimal responses to Industry activity and relatively few animals exhibited a flight response we do not anticipate that interactions would impact survival or reproduction of walrus at the individual or population level.

We do not know the length of time or distance traveled by walruses that approached, avoided, or fled from the vessels before resuming normal activities. However, it is likely that those responses lasted less than 30 minutes and covered less than 805 m (0.5 mi).

MMO data collected in 2012 for 48 walrus observations indicate that walrus encounter times ranged from less than 1 to 31 minutes, averaging 3 minutes. The shortest duration encounters usually involved single animals that did not react to the vessel or dove and were not seen again. The longest duration encounter occurred when a vessel was moving through broken ice and encountered several groups of walruses in rapid succession. These data indicate that most encounters were of single animals where behavioral response times were limited to short durations.

During 2006–2011, observations from Industry activities in the Beaufort Sea indicate that, in most cases, walruses appeared undisturbed by human interactions. Walrus have hauled out on the armor of offshore drilling islands or coastal facilities and exhibited mild reactions (raise head and observe) to helicopter noise. There is no evidence that there were any physical effects or impacts to these individual walruses based on the observed interactions with Industry. A more detailed account of Industry-generated noise effects can be found in the *Potential Effects of Oil and Gas Industry Activities on Pacific Walruses and Polar Bears, Pacific Walrus, 1. Disturbance from Noise* section.

2. Cumulative Impacts

The Status of the Pacific Walrus (*Odobenus rosmarus divergens*) (Garlich-Miller *et al.* 2011) prepared by the Service (*http://alaska.fws.gov/fisheries/mmm/walrus/pdf/review_2011.pdf*) and Jay *et al.* (2012) describe natural and human factors that could contribute to cumulative effects that could impact walruses into the future. Factors other than oil and gas activities that could affect walruses within the 5-year period of these proposed regulations include climate change, harvest, and increased shipping, all of which are discussed below.

A. Climate Change

Analysis of long-term environmental data sets indicates that substantial reductions in both the extent and thickness of the Arctic sea ice cover have occurred over the past 40 years. The record minimum sea ice extent occurred in September 2012 with 2002, 2005, 2007, 2009, 2010, and 2011 ice extent close to the record low and substantially below the 20-year mean (NSIDC 2012). Walruses rely on suitable sea ice as a substrate for resting between foraging bouts, calving, molting, isolation from predators, and protection from storm events. The juxtaposition of sea ice over shallow shelf habitat suitable for benthic feeding is important to walruses. Recent trends in the Chukchi Sea have resulted in seasonal sea ice retreat off the continental shelf and over deep Arctic Ocean waters, presenting significant adaptive challenges to walruses in the region. Observed impacts to walruses as a result of diminishing sea ice cover include: A northward shift in range and declines in Bering Sea haulout use; an increase in the speed of the spring migration; earlier formation and longer duration of Chukchi Sea coastal haulouts; and increased vulnerability to predation and disturbance while at Chukchi Sea coastal haulouts, resulting in increased mortality rates among younger animals. Postulated effects include: Premature separation of females and dependent calves; reductions in the prey base;

declines in animal health and condition; increased interactions with development activities; population decline; and the potential for the harvest to become unsustainable. Future studies investigating walrus distributions, population status and trends, harvest sustainability, and habitat use patterns in the Chukchi Sea are important for responding to walrus conservation and management issues associated with environmental and habitat changes.

B. Harvest

Walruses have an intrinsically low rate of reproduction and are thus limited in their capacity to respond to exploitation. In the late 19th century, American whalers intensively harvested walruses in the northern Bering and southern Chukchi seas. Between 1869 and 1879, catches averaged more than 10,000 per year, with many more animals struck and lost. The population was substantially depleted by the end of the century, and the commercial hunting industry collapsed in the early 1900s. Since 1930, the combined walrus harvests of the United States and Russian Federation have ranged from 2,300 to 9,500 animals per year. Notable harvest peaks occurred during 1930 to 1960 (4,500 to 9,500 per year) and in the 1980s (7,000 to 16,000 per year). Commercial hunting continued in the Russian Federation until 1991, under a quota system of up to 3,000 animals per year. Since 1992, the harvest of walruses has been limited to the subsistence catch of coastal communities in Alaska and Chukotka. Harvest levels through the 1990s ranged from approximately 4,100 to 7,600 animals per year and 3,800 to 6,800 in the 2000s. As described in detail earlier in the Subsistence Use and Harvest Patterns of Pacific Walruses and Polar Bears section, recent harvest levels are lower than historic highs. The Service is currently working to assess population size and sustainable harvest rates.

C. Commercial Fishing and Marine Vessel Traffic

Available data suggest that walruses rarely interact with commercial fishing and marine vessel traffic. Walruses are normally closely associated with sea ice, which limits their interactions with fishing vessels and barge traffic. However, as previously noted, the temporal and seasonal extent of the sea ice is projected to diminish in the future. Commercial shipping through the Northwest Passage and Northern Sea Route may increase in coming decades. Commercial fishing opportunities may also expand should the sea ice continue to diminish. The result could be increased temporal and spatial overlap between fishing and shipping operations and walrus habitat use and increased interactions between walruses and marine vessels.

Hunting pressure, declining sea ice due to climate change, and the expansion of commercial activities into walrus habitat all have potential to impact walruses. Combined, these factors are expected to present significant challenges to future walrus conservation and management efforts. The success of future management efforts will rely in part on continued investments in research investigating population status and trends and habitat use patterns. Research by the U.S. Geological Survey (USGS) and the Chukotka Branch of the Pacific Fisheries Research Center examining walrus habitat use patterns in the Chukchi Sea is beginning to provide useable results (Jay 2012, pers. comm.). In addition, the Service is beginning to develop and test some methods for a genetic mark-recapture project to estimate walrus population size and trends and demographic parameters. The effectiveness of various mitigation measures and management actions will also need to be continually evaluated through monitoring programs and adjusted as necessary. The decline in sea ice is of particular concern, and will be considered in the evaluation of future proposed activities and as more information on walrus population status becomes available.

Evaluation of Documented Impacts to Pacific Walrus

The proposed projects, including the most extensive activities, such as seismic surveys and exploratory drilling operations, identified by the petitioners are likely to result in some incremental cumulative effects to walruses through the potential exclusion or avoidance of walruses from feeding or resting areas and the disruption of associated biological behaviors. However, based on the habitat use patterns of walruses in the Chukchi Sea and their close association with seasonal pack ice, relatively small numbers of walruses are likely to be encountered in the open sea conditions where most of the proposed activities are expected to occur, with the exception of the Hanna Shoal area, where we can reliably predict that many walruses will remain even after the ice melts. Industry activities that occur near coastal haulouts, near Hanna Shoal, or intersect travel corridors between haulouts and Hanna Shoal would require close monitoring and additional special mitigation procedures, such as seasonal exclusions (e.g., July to September) of Industry activities from Hanna Shoal and routing vessel traffic and aircraft flights around walrus travel corridors. Required monitoring and mitigation measures, designed to minimize interactions between authorized projects and concentrations of resting or feeding walruses, are expected to limit interactions and trigger real time consultations if needed. Therefore, we conclude that the proposed exploration activities, especially as mitigated through the regulatory process, are not at this time expected to add significantly to the cumulative impacts on the walrus population from past, present, and future activities that are reasonably likely to occur within the 5-year period covered by these proposed regulations.

Polar Bear

Information regarding interactions between oil and gas activities and polar bears in the Chukchi and Beaufort seas has been collected for several decades. This analysis concentrates on the Chukchi Sea information collected through regulatory requirements and is useful in predicting how polar bears are likely to be affected by the proposed activities.

To date, most impacts to polar bears from Industry operations in the Chukchi Sea have been temporary disturbance events, some of which have led to deterrence events. Monitoring efforts by Industry required under previous regulations for the incidental take of polar bears documented various types of interactions between polar bears and Industry.

1. Reported Observations

From 1989 to 1991, Shell Western E&P conducted drilling operations in the Chukchi Sea. A total of 110 polar bears were recorded from aerial surveys and from support and ice management vessels during the 3 years. In 1989, 18 bears were sighted in the pack ice during the monitoring programs associated with the drilling program. In 1990, a total of 25 polar bears were observed on the pack ice in the Chukchi Sea between June 29 and August 11, 1990. Seventeen bears were encountered by the support vessel, *Robert LeMeur,* during an ice reconnaissance survey before drilling began at the prospects. During drilling operations, four bears were observed near (<9 km or 5.5 mi) active prospects, and the remainder were considerably beyond the drilling operation (15 to 40 km or 9.3 to 24.8 mi). These bears responded to the drilling or icebreaking operations by approaching (two bears), watching (nine bears), slowly moving away (seven

bears), or ignoring (five bears) the activities; response was not evaluated for two bears. During the 1991 drilling program, 64 polar bears were observed on the pack ice, and one was observed swimming south of the ice edge. The researchers of the 1990 monitoring program for the Shell exploration concluded that: (1) Polar bear distributions were closely linked to the pack ice; (2) the pack ice was near the active prospects for a brief time; and (3) the ice passing near active prospects contained few animals. These data were collected when sea ice in the region was more prevalent than today, and we anticipate that current and future operations will observe fewer bears; however, we expect that behaviorally the bears observed will react similarly.

Between 2006 and 2011, 16 offshore projects were issued incidental take authority for polar bears: Seven seismic surveys; four shallow hazards and site clearance surveys; and five environmental studies, including ice observation flights and onshore and offshore environmental baseline surveys. Observers associated with these 16 projects documented 62 individual bears in 47 different observations. These observations and bear responses are discussed below.

The majority of the bears were observed on land (50 percent; 31 of 62 polar bears). Twenty-one bears (34 percent) were recorded on the ice, mainly in unconsolidated ice on ice floes, and 10 bears (16 percent) were observed swimming in the water. Fifty-seven percent of the polar bears (35 of 62 bears) were observed from vessels, while 35 percent (22 of 62 bears) were sighted from aerial surveys and 8 percent (5 of 62 bears) were observed from the ground.

Of the 62 polar bears documented, 32 percent (20 of 62 bears) of the observations were recorded as Level B harassment takes, where the bears exhibited short-term, temporary reactions to the conveyance, vessel, plane, or vehicle, such as moving away from the conveyance. No polar bears were intentionally deterred. Sixty-five percent of the bears (40 of 62 bears) exhibited no behavioral reactions to the conveyance, while the reactions of 3 percent of the bears (2 of 62 bears) were unknown (not observed or not recorded).

Most polar bears were observed during secondary or support activities, such as aerial surveys or transiting between project areas. These activities were associated with a primary project, such as a seismic operation. No polar bears were observed during active seismic operations.

Additionally, other activities have occurred in the Chukchi Sea region that have resulted in reports of polar bear sightings to the Service. Five polar bear observations (11 individuals) were recorded during the University of Texas at Austin's marine geophysical survey performed by the U.S. Coast Guard (USCG) Cutter *Healy* in 2006. All bears were observed on the ice between July 21 and August 19. The closest point of approach distances of bears from the *Healy* ranged from 780 m to 2.5 km (853 yards [yd] to 1.5 mi). One bear was observed approximately 575 m (628.8 yd) from a helicopter conducting ice reconnaissance. Four of the groups exhibited possible reactions to the helicopter or vessel, suggesting that disturbances from offshore vessel operations when they occur are short-term and limited to minor changes in behavior.

In 2007, a female bear and her cub were observed approximately 100 meters (110 yd) from a drill pad at the Intrepid exploration drilling site, located on the Chukchi Sea coast south of Barrow. The bear did not appear concerned about the activity and eventually the female changed her direction of movement and left the area.

Additional information exists on Industry and polar bear encounters from the Beaufort Sea (76 FR 47010; August 3, 2011). Documented impacts on polar bears by Industry in the Beaufort Sea during the past 30 years appear minimal. Polar bears spend time on land, coming ashore to feed, den, or move to other areas. Recent studies suggest that bears are spending more time on land than they have in the past in response to changing ice conditions.

Annual monitoring reports from Industry activities and community observations in the Beaufort Sea indicate that fall storms, combined with reduced sea ice, force bears to concentrate along the coastline (between August to October) where bears remain until the ice returns. For this reason, polar bears have been encountered at or near most coastal and offshore production facilities, or along the roads and causeways that link these facilities to the mainland. During those periods, the likelihood of interactions between polar bears and Industry activities increases. During 2011, in the Beaufort Sea region, companies observed 237 polar bears in 140 sightings on land and in the nearshore marine environment. Of the 237 bears observed in 2011, 44 bears (19 percent of the total observed) were recorded as Level B takes as they were deterred (hazed) away from facilities and people. Industry monitoring reports indicate that most bears are observed within a mile of the coastline. Similarly, we expect intermittent periods with high concentrations of bears to occur along the Chukchi Sea coastline as 50 percent of the bear encounters between 2006 and 2011 were documented in the onshore habitat.

While no lethal take of polar bears has occurred in the Chukchi Sea, a lethal take associated with Industry occurred at the Beaufort Sea Endicott facility in 2011, when a security guard mistakenly used a crackershell in place of a bean bag deterrent round and killed the bear during a deterrence action. Prior to issuance of regulations, lethal takes by Industry were rare. Since 1968, there have been two documented cases, one in the winter of 1968–1969, and one in 1990, of lethal take of polar bears associated with oil and gas activities; in both of these instances, the lethal take was reported to be in defense of human life.

2. Cumulative Impacts

Cumulative impacts of oil and gas activities are assessed, in part, through the information we gain in monitoring reports, which are a required component of each operator's LOA under the authorizations. We have over 20 years of monitoring reports, and the information on all incidental and intentional polar bear interactions provides a comprehensive history of past effects of Industry activities on polar bears. We use the information on previous impacts to evaluate potential impacts from existing and future Industry activities and facilities. Additional information used in our cumulative effects assessment includes: Service, USGS, and other polar bear research and data; traditional knowledge of polar bear habitat use; anecdotal observations; and professional judgment.

While the number of LOAs being requested does not represent the potential for direct impact to polar bears, they do offer an index as to the effort and type of Industry activity that is currently being conducted. LOA trend data also help the Service track progress on various projects as they move through the stages of oil field development. An increase in Industry projects across the Arctic has the ability to increase bear-human interactions.

The Polar Bear Status Review describes cumulative effects of oil and gas development on polar bears in Alaska (see pages 175 to 181 of the status review). This document can be found at: *http://alaska.fws.gov/fisheries/mmm/polarbear/issues.htm*. The status review concentrated on oil and gas

development in the Beaufort Sea because of the established presence of Industry in the Beaufort Sea. The Service believes the conclusions of the status review would apply to Industry activities in the Chukchi Sea during the 5-year timeframe of the proposed regulations as the exploratory activities in the Beaufort Sea are similar to those being conducted and proposed in the Chukchi Sea.

In addition, in 2003, the National Research Council published a description of the cumulative effects that oil and gas development would have on polar bears and seals in Alaska. They concluded that:

(1) ''Industrial activity in the marine waters of the Beaufort Sea has been limited and sporadic and likely has not caused serious cumulative effects to ringed seals or polar bears.'' Industry activity in the Chukchi Sea during the timeframe of the proposed regulations would be limited to exploration activities, such as seismic, drilling, and support activities.

(2) ''Careful mitigation can help to reduce the effects of oil and gas development and their accumulation, especially if there is no major oil spill.'' The Service would use mitigation measures similar to those established in the Beaufort Sea to limit impacts of polar bears in the Chukchi Sea. ''However, the effects of full scale industrial development off the North Slope would accumulate through the displacement of polar bears and ringed seals from their habitats, increased mortality, and decreased reproductive success.'' Full-scale development of this nature would not occur during the prescribed timeframe of the proposed regulations in the Chukchi Sea.

(3) ''A major Beaufort Sea oil spill would have major effects on polar bears and ringed seals.'' One of the concerns for future oil and gas development is for those activities that occur in the marine environment due to the chance for oil spills to impact polar bears or their habitats. No production activities are planned for the Chukchi Sea during the duration of these proposed regulations. Oil spills as a result of exploratory drilling activity could occur in the Chukchi Sea; however, the probability of a large spill is expected to be minimal.

(4) ''Climatic warming at predicted rates in the Beaufort and Chukchi seas region is likely to have serious consequences for ringed seals and polar bears, and those effects will accumulate with the effects of oil and gas activities in the region.'' The Service is currently working to minimize the impacts of climate change on its trust species. The implementation of incidental take regulations is one effective way to address and minimize impacts to polar bears.

(5) ''Unless studies to address the potential accumulation of effects on North Slope polar bears or ringed seals are designed, funded, and conducted over long periods of time, it will be impossible to verify whether such effects occur, to measure them, or to explain their causes.'' Current studies in the Chukchi Sea are examining polar bear habitat use and distribution, reproduction, and survival relative to a changing sea ice environment.

Climate change, predominantly through sea ice decline, will alter polar bear habitat because seasonal changes, such as extended duration of open water, will preclude sea ice habitat use by restricting some bears to coastal areas. Biological effects on polar bears are expected to include increased movements or travel, changes in bear distribution throughout their range, changes to the access and allocation of denning areas, and increased open water swimming. Demographic effects that may be influenced by climate change include changes in prey availability to polar bears, a potential reduction in the access to prey, and changes in seal productivity.

In the Chukchi Sea, it is expected that the reduction of sea ice extent will affect the timing of polar bear seasonal movements between the coastal regions and the pack ice. If the sea ice continues to recede as predicted, the Service anticipates that there may be an increased use of terrestrial habitat in the fall period by polar bears on the western coast of Alaska and an increased use of terrestrial habitat by denning bears in the same area, which may expose bears to Industry activity. Mitigation measures would be effective in minimizing any additional effects attributed to seasonal shifts in distributions of denning polar bears during the 5-year timeframe of the proposed regulations. It is likely that, due to potential seasonal changes in abundance and distribution of polar bears during the fall, more frequent encounters may occur and that Industry may have to implement mitigation measures more often, for example, increasing polar bear deterrence events. As with the Beaufort Sea, the challenge in the Chukchi Sea will be predicting changes in ice habitat and coastal habitats in relation to changes in polar bear distribution and use of habitat.

A detailed description of climate change and its potential effects on polar bears by the Service can be found in the documents supporting the decision to list the polar bear as a threatened species under the ESA at: *http://alaska.fws.gov/fisheries/mmm/polarbear/esa.htm#listing.* Additional detailed information by the USGS regarding the status of the SBS stock in relation to decreasing sea ice due to increasing temperatures in the Arctic, projections of habitat and populations, and forecasts of rangewide status can be found at: *http://www.usgs.gov/newsroom/special/polar_bears.*

The proposed activities (drilling operations, seismic surveys, and support operations) identified by the petitioners are likely to result in some incremental cumulative effects to polar bears during the 5-year timeframe of the proposed regulations. This could occur through the potential exclusion or avoidance of polar bears from feeding, resting, or denning areas and disruption of associated biological behaviors. However, the level of cumulative effects, including those of climate change, during the 5-year timeframe of the proposed regulations would result in negligible effects on the bear population.

Evaluation of Documented Impacts on Polar Bears

Monitoring results from Industry, analyzed by the Service, indicate that little to no short-term impacts on polar bears have resulted from oil and gas activities. We evaluated both subtle and acute impacts likely to occur from industrial activity, and we determined that all direct and indirect effects, including cumulative effects, of industrial activities have not adversely affected the species through effects on rates of recruitment or survival. Based on past monitoring reports, the level of interaction between Industry and polar bears has been minimal. Additional information, such as subsistence harvest levels and incidental observations of polar bears near shore, provides evidence that these populations have not been adversely affected. For the 5-year timeframe of the proposed regulations, we anticipate the level of oil and gas Industry interactions with polar bears would likely increase in response to more bears on shore and more activity along the coast; however we do not anticipate significant impacts on bears to occur.

Summary of Take Estimates for Pacific Walruses and Polar Bears

Small Numbers Determination

As discussed in the ''Biological Information'' section, the dynamic nature of sea ice habitats influences seasonal and annual distribution and abundance of polar bears and walruses

in the specified geographical region (eastern Chukchi Sea). The following analysis demonstrates that, if we adopt the regulations as proposed, only small numbers of walruses and polar bears are likely to be taken incidental to the described Industry activities. This analysis is based upon known distribution patterns and habitat use of walruses and polar bears.

Pacific Walrus

The Service has based its small numbers determination on an examination of the best available information concerning the range of this species and its habitat use patterns (see Biological Information for additional details); information regarding the siting, timing, scope, and footprint of proposed activities (see Description of Activities for additional details); information regarding monitoring requirements and mitigation measures designed to avoid and mitigate incidental take of walruses during authorized activities (see Section 18.118 Mitigation, Monitoring, and Reporting Requirements in the Proposed Regulation Promulgation section for additional details); and the 193 lease sale stipulations by the Mineral Management Service (now BOEM in February 2008 regarding protection of biological resources. The objective of this analysis is to determine whether or not the proposed Industry activities described in the ITR petition are likely to impact small numbers of individual animals.

The specified geographic region covered by this request includes the waters (State of Alaska and OCS) and bed of the Chukchi Sea, as well as terrestrial habitat up to 40 km (25 mi) inland (Figure 1). The marine environment and terrestrial coastal haulouts are considered walrus habitat for this analysis. The petition specifies that offshore exploration activities would be limited to the July 1 to November 30 open-water season to avoid seasonal pack ice. Furthermore, the petition specifies that onshore or near shore activities would not occur in the vicinity of coastal walrus haulouts. Oil and gas activities anticipated and considered in our analysis include: (1) Offshore exploration drilling; (2) offshore 3D and 2D seismic surveys; (3) shallow hazards surveys; (4) other geophysical surveys, such as ice gouge, strudel scour, and bathymetry surveys; (5) geotechnical surveys; (6) onshore and offshore environmental studies; and (7) associated support activities for the aforementioned activities. A full description of these activities can be found in this document in the Description of Activities section.

Distribution of Walruses During the Open Water Season

During the July to November open-water season, the Pacific walrus population ranges well beyond the boundaries of the specified geographic region (Figure 1). Based on population surveys, haulout monitoring studies, and satellite tracking studies, the population generally occurs in three areas: The majority of males remain in the Bering Sea outside of the specified geographic region, and juveniles, adult females, and calves are distributed both in the western Chukchi Sea in the vicinity of Wrangel and Herald Islands in Russian waters, and another subset of females and young are in the eastern Chukchi Sea, which includes the specified geographic region, with high densities in the Hanna Shoal area (Fay 1982; Jay *et al.* 2012; Jay *et al.* pers. comm.). Therefore, the animals in the northeast Chukchi Sea that could potentially be influenced by Industry activities represent only a portion of the overall population.

Though the specified geographic region of these regulations (Figure 1) includes areas of potential walrus habitat, the actual area of Industry activities occurring within this region would be relatively small. The entire Chukchi Sea is approximately 600,000 km^2 (231,660 mi^2). The area of the specified geographic region (Figure 1) is approximately 240,000 km^2 (92,664 mi^2), and the area covered by Lease Sale 193 offered in 2006 was approximately 138,000 km^2 (53,282 mi^2), with currently active leases covering approximately 11,163 km^2 (4,310 mi^2). The Chukchi Sea is only a portion of the overall Pacific walrus range, and though most of it contains suitable walrus habitat, some portions are not suitable (e.g., where water depths exceed 100 m). However, if we assume that the entire 600,000 km^2 (231,660 mi^2) of the Chukchi Sea is utilized by walruses, then the specified geographic region (Figure 1) covers approximately 40 percent, Lease Sale 193 area covers approximately 23 percent, and current active leases cover approximately 2 percent of the Chukchi Sea, respectively. In any single year, and over the 5-year period of the proposed regulations, Industry activity would only occur on a portion of the active lease area. For example, AOGA indicates in its petition that one seismic survey would occur each year during the 5-year period of the proposed regulations. AOGA further estimates that a typical marine 3D seismic survey is expected to ensonify approximately 1680 km^2 (649 mi^2) of sea floor. This equates to roughly 15 percent of the active lease area, 0.7 percent of the specified geographic region (Figure 1), and 0.28 percent of the Chukchi Sea per year, respectively.

We anticipate that Industry activities would impact a relatively small proportion of the potential walrus habitat in the specified geographical region at any given time, whether or not the habitat is occupied by walruses. The narrow scope and footprint of activities that would occur in any given year limits the potential for Industry to interact with the subset of the walruses that may be distributed in the eastern Chukchi Sea during the open water season.

Habitat Use Patterns in the Specified Geographic Region

The subset of the overall walrus population residing in the eastern Chukchi Sea can be widespread and abundant depending on ice conditions and distribution. Walruses typically migrate into the region in early June along lead systems that form along the coast. Walruses summering in the eastern Chukchi Sea exhibit strong selection for sea ice habitats. Previous aerial survey efforts in the area found that 80 to 96 percent of walruses were closely associated with sea ice habitats, and that the number of walruses observed in open water habitats decreased significantly with distance from the pack ice (Gilbert 1999).

The distribution of the subset of the walrus population that occurs in the specified geographic region (Figure 1) each year is primarily influenced by the distribution and extent of seasonal pack ice, which is expected to vary substantially both seasonally and annually. In June and July, scattered groups of walruses are typically associated with loose pack ice habitats between Icy Cape and Point Barrow (Fay 1982; Gilbert et al. 1992). Recent walrus telemetry studies investigating foraging patterns suggest that many walruses focus foraging efforts near Hanna Shoal in the eastern Chukchi Sea, northwest of Point Barrow (Jay *et al.* pers. comm.). Recent walrus telemetry studies investigating foraging patterns suggest that many walruses focus foraging efforts near Hanna Shoal in the eastern Chukchi Sea, northwest of Point Barrow (Jay *et al.* pers. comm.). In August and September, concentrations of animals tend to be in areas of unconsolidated pack ice, usually within 100 km (62 mi) of the leading edge of the ice pack (Gilbert 1999). Individual groups occupying unconsolidated pack ice

typically range from fewer than 10 to more than 1,000 animals (Gilbert 1999; Ray et al. 2006). In August and September, the edge of the pack ice generally retreats north to approximately 71° N latitude (the majority of active lease blocks are between 71 and 72° N), but in light ice years can retreat north of the continental shelf (Douglas 2010), about 73 to 75° N. Sea ice normally reaches its minimum (northern) extent in September, and ice begins to reform rapidly in October and November. Walruses typically migrate out of the eastern Chukchi Sea in October in advance of the developing sea ice (Fay 1982; Jay et al. pers. comm.).

Sea ice has historically persisted in the Chukchi Sea region through the entire year although the extent of sea ice cover over continental shelf areas during the summer and fall has been highly variable. Over the past decade, sea ice has begun to retreat beyond shallow continental shelf waters in late summer. For example, in 5 of the last 8 years (2004 to 2012), the continental shelf waters of the eastern Chukchi Sea have become ice free in late summer, for a period ranging from a few weeks up to 2 months. Climate-based models suggest that the observed trend of rapid ice loss from continental shelf regions of the Chukchi Sea is expected to persist, and perhaps accelerate in the future (Douglas 2010).

Based on telemetry studies, during periods of minimal or no-ice cover over continental shelf regions of the eastern Chukchi Sea, we expect that most walruses in that subset of the population will either migrate out of the region beyond the scope of Industry activities in pursuit of more favorable ice habitats (i.e., the western Chukchi Sea), or relocate to coastal haulouts where they can rest on land between foraging excursions (Jay *et al.* pers. comm.*)*. Walruses occupying coastal haulouts along the Chukchi Sea coast tend to aggregate in large dense groups, which are vulnerable to disturbances that can result in trampling injuries and mortalities (Garlich-Miller *et al.* 2011). The AOGA petition specifically notes that Industry activities would not occur near coastal walrus haulouts. In addition, OCS Lease Sale Area 193 excluded a 40-km (25-mi) coastal buffer zone from the lease area to protect sensitive coastal habitats and mitigate potential interactions with subsistence hunting activities along the coast. We expect that a similar coastal buffer zone would be included in future lease sales in the region. Moreover, required mitigation measures for authorized activities pursuant to the proposed ITRs expressly forbid operating near coastal walrus haulouts (see mitigation measures below). For example, all support vessels and aircraft would be required to maintain a 1-mile buffer area around groups of walruses hauled out on land. Because of these limitations on authorized activities near coastal walrus haulouts, we do not expect that any takes would occur at coastal haulouts from Industry activities.

We expect that the density of walruses in offshore, open water environments, where most exploration activities are expected to occur, will be relatively low. Based on previous aerial survey efforts in the region (Gilbert 1999) and satellite tracking of walrus distributions and movement patterns in the region (Jay *et al.* pers. comm.), we expect that most walruses in the subset of the overall population in the specified geographic region will be closely associated with broken pack ice during the open water season. This would limit the exposure of walruses to seismic surveys and exploratory drilling operations, where we expect them to avoid these areas of broken ice cover in order to avoid damaging their equipment. Furthermore, during the open water season, walruses could also occupy coastal haulouts when ice concentrations are low in offshore regions.

Telemetry studies investigating the foraging behavior of walruses at coastal haulouts indicate that most animals forage within 30 to 60 km (19 to 37 mi) of coastal haulouts (Fischbach et al. 2010), primarily within the 40-km (25-mi) coastal buffer, which is closed to seismic surveys and drilling. However, some animals appear to make long foraging excursions from coastal haulouts to offshore feeding areas near Hanna Shoal (about 180 km, 112 mi from Point Lay, AK) (Jay et al. pers. comm.). This movement pattern is also apparent based on walrus vocalizations recorded at buoys placed throughout the area in 2010 (Delarue et al. 2012). Given this observed behavior, we expect that the density of walruses in the Hanna Shoal region could be relatively high compared with other offshore regions, even during periods of minimal sea ice cover. Most of the lease sale blocks in the Hanna Shoal region are currently not leased. Based on the significant biological value of Hanna Shoal to walrus foraging, and the likelihood of encountering large groups of foraging walruses in that area through September, we do not anticipate issuing any LOAs for seismic or drilling activity in the Hanna Shoal region during the 5-year span of these proposed regulations. In recognition of the biological significance of Hanna Shoal, BOEM has funded an environmental study of the area to better understand the resources available there. The BOEM study will be used, in part, by BOEM to determine if it would be appropriate to include or exclude areas within Hanna Shoal in future lease sales.

Authorized Industry activities occurring near Hanna Shoal could potentially encounter groups of walruses moving from other areas, including coastal haulouts. The timing and movement routes between coastal haulouts and offshore foraging areas are not known, and are likely to vary from year to year. Although it is difficult to predict where groups of moving or feeding walruses are likely to be encountered in offshore open water environments, monitoring requirements and adaptive mitigation measures are expected to limit interactions with groups of walruses encountered in open water habitats. For example, all authorized support vessels must employ MMOs to monitor for the presence of walruses and other marine mammals. Vessel operators are required to take every precaution to avoid interactions with concentrations of feeding or moving walruses, and must maintain a minimum 805-m (0.5-mi) operational exclusion zone around walrus groups encountered in open water. Although monitoring requirements and adaptive mitigation measures are not expected to completely eliminate interactions with walruses in open water habitats, they are expected to limit takes to relatively small numbers of animals.

In summary, based upon scientific knowledge of the habitat use patterns of walruses in the specified region, we expect the number of animals using pelagic waters during the operating season to be small relative to the number of animals using habitats preferred by and more favorable to walruses (i.e., pack ice habitats and/or coastal haulouts and near-shore environments). Industry would not be operating in areas with extensive ice cover due to their own operating limitations, and therefore Industry activities would avoid preferred walrus habitats. Further regulatory restrictions, such as stipulations on activities near haulouts, would insure that Industry activities would not occur in or near those preferred walrus habitat areas. Moreover, we do not anticipate issuing any LOAs for seismic and drilling activities in the Hanna Shoal area.

Most of the proposed oil and gas exploration activity is projected to occur in offshore areas under open water conditions where densities of walruses are expected to be low. Support vessels

and aircraft transiting through areas of broken ice habitat where densities of walruses may be higher would be required to employ monitoring and adaptive mitigation measures intended to reduce interactions with walruses. Accordingly, in consideration of the habitat characteristics where most exploration activities are expected to occur (open-water environments) and specific mitigation measures designed to reduce potential interactions with walruses and other marine mammals, we expect that interactions would be limited to relatively small numbers of animals compared to the number of walruses in the specified geographic region as well as the overall population.

The Use of Monitoring Requirements and Mitigation Measures

Holders of a LOA must use methods and conduct activities in a manner that minimizes adverse impacts on walruses to the greatest extent practicable. Monitoring programs are required to inform operators of the presence of marine mammals and sea ice. Adaptive management responses based on real-time monitoring information (described in these proposed regulations) would be used to avoid or minimize interactions with walruses. Adaptive management approaches, such as temporal or spatial limitations in response to the presence of walruses in a particular place or time, or in response to the occurrence of walruses engaged in a particularly sensitive activity, such as feeding, would be used to avoid or minimize interactions with walruses. A full description of the mitigation, monitoring, and reporting requirements associated with LOAs under these proposed regulations can be found in Section 18.118 Mitigation, Monitoring, and Reporting Requirements in the Proposed Regulation Promulgation section. Some of the mitigation measures expected to limit interactions with walruses would include:

1. Industry operations are not permitted in the geographic region until July 1. This condition is intended to allow walruses the opportunity to disperse from the confines of the spring lead system and minimize Industry interactions with subsistence walrus hunters.

2. Vessels must be staffed with MMOs to alert crew of the presence of walruses and initiate adaptive mitigation responses when walruses are encountered.

3. Vessels should take all practical measures (i.e., reduce speed, change course heading) to maintain a minimum 805-m (0.5-mi) operational exclusion zone around groups of 12 or more walruses encountered in the water. Vessels may not be operated in such a way as to separate members of a group of walruses.

4. Set back distances have been established between walruses and vessels to minimize impacts and limit disturbance, 805 m (0.5 mi) when walruses are observed on ice and in the water; 1,610 m (1 mi) when observed on land.

5. Set back distances have been established between walruses and aircraft to minimize impacts and limit disturbance. No fixed-wing aircraft may operate at an altitude lower than 457 m (1,500 ft) within 805 m of walrus groups observed on ice, or within 1,610 m (1 mi) of walrus groups observed on land. No rotary winged aircraft (helicopter) may operate at an altitude lower than 914 m (3,000 ft) elevation within a lateral distance of 1,610 m (1 mi) of walrus groups observed on land. These operating conditions are intended to avoid and mitigate the potential for walruses to be flushed from ice floes or land based haulouts.

6. Operators must maintain a minimum spacing of 24 km (15 mi) between all active seismic-source vessels and/or exploratory drilling operations to avoid significant synergistic or cumulative effects from multiple oil and gas exploration activities on foraging or migrating walruses.

7. Any offshore exploration activity expected to include the production of downward-directed, pulsed underwater sounds with sound source levels ≥160 dB re 1 μPa will be required to establish and monitor acoustic exclusion and disturbance zones.

8. Trained MMOs must establish acoustically verified exclusion zones for walruses surrounding seismic airgun arrays where the received level would be ≥ 180 dB re 1 μPa and ≥ 160 dB re 1 μPa in order to monitor incidental take.

9. Whenever 12 or more walruses are detected within the acoustically verified 160-dB re 1 μPa disturbance zone ahead of or perpendicular to the seismic vessel track, operators must immediately power down or shut down the seismic airgun array and/or other acoustic sources to ensure sound pressure levels at the shortest distance to the aggregation do not exceed 160-dB re 1 μPa, and operators cannot begin powering up the seismic airgun array until it can be established that there are no walrus aggregations within the 160-dB disturbance zone based upon ship course, direction to walruses, and distance from last sighting.

These proposed monitoring requirements and mitigation measures are not expected to completely eliminate the potential for walruses to be taken incidental to proposed Industry activities in the region; however, they are expected to significantly reduce the number of takes and the number of walruses affected. By substantially limiting the season of operation and by requiring buffer areas around groups of walruses on land, ice, and in open water areas, we conclude that mitigation measures would significantly reduce the number of walruses incidentally taken by Industry activities.

Pacific Walrus Small Number Conclusion

Based upon our review of the best scientific information available, we conclude that proposed Industry activities described in the AOGA petition would impact a relatively small number of walruses both within the specified geographical region and at the broader population scale. The information available includes the range, distribution, and habitat use patterns of Pacific walruses during the operating season, the relatively small footprint and scope of authorized projects both within the specified geographic region and on a broader scale within the known range of this species during the open water season, and consideration of monitoring requirements and adaptive mitigation measures intended to avoid and limit the number of takes to walruses encountered through the course of authorized activities.

Polar Bears

Distribution of Polar Bears During the Open Water Season

The number of polar bears occupying the specified geographical region during the open water exploration season, when the majority of Industry activities are anticipated to occur, is expected to be smaller than the number of animals distributed throughout their range. Polar bears range well beyond the boundaries of the proposed geographic region of the ITRs and the Chukchi Sea Lease Sale area. Even though they are naturally widely distributed throughout their range, a relatively large proportion of bears from the CS population utilize the western Chukchi Sea region of the Russian Federation during the open-water season. Concurrently, polar bears from the SBS population predominantly utilize the central Beaufort Sea region of the Alaskan and Canadian Arctic during this period. These areas are well outside of the geographic region of these

proposed regulations. Movement data and habitat use analysis of bears from the CS and SBS populations suggest that they utilize the ice habitat as a platform to survive, by feeding and resting. As the ice recedes, the majority of the bears ''move'' with it. A small portion of bears can be associated with the coast during the open-water season. In addition, open water is not selected habitat for polar bears and bears observed in the water likely try to move to a more stable habitat platform, such as sea ice or land.

As stated earlier, though the specified geographic region described for these proposed regulations (Figure 1) includes areas of potential polar bear habitat, the actual area of Industry activity occurring within this region would be relatively small. The entire Chukchi Sea is approximately 600,000 km² (231,660 mi²). The area of the specified geographic region (Figure 1) is approximately 240,000 km² (92,664 mi²), the lease sale 193 area offered for leases was approximately 138,000 km² (53,282 mi²) with active leases of approximately 11,163 km² (4,310 mi²). The Chukchi Sea is only a portion of the overall polar bear range and though most of it contains suitable polar bear habitat, some portions are not suitable. However, if we conservatively assume that the entire approximately 600,000 km² (231,660 mi²) of the Chukchi Sea is utilized by polar bears, then the specified geographic region (Figure 1) covers approximately 40 percent, the lease sale 193 area approximately 23 percent, and current active leases are approximately 2 percent of that area, respectively. In any single year, and over the 5-year period of the proposed regulations, Industry activity would occur only on a portion of the active lease area. Additionally, polar bear critical habitat encompasses 519,401 km² (200,541 mi²) of offshore and onshore habitat in the Chukchi Sea and Beaufort Sea regions. The area of individual marine activities is expected to comprise a small percentage of the lease area. Vessel operations would be operating in habitats where polar bear densities are expected to be lowest, that is, open water. Although it is impossible to predict with certainty the number of polar bears that might be present in the offshore environment of the lease sale area in a given year, or in a specific project area during the open water season, based on habitat characteristics where most exploration activities would occur (open-water environments) and based on scientific knowledge and observation of the species, only small numbers of polar bears are expected to contact Industry operations, and of those, only a small percentage will exhibit behavioral responses constituting take.

Likewise, the number of polar bears expected to be incidentally taken by Industry activities is a small proportion of the species' abundance. The estimate for Level B incidental take of polar bears is based on the past monitoring data from 2006 to 2011; the timing (open-water season) of the primary, off-shore Industry activities in the Chukchi Sea region; and the limited use of the pelagic environment by polar bears during the open water season. The estimated total Level B incidental take for polar bears is expected to be no more than 25 animals per year. This is a conservative estimate which takes into account that between 2006 to 2011, only 20 polar bears of the 62 polar bears documented by Industry exhibited behavioral responses equivalent to Level B harassment takes (3.3 Level B takes of bears/year). In addition, this number is less than 1 percent of the estimated combined populations of the CS and SBS polar bear stocks (approximately 2,000 and 1,500, respectively). This estimate reflects the low densities of polar bears occurring in the Alaska region of the Chukchi Sea during the open water period. The majority of interactions between polar bears and Industry are expected to occur near the pack ice edge habitat and in the terrestrial environment, where this estimate anticipates a potential increase of bears interacting with terrestrial facilities through the duration of the proposed regulatory period (2013 to 2018).

Habitat Use Patterns in the Specified Geographic Region

Within the specified geographic region, the number of polar bears utilizing open water habitats, where the primary activity (offshore exploration operations) would occur, is expected to be small relative to the number of animals utilizing pack ice habitats or coastal areas. Polar bears are capable of swimming long distances across open water (Pagano *et al.* 2012). However, polar bears remain closely associated with primarily sea ice (where food availability is high) during the open water season (Durner *et al.* 2004). A limited number of bears could also be found in coastal areas. We expect the number of polar bears using pelagic waters during proposed open water exploration activities to be very small relative to the number of animals exploiting more favorable habitats in the region (i.e., pack ice habitats and/or coastal haulouts and near shore environments).

In addition, a small portion of terrestrial habitat used by polar bears may be exposed to Industry activities. As detailed in the section, ''Description of Geographic Region,'' terrestrial habitat encompasses approximately 10,000 km² (3,861 mi²) of the NPR–A. Bears can use the terrestrial habitat to travel and possibly den and a smaller portion of this habitat situated along the coast could be potential polar bear denning habitat. However, the majority of coastal denning for the Chukchi Sea bears occurs along the Chukotka coast in the Russian Federation, outside of the geographic region. Hence, Industry activities operating on the Alaskan coast have the potential to impact only a small number of bears. Additionally, where terrestrial activities may occur in coastal areas of Alaska in polar bear denning habitat, specific mitigation measures would be required to minimize Industry impacts.

The Use of Monitoring Requirements and Mitigation Measures

Holders of an LOA must adopt monitoring requirements and mitigation measures designed to reduce potential impacts of their operations on polar bears. Restrictions on the season of operation (July to November) for marine activities are intended to limit operations to ice-free conditions when polar bear densities are expected to be low in the proposed area of Industry operation. Additional mitigation measures could also occur near areas important to polar bears, such as certain critical habitat. Specific aircraft or vessel traffic patterns would be implemented when appropriate to minimize potential impacts to animals. Monitoring programs are required to inform operators of the presence of marine mammals and sea ice incursions. Adaptive management responses based on real-time monitoring information (described in these proposed regulations) would be used to avoid or minimize interactions with polar bears. For example, in Industry activities in terrestrial environments where denning polar bears may be a factor, mitigation measures would require that den detection surveys be conducted and Industry will maintain at least a 1-mile distance from any known polar bear den. A full description of the required Industry mitigation, monitoring, and reporting requirements associated with an LOA can be found in 50 CFR 18.118. While these regulations describe a suite of general requirements, additional mitigation measures could be developed at the project level given site-specific parameters or techniques developed in the future that could be more

appropriate to minimize Industry impacts.

Polar Bear Small Number Conclusion

We anticipate a low number of polar bears at any given time in the areas the Service anticipates Industry operations to occur, and given the size of the operations and the mitigation factors anticipated, the likelihood of impacting individual animals is low. We anticipate that the type of take would be similar to that observed in 2006 to 2011, i.e., nonlethal, minor, short-term behavioral changes that would not cause a disruption in normal behavioral patterns of polar bears. In addition, these takes are unlikely to have cumulative effects from year to year as the response of bears would be short-lived, behavioral or physiological responses, and the same individuals are unlikely to be exposed in subsequent years. Overall, these takes (25 annually) are not expected to, or not likely to, result in adverse effects that would influence population-level reproduction, recruitment, or survival.

Small Number Summary and Conclusion

To summarize, relative to species abundance, only a small number of the Pacific walrus population and the Chukchi/Bering Sea and Southern Beaufort Sea polar bear populations would be impacted by the proposed Industry activities. This statement can be made with a high level of confidence because:

(1) Pacific walruses and polar bears are expected to remain closely associated with either sea ice or coastal zones, predominantly the Russian Federation coast, where food availability is high and not in open water where the proposed activity will occur.

(2) Vessel observations from 2006 to 2011 recorded encountering 11,125 walruses, which is a small percentage of the overall walrus population. Of this small percentage of walruses observed, only 2,448 individuals appeared to have exhibited mild forms of behavioral response, such as being attentive to the vessel. During the same 6-year period, 62 polar bears were observed, which is a small percentage of the overall Alaskan population. Of this small percentage of observed polar bears, only 20 individuals exhibited mild forms of behavioral response.

(3) The restrictive monitoring and mitigation measures that would be placed on Industry activity would further reduce the number of animals encountered and minimize any potential impacts to those individuals encountered.

(4) The continued predicted decline in sea ice extent as the result of climate change is anticipated to further reduce the number of polar bears and walruses occurring in the specified geographic area during Industry activities because neither species prefers using the open water environment. This would further reduce the potential for interactions with Industry activities during the open-water season.

In conclusion, given the spatial distribution, habitat requirements, and applicable data, the number of animals interacting with Industry activities would be small compared to the total Pacific walrus and the Chukchi and Southern Beaufort Sea polar bear populations. Moreover, not all interactions would result in a taking as defined under the MMPA, which will reduce the numbers even further.

Negligible Effects Determination

Based upon our review of the nature, scope, and timing of the proposed Industry activities and mitigation measures, and in consideration of the best available scientific information, it is our determination that the proposed activities would have a negligible impact on walruses and on polar bears. We considered multiple factors in our negligible effects determination.

The predicted impacts of proposed activities on walruses and polar bears would be nonlethal, temporary passive takes of animals. The documented impacts of previous similar Industry activities on walruses and polar bears, taking into consideration cumulative effects, provides direct information that the Industry activities analyzed for this proposed rule are likely to have minimal effects on individual polar bears and Pacific walruses. All anticipated effects would be short-term, temporary behavioral changes, such as avoiding the activity and/or moving away from the activity. Any minor displacement would not result in more than negligible impacts because habitats of similar value are not limited to the area of immediate activity and are abundantly available within the region. The Service does not anticipate that these impacts would cause disruptions in normal behavioral patterns of affected animals. The Service predicts the impacts of Industry activities on walruses and polar bears would be infrequent, sporadic, and of short duration. Additionally, impacts would involve passive forms of take and are not likely to adversely affect overall population reproduction, recruitment, or survival. The potential effects of Industry activities are discussed in detail in the section ''Potential Effects of Oil and Gas Industry Activities on Pacific Walruses and Polar Bears.''

A review of similar Industry activities and associated impacts in 2006 to 2011 in the Chukchi Sea, where the majority of the proposed activities will occur, help us predict the type of impacts and their effects that would likely occur during the timeframe of these proposed regulations. Vessel-based monitors reported 11,125 walrus sightings during Industry seismic activity from 2006 to 2011. Approximately 7,310 animals exhibited no response to the vessels while 2,448 of the walruses sighted exhibited some form of behavioral response to stimuli (auditory or visual) originating from the vessels, primarily exhibiting attentiveness, approach, avoidance, or fleeing. Again, other than a short-term change in behavior, no negative impacts were noted, and the numbers of animals demonstrating a change in behavior was small in comparison to those observed in the area.

During the same time, polar bears documented during Industry activities in the Chukchi Sea were observed on land, on ice, and in the water. Bears reacted to the human presence, whether the conveyance was marine, aerial, or ground-based, by distancing themselves from the conveyance. In addition, polar bear reactions recorded during activities suggested that 65 percent of the bears (45 of 62 individual bears) observed elicited no reaction at all to the human presence. Thirty-two percent of the bears exhibited temporary, minor changes in behavior.

Mitigation measures would limit potential effects of Industry activities. As described in the Small Numbers Determination, holders of an LOA must adopt monitoring requirements and mitigation measures designed to reduce potential impacts of their operations on walruses and polar bears. Seasonal restrictions, required monitoring programs to inform operators of the presence of marine mammals and sea ice incursions, den detection surveys for polar bears, and adaptive management responses based on real-time monitoring information (described in these proposed regulations) would all be used to avoid or minimize interactions with walruses and polar bears and therefore limit Industry effects on these animals. First, restricting Industry activities to the open water season (July to November) would insure that walruses reach preferred summering areas without interference and polar bears are able to exploit sea ice habitats in active lease sale areas. Second, MMOs on all

vessels would inform the bridge when animals are observed; identify their location and distance; and identify situations when seismic survey shutdowns, course changes, and speed reductions are needed to maintain specified separation distances designed to avoid take. Third, the data collected by MMOs about encounters would be used to refine mitigation measures, if needed. Fourth, standard operation procedures for aircraft (altitude requirements and lateral distance separation) are also designed to avoid disturbance of walruses and polar bears.

We conclude that any incidental take reasonably likely to occur as a result of carrying out any of the activities described under these proposed regulations would have no more than negligible impacts on walruses and polar bears in the Chukchi Sea region, and we do not expect any resulting disturbances to negatively impact the rates of recruitment or survival for the Pacific walrus and polar bear populations. As described in detail previously, we expect that only small numbers of Pacific walruses and polar bears would be exposed to Industry activities. We expect that individual Pacific walruses and polar bears that are exposed to Industry activity would experience only short-term, temporary, and minimal changes to their normal behavior. These proposed regulations would not authorize lethal take, and we do not anticipate any lethal take would occur.

Findings

We propose the following findings regarding this action:

Small Numbers

The Service finds that any incidental take reasonably likely to result from the effects of the proposed activities, as mitigated through this proposed regulatory process, would be limited to small numbers of walruses and polar bears relative to species abundance. In making this finding the Service developed a ''small numbers'' analysis based on: (a) The seasonal distributions and habitat use patterns of walruses and polar bears in the Chukchi Sea; (b) the timing, scale, and habitats associated with the proposed Industry activities and the limited potential area of impact in open water habitats, and (c) monitoring requirements and mitigation measures designed to limit interactions with, and impacts to, polar bears and walruses. We concluded that only a subset of the overall walrus population would occur in the specified geographic region and that a small proportion of that subset would encounter Industry operations. In addition, only a small proportion of the relevant stocks of polar bear and Pacific walruses will would likely be impacted by any individual project because: (1) The proportion of walruses and polar bears in the U.S. portion of the Chukchi Sea during the open water season is relatively small compared to numbers of walruses and polar bears found outside the region; (2) within the specified geographical region, only small numbers of walruses or polar bears will occur in the open water habitat where proposed marine Industry activities would occur; (3) within the specified geographical region, the scope of marine operations is a small percentage of the open water habitat in the region; (4) based on monitoring information, only a portion of the animals in the vicinity of the industrial activities are likely to be affected; and (5) the required monitoring requirements and mitigation measures described below would further reduce impacts.

The number of animals likely to be affected is small, because: (1) A small proportion of the Pacific walrus population or the Chukchi Sea and Southern Beaufort Sea polar bear populations will be present in the area of proposed Industry activities; (2) of that portion, a small percentage would come in contact with Industry activities; and (3) of those individuals that may come in contact with Industry activities, less than one-third are anticipated to exhibit a behavioral response that may rise to the level of harassment as defined by the MMPA.

Negligible Effects

The Service finds that any incidental take reasonably likely to result from the effects of oil and gas related exploration activities during the period of this proposed rule in the Chukchi Sea and adjacent western coast of Alaska would have no more than a negligible effect, if any, on Pacific walruses and polar bears. We make this finding based on the best scientific information available including: (1) The results of monitoring data from our previous regulations (19 years of monitoring and reporting data); (2) the review of the information generated by the listing of the polar bear as a threatened species and the designation of polar bear critical habitat; (3) the analysis of the listing of the Pacific walrus as a candidate species under the ESA, and the status of the population; (4) the biological and behavioral characteristics of the species, which is expected to limit the amount of interactions between walruses, polar bears, and Industry; (5) the nature of proposed oil and gas Industry activities; (6) the potential effects of Industry activities on the species, which would not impact the rates of recruitment and survival of polar bears and walruses in the Chukchi Sea Region; (7) the documented impacts of Industry activities on the species, where nonlethal, temporary, passive takes of animals occur, taking into consideration cumulative effects; (8) potential impacts of declining sea ice due to climate change, where both walruses and polar bears can potentially be redistributed to locations outside the areas of Industry activity due to their fidelity to sea ice; (9) mitigation measures that would minimize Industry impacts through adaptive management; and (10) other data provided by monitoring activities through the incidental take program in the Beaufort Sea (1993 to 2011) and in the Chukchi Sea (1989 to 1996 and 2006 to 2011).

In making these findings, we considered the following:

(1) The distribution of the species (through 10 years of aerial surveys and studies of feeding ecology, and analysis of pack ice position and Pacific walrus and polar bear distribution);

(2) The biological characteristics of the species (through harvest data, biopsy information, and radio telemetry data);

(3) The nature of oil and gas Industry activities;

(4) The potential effects of Industry activities and potential oil spills on the species;

(5) The probability of oil spills occurring;

(6) The documented impacts of Industry activities on the species taking into consideration cumulative effects;

(7) The potential impacts of climate change, where both walruses and polar bears can potentially be displaced from preferred habitat;

(8) Mitigation measures designed to minimize Industry impacts through adaptive management; and

(9) Other data provided by Industry monitoring programs in the Beaufort and Chukchi seas.

We also considered the specific Congressional direction in balancing the potential for a significant impact with the likelihood of that event occurring. The specific Congressional direction that justifies balancing probabilities with impacts follows:

> If potential effects of a specified activity are conjectural or speculative, a finding of negligible impact may be appropriate. A finding of negligible impact may also be appropriate if the probability of occurrence is low but the potential effects may be significant. In this case, the probability of occurrence of impacts must be balanced with

the potential severity of harm to the species or stock when determining negligible impact. In applying this balancing test, the Service will thoroughly evaluate the risks involved and the potential impacts on marine mammal populations. Such a determination will be made based on the best available scientific information [53 FR 8474, March 15, 1988; 132 Cong. Rec. S 16305 (October 15, 1986)].

We reviewed the effects of the oil and gas Industry activities on polar bears and walruses, including impacts from noise, physical obstructions, human encounters, and oil spills. Based on our review of these potential impacts, past LOA monitoring reports, and the biology and natural history of walruses and polar bears, we conclude that any incidental take reasonably likely to or reasonably expected to occur as a result of proposed activities would have a negligible impact on polar bear and Pacific walrus populations. Furthermore, we do not expect these disturbances to affect the annual rates of recruitment or survival for the walrus and polar bear populations. These proposed regulations would not authorize lethal take, and we do not anticipate any lethal take would occur.

The probability of an exploratory oil spill that would cause significant impacts to walruses and polar bears appears to be extremely low during the 5-year timeframe of the proposed regulations. In the unlikely event of a catastrophic spill, we will take immediate action to minimize the impacts to these species and reconsider the appropriateness of authorizations for incidental taking through section 101(a)(5)(A) of the MMPA.

Our finding of ''negligible impact'' applies to incidental take associated with the petitioner's oil and gas exploration activities as mitigated through the regulatory process. The regulations establish monitoring and reporting requirements to evaluate the potential impacts of authorized activities, as well as mitigation measures designed to minimize interactions with and impacts to walruses and polar bears. We would evaluate each request for an LOA based on the specific activity and the specific geographic location where the proposed activities are projected to occur to ensure that the level of activity and potential take is consistent with our finding of negligible impact. Depending on the results of the evaluation, we may grant the authorization, add further operating restrictions, or deny the authorization.

Conditions are attached to each LOA. These conditions minimize interference with normal breeding, feeding, and possible migration patterns to ensure that the effects to the species remain negligible. A complete list and description of conditions attached to all LOAs is found at the end of this document in the proposed changes to 50 CFR 18.118. Examples of conditions include, but are not limited to: (1) These regulations would not authorize intentional taking of polar bear or walruses or lethal incidental take; (2) for the protection of pregnant polar bears during denning activities (den selection, birthing, and maturation of cubs) in known denning areas, Industry activities may be restricted in specific locations during specified times of the year; and (3) each activity covered by an LOA requires a site specific plan of operation and a site specific polar bear and walrus interaction plan. We may add additional measures depending upon site specific and species specific concerns. We will analyze the required plan of operation and interaction plans to ensure that the level of activity and possible take are consistent with our finding that total incidental takes will have a negligible impact on polar bear and walruses and, where relevant, will not have an unmitigable adverse impact on the availability of these species for subsistence uses.

We have evaluated climate change in regard to polar bears and walruses. Although climate change is a worldwide phenomenon, it was analyzed as a contributing effect that could alter polar bear and walrus habitat and behavior. Climate change could alter walrus and polar bear habitat because seasonal changes, such as extended duration of open water, may preclude sea ice habitat use and restrict some animals to coastal areas. The reduction of sea ice extent, caused by climate change, may also affect the timing of walrus and polar bear seasonal movements between the coastal regions and the pack ice. If the sea ice continues to recede as predicted, it is hypothesized that polar bears may spend more time on land rather than on sea ice similar to what has been recorded in Hudson Bay, Canada. Climate change could also alter terrestrial denning habitat through coastal erosion brought about by accelerated wave action. The challenge will be predicting changes in ice habitat, barrier islands, and coastal habitats in relation to changes in polar bear and walrus distribution and use of habitat.

Climate change over time continues to be a major concern to the Service, and we are currently involved in the collection of baseline data to help us understand how the effects of climate change will be manifested in the Chukchi Sea walrus and polar bear populations. As we gain a better understanding of climate change effects on the Chukchi Sea population, we will incorporate the information in future actions. Ongoing studies include those led by the Service and the USGS Alaska Science Center to examine polar bear and walrus habitat use, reproduction, and survival relative to a changing sea ice environment. Specific objectives of the project include: An enhanced understanding of walrus and polar bear habitat availability and quality influenced by ongoing climate changes and the response by polar bears and walruses; the effects of walrus and polar bear responses to climate-induced changes to the sea ice environment on body condition of adults, numbers and sizes of offspring, and survival of offspring to weaning (recruitment); and population age structure.

Impact on Subsistence Take

Based on the best scientific information available and the results of harvest data, including affected villages, the number of animals harvested, the season of the harvests, and the location of hunting areas, we find that the effects of the proposed exploration activities in the Chukchi Sea region would not have an unmitigable adverse impact on the availability of walruses and polar bears for taking for subsistence uses during the period of the proposed rule. In making this finding, we considered the following: (1) Historical data regarding the timing and location of harvests; (2) effectiveness of mitigation measures stipulated by Service regulations for obtaining an LOA at 50 CFR 18.118, which includes requirements for community consultations and POCs, as appropriate, between the applicants and affected Native communities; (3) the BOEM/BSEE issued operational permits; (4) records on subsistence harvest from the Service's Marking, Tagging, and Reporting Program; (5) community consultations; (6) effectiveness of the POC process between Industry and affected Native communities; and (7) anticipated 5-year effects of proposed Industry activities on subsistence hunting.

Applicants must use methods and conduct activities identified in their LOAs in a manner that minimizes to the greatest extent practicable adverse impacts on walruses and polar bears, their habitat, and on the availability of these marine mammals for subsistence uses. Prior to receipt of an LOA, Industry must provide evidence to us that community consultations have occurred and that an adequate POC has been presented to the subsistence communities. Industry would be required to contact subsistence

communities that may be affected by its activities to discuss potential conflicts caused by location, timing, and methods of proposed operations. Industry must make reasonable efforts to ensure that activities do not interfere with subsistence hunting and that adverse effects on the availability of polar bear or walruses are minimized. Documentation of all consultations must be included in LOA applications. Documentation must include meeting minutes, a summary of any concerns identified by community members, and the applicant's responses to identified concerns. If community concerns suggest that the proposed activities could have an adverse impact on the subsistence uses of these species, conflict avoidance issues must be addressed through a POC. The POC would help ensure that oil and gas activities would continue not to have an unmitigable adverse impact on the availability of the species or stock for subsistence uses.

Where prescribed, holders of LOAs must have a POC on file with the Service and on site. The POC must address how applicants will work with potentially affected Native communities and what actions will be taken to avoid interference with subsistence hunting opportunities for walruses and polar bears. The POC must include:

1. A description of the procedures by which the holder of the LOA will work and consult with potentially affected subsistence hunters.

2. A description of specific measures that have been or will be taken to avoid or minimize interference with subsistence hunting of walruses and polar bears, and to ensure continued availability of the species for subsistence use.

The Service will review the POC to ensure any potential adverse effects on the availability of the animals are minimized. The Service will reject POCs if they do not provide adequate safeguards to ensure that marine mammals will remain available for subsistence use.

The Service has not received any reports and is aware of no information that indicates that polar bears or walruses are being or will be deflected from hunting areas or impacted in any way that diminishes their availability for subsistence use by the expected level of the proposed oil and gas activity. If there is evidence during the 5-year period of the proposed regulations that oil and gas activities are affecting the availability of walruses or polar bears for take for subsistence uses, we would reevaluate our findings regarding permissible limits of take and the measures required to ensure continued subsistence hunting opportunities.

Monitoring and Reporting

The purpose of monitoring requirements is to assess the effects of industrial activities on polar bears and walruses, to ensure that take is consistent with that anticipated in the negligible impact and subsistence use analyses, and to detect any unanticipated effects on the species. Monitoring plans document when and how bears and walruses are encountered, the number of bears and walruses, and their behavior during the encounter. This information allows the Service to measure encounter rates and trends of bear and walrus activity in the industrial areas (such as numbers and gender, activity, seasonal use) and to estimate numbers of animals potentially affected by Industry. Monitoring plans are site-specific and dependent on the proximity of the activity to important habitat areas, such as den sites, travel corridors, and food sources; however, all activities are required to report all sightings of polar bears and walruses. To the extent possible, monitors would record group size, age, sex, reaction, duration of interaction, and closest approach to Industry. Activities within the coast of the geographic region may incorporate daily watch logs as well, which record 24-hour animal observations throughout the duration of the project. Polar bear monitors would be incorporated into the monitoring plan if bears are known to frequent the area or known polar bear dens are present in the area. At offshore Industry sites, systematic monitoring protocols would be implemented to statistically monitor observation trends of walruses or polar bears in the nearshore areas where they usually occur.

Monitoring activities are summarized and reported in a formal report each year. The applicant must submit an annual monitoring and reporting plan at least 90 days prior to the initiation of a proposed activity, and the applicant must submit a final monitoring report to us no later than 90 days after the completion of the activity. We base each year's monitoring objective on the previous year's monitoring results.

We require an approved plan for monitoring and reporting the effects of oil and gas Industry exploration, development, and production activities on polar bears and walruses prior to issuance of an LOA. Since production activities are continuous and long-term, upon approval, LOAs and their required monitoring and reporting plans will be issued for the life of the activity or until the expiration of the regulations, whichever occurs first. Each year, prior to January 15, we require that the operator submit development and production activity monitoring results of the previous year's activity. We require approval of the monitoring results for continued operation under the LOA.

Treaty Obligations

The regulations are consistent with the Bilateral Agreement for the Conservation and Management of the Polar Bear between the United States and the Russian Federation. Article II of the Polar Bear Agreement lists three obligations of the Parties in protecting polar bear habitat:

(1) ''Take appropriate action to protect the ecosystem of which polar bears are a part;''

(2) ''Give special attention to habitat components such as denning and feeding sites and migration patterns;'' and

(3) ''Manage polar bear populations in accordance with sound conservation practices based on the best available scientific data.''

This proposed rule is also consistent with the Service's treaty obligations because it incorporates mitigation measures that ensure the protection of polar bear habitat. LOAs for industrial activities are conditioned to include area or seasonal timing limitations or prohibitions, such as placing 1-mile avoidance buffers around known or observed dens (which halts or limits activity until the bear naturally leaves the den), building roads perpendicular to the coast to allow for polar bear movements along the coast, and monitoring the effects of the activities on polar bears. Available denning habitat maps are provided by the USGS.

Clarity of the Rule

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

(a) Be logically organized:

(b) Use the active voice to address readers directly;

(c) Use clear language rather than jargon;

(d) Be divided into short sections and sentences; and

(e) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in the **ADDRESSES** section. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly

written, which sections or sentences are too long, the sections where you feel tables would be useful, etc.

Required Determinations

National Environmental Policy Act (NEPA) Considerations

We have prepared a draft EA in conjunction with this proposed rulemaking. Subsequent to closure of the comment period for this proposed rule, we will decide whether this rulemaking is a major Federal action significantly affecting the quality of the human environment within the meaning of section 102(2)(C) of the NEPA of 1969. For a copy of the EA, go to *http://www.regulations.gov* and search for Docket No. FWS–R7–ES–2012–0043 or contact the individual identified above in the section **FOR FURTHER INFORMATION CONTACT.**

Endangered Species Act (ESA)

On May 15, 2008, the Service listed the polar bear as a threatened species under the ESA (73 FR 28212), and on December 7, 2010 (75 FR 76086), the Service designated critical habitat for polar bear populations in the United States, effective January 6, 2011. Sections 7(a)(1) and 7(a)(2) of the ESA (16 U.S.C. 1536(a)(1) and (2)) direct the Service to review its programs and to utilize such programs in the furtherance of the purposes of the ESA and to ensure that a proposed action is not likely to jeopardize the continued existence of an ESA-listed species or result in the destruction or adverse modification of critical habitat. In addition, the status of walruses rangewide was reviewed for potential listing under the ESA. The listing of walruses was found to be warranted, but precluded due to higher priority listing actions (i.e., walrus is a candidate species) on February 10, 2011 (76 FR 7634). Consistent with our statutory obligations, the Service's Marine Mammal Management Office has initiated an intra-Service section 7 consultation regarding the effects of these proposed regulations on the polar bear with the Service's Fairbanks' Ecological Services Field Office. Consistent with established agency policy, we will also conduct a conference regarding the effects of these proposed regulations on the Pacific walrus. We will complete the consultation and conference prior to finalizing these proposed regulations.

Regulatory Planning and Review (Executive Order 12866 and 13563)

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) will review all significant rules. The OIRA has determined that this rule is not significant.

Executive Order 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainly, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.

Expenses would be related to, but not necessarily limited to, the development of applications for LOAs, monitoring, recordkeeping, and reporting activities conducted during Industry oil and gas operations, development of polar bear interaction plans, and coordination with Alaska Natives to minimize effects of operations on subsistence hunting. Compliance with the rule, if adopted, is not expected to result in additional costs to Industry that it has not already been subjected to for the previous 7 years. Realistically, these costs are minimal in comparison to those related to actual oil and gas exploration, development, and production operations. The actual costs to Industry to develop the petition for promulgation of regulations and LOA requests probably does not exceed $500,000 per year, short of the ''major rule'' threshold that would require preparation of a regulatory impact analysis.

Small Business Regulatory Enforcement Fairness Act

We have determined that this rule is not a major rule under 5 U.S.C. 804(2), the Small Business Regulatory Enforcement Fairness Act. The rule is not likely to result in a major increase in costs or prices for consumers, individual industries, or government agencies or have significant adverse effects on competition, employment, productivity, innovation, or on the ability of U.S. based enterprises to compete with foreign-based enterprises in domestic or export markets.

Regulatory Flexibility Act

We have also determined that this rule would not have a significant economic effect on a substantial number of small entities under the Regulatory Flexibility Act, 5 U.S.C. 601 et seq. Oil companies and their contractors conducting exploration, development, and production activities in Alaska have been identified as the only likely applicants under the proposed regulations. Therefore, a Regulatory Flexibility Analysis is not required. In addition, these potential applicants have not been identified as small businesses and, therefore, a Small Entity Compliance Guide is not required. The proposed analysis for this rule is available from the individual identified above in the section **FOR FURTHER INFORMATION CONTACT**.

Takings Implications

This rule does not have takings implications under Executive Order 12630 because it proposes to authorize the nonlethal, incidental, but not intentional, take of walruses and polar bears by oil and gas Industry companies and thereby would exempt these companies from civil and criminal liability as long as they operate in compliance with the terms of their LOAs. Therefore, a takings implications assessment is not required.

Federalism Effects

This rule does not contain policies with Federalism implications sufficient to warrant preparation of a federalism impact summary statement under Executive Order 13132. The MMPA gives the Service the authority and responsibility to protect walruses and polar bears.

Unfunded Mandates Reform Act

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501, et seq.), this rule would not ''significantly or uniquely'' affect small governments. A Small Government Agency Plan is not required. The Service has determined and certifies pursuant to the Unfunded Mandates Reform Act that this proposed rulemaking would not impose a cost of $100 million or more in any given year on local or State governments or private entities. This rule would not produce a Federal mandate of $100 million or greater in any year, i.e., it is not a ''significant regulatory action'' under the Unfunded Mandates Reform Act.

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994, ''Government-to-Government Relations with Native American Tribal Governments'' (59 FR 22951), Executive Order 13175, Secretarial Order 3225,

and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with federally recognized Tribes on a Government-to-Government basis. In accordance with Secretarial Order 3225 of January 19, 2001 [Endangered Species Act and Subsistence Uses in Alaska (Supplement to Secretarial Order 3206)], Department of the Interior Memorandum of January 18, 2001 (Alaska Government-to-Government Policy), Department of the Interior Secretarial Order 3317 of December 1, 2011 (Tribal Consultation and Policy), and the Native American Policy of the U.S. Fish and Wildlife Service, June 28, 1994, we acknowledge our responsibilities to work directly with Alaska Natives in developing programs for healthy ecosystems, to seek their full and meaningful participation in evaluating and addressing conservation concerns for listed species, to remain sensitive to Alaska Native culture, and to make information available to Tribes. We have evaluated possible effects on federally recognized Alaska Native tribes. Through the LOA process identified in the proposed regulations, Industry presents a communication process, culminating in a POC, if warranted, with the Native communities most likely to be affected and engages these communities in numerous informational meetings.

To facilitate co-management activities, cooperative agreements have been completed by the Service, the Alaska Nanuuq Commission (ANC), the Eskimo Walrus Commission (EWC), and Qayassiq Walrus Commission (QWC). The cooperative agreements fund a wide variety of management issues, including: Commission co-management operations; biological sampling programs; harvest monitoring; collection of Native knowledge in management; international coordination on management issues; cooperative enforcement of the MMPA; and development of local conservation plans. To help realize mutual management goals, the Service, ANC, QWC, and EWC regularly hold meetings to discuss future expectations and outline a shared vision of co-management.

The Service also has ongoing cooperative relationships with the NSB and the Inupiat-Inuvialuit Game Commission where we work cooperatively to ensure that data collected from harvest and research are used to ensure that polar bears are available for harvest in the future; provide information to co-management partners that allows them to evaluate harvest relative to their management agreements and objectives; and provide information that allows evaluation of the status, trends, and health of polar bear populations.

Civil Justice Reform

The Departmental Solicitor's Office has determined that these proposed regulations do not unduly burden the judicial system and meet the applicable standards provided in sections 3(a) and 3(b)(2) of Executive Order 12988.

Paperwork Reduction Act

This rule contains information collection requirements. We may not conduct or sponsor and a person is not required to respond to a collection of information unless it displays a currently valid Office of Management and Budget (OMB) control number. The Information collection requirements included in this proposed rule are approved by the OMB under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). The OMB control number assigned to these information collection requirements is 1018–0070, which expires on January 31, 2014. This control number covers the information collection, recordkeeping, and reporting requirements in 50 CFR 18, subpart I, which are associated with the development and issuance of specific regulations and LOAs.

Energy Effects

Executive Order 13211 requires agencies to prepare Statements of Energy Effects when undertaking certain actions. This proposed rule would provide exceptions from the taking prohibitions of the MMPA for entities engaged in the exploration of oil and gas in the Chukchi Sea and adjacent coast of Alaska. By providing certainty regarding compliance with the MMPA, this rule would have a positive effect on Industry and its activities. Although the rule would require Industry to take a number of actions, these actions have been undertaken by Industry for many years as part of similar past regulations. Therefore, this rule is not expected to significantly affect energy supplies, distribution, or use and does not constitute a significant energy action. No Statement of Energy Effects is required.

References

A list of the references cited in this rule is available on the Federal eRulemaking portal (*http://www.regulations.gov*) under Docket No. FWS–R7–ES–2012–0043.

List of Subjects in 50 CFR Part 18

Administrative practice and procedure, Alaska, Imports, Indians, Marine mammals, Oil and gas exploration, Reporting and recordkeeping requirements, Transportation.

Proposed Regulation Promulgation

For the reasons set forth in the preamble, the Service proposes to amend part 18, subchapter B of chapter 1, title 50 of the Code of Federal Regulations to be effective June 11, 2013, to June 11, 2018, as set forth below.

PART 18—MARINE MAMMALS

■ 1. The authority citation of 50 CFR part 18 continues to read as follows:

Authority: 16 U.S.C. 1361 *et seq.*

■ 2. Amend part 18 by adding a new subpart I to read as follows:

Subpart I—Nonlethal Taking of Pacific Walruses and Polar Bears Incidental to Oil and Gas Exploration Activities in the Chukchi Sea and Adjacent Coast of Alaska

Sec.
18.111 What specified activities does this subpart cover?
18.112 In what specified geographic region does this subpart apply?
18.113 When is this subpart effective?
18.114 How do I obtain a Letter of Authorization?
18.115 What criteria does the Service use to evaluate Letter of Authorization requests?
18.116 What does a Letter of Authorization allow?
18.117 What activities are prohibited?
18.118 What are the mitigation, monitoring, and reporting requirements?
18.119 What are the information collection requirements?

Subpart I—Nonlethal Taking of Pacific Walruses and Polar Bears Incidental to Oil and Gas Exploration Activities in the Chukchi Sea and Adjacent Coast of Alaska

§ 18.111 What specified activities does this subpart cover?

Regulations in this subpart apply to the nonlethal incidental, but not intentional, take of small numbers of Pacific walruses and polar bears by you (U.S. citizens as defined in § 18.27(c)) while engaged in oil and gas exploration activities in the Chukchi Sea and adjacent western coast of Alaska.

§ 18.112 In what specified geographic region does this subpart apply?

This subpart applies to the specified geographic region defined as the continental shelf of the Arctic Ocean adjacent to western Alaska. This area

includes the waters (State of Alaska and Outer Continental Shelf waters) and seabed of the Chukchi Sea, which encompasses all waters north and west of Point Hope (68°20′20″ N, −166°50′40 W, BGN 1947) to the U.S.–Russia Convention Line of 1867, west of a north–south line through Point Barrow (71°23′29″ N, −156°28′30 W, BGN 1944), and up to 200 miles north of Point Barrow. The region also includes the terrestrial coastal land 25 miles inland between the western boundary of the south National Petroleum Reserve–Alaska (NPR–A) near Icy Cape (70°20′00″ N, −148°12′00 W) and the north–south line from Point Barrow. This terrestrial region encompasses a portion of the Northwest and South Planning Areas of the NPR–A. Figure 1 shows the area where this subpart applies.

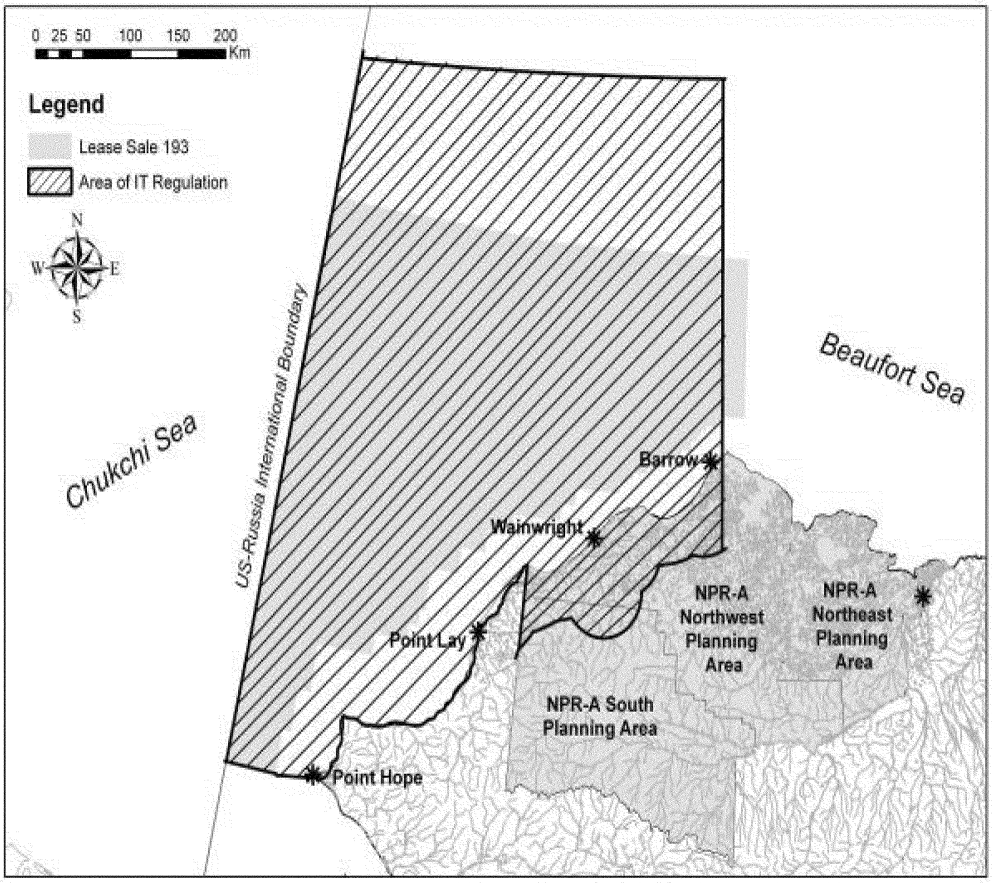

Figure 1: The geographic area of the Chukchi Sea and onshore coastal areas covered by the incidental take regulations.

§ 18.113 When is this subpart effective?

Regulations in this subpart are effective from [*effective date of the final rule*] through [*date 5 years from the effective date of the final rule*] for year-round oil and gas exploration activities.

§ 18.114 How do I obtain a Letter of Authorization?

(a) You must be a U.S. citizen as defined in § 18.27(c).

(b) If you are conducting an oil and gas exploration activity in the specified geographic region described in § 18.112 that may cause the taking of Pacific walruses (walruses) or polar bears and you want nonlethal incidental take authorization under this rule, you must apply for a Letter of Authorization for each exploration activity. You must submit the application for authorization to our Alaska Regional Director (see 50 CFR 2.2 for address) at least 90 days prior to the start of the proposed activity.

(c) Your application for a Letter of Authorization must include the following information:

(1) A description of the activity, the dates and duration of the activity, the specific location, and the estimated area affected by that activity, i.e., a plan of operation.

(2) A site-specific plan to monitor and mitigate the effects of the activity on polar bears and Pacific walruses that may be present during the ongoing activities (i.e., marine mammal monitoring and mitigation plan). Your monitoring program must document the effects to these marine mammals and estimate the actual level and type of

take. The monitoring requirements provided by the Service will vary depending on the activity, the location, and the time of year.

(3) A site-specific polar bear and/or walrus awareness and interaction plan. An interaction plan for each operation will outline the steps the applicant will take to limit animal-human interactions, increase site safety, and minimize impacts to marine mammals.

(4) A record of community consultation or a Plan of Cooperation (POC) to mitigate potential conflicts between the proposed activity and subsistence hunting, when necessary. Applicants must consult with potentially affected subsistence communities along the Chukchi Sea coast (Point Hope, Point Lay, Wainwright, and Barrow) and appropriate subsistence user organizations (the Eskimo Walrus Commission and the Alaska Nanuuq Commission) to discuss the location, timing, and methods of proposed operations and support activities and to identify any potential conflicts with subsistence walrus and polar bear hunting activities in the communities. Applications for Letters of Authorization must include documentation of all consultations with potentially affected user groups and a record of community consultation. Documentation must include a summary of any concerns identified by community members and hunter organizations, and the applicant's responses to identified concerns. Mitigation measures are described in § 18.118.

§ 18.115 What criteria does the Service use to evaluate Letter of Authorization requests?

(a) We will evaluate each request for a Letter of Authorization based on the specific activity and the specific geographic location. We will determine whether the level of activity identified in the request exceeds that analyzed by us in considering the number of animals likely to be taken and evaluating whether there will be a negligible impact on the species or adverse impact on the availability of the species for subsistence uses. If the level of activity is greater, we will reevaluate our findings to determine if those findings continue to be appropriate based on the greater level of activity that you have requested. Depending on the results of the evaluation, we may grant the authorization, add further conditions, or deny the authorization.

(b) In accordance with § 18.27(f)(5), we will make decisions concerning withdrawals of Letters of Authorization, either on an individual or class basis, only after notice and opportunity for public comment.

(c) The requirement for notice and public comment in paragraph (b) of this section will not apply if we determine that an emergency exists that poses a significant risk to the well-being of species or stocks of Pacific walruses or polar bears.

§ 18.116 What does a Letter of Authorization allow?

(a) Your Letter of Authorization may allow the nonlethal incidental, but not intentional, take of walruses and polar bears when you are carrying out one or more of the following activities:

(1) Conducting geological and geophysical surveys and associated activities;

(2) Drilling exploratory wells and associated activities; or

(3) Conducting environmental monitoring activities associated with exploration activities to determine specific impacts of each activity.

(b) Each Letter of Authorization will identify conditions or methods that are specific to the activity and location.

§ 18.117 What activities are prohibited?

(a) Intentional take and lethal incidental take of walruses or polar bears; and

(b) Any take that fails to comply with this part or with the terms and conditions of your Letter of Authorization.

§ 18.118 What are the mitigation, monitoring, and reporting requirements?

(a) *Mitigation.* Holders of a Letter of Authorization must use methods and conduct activities in a manner that minimizes to the greatest extent practicable adverse impacts on walruses and polar bears, their habitat, and on the availability of these marine mammals for subsistence uses. Dynamic management approaches, such as temporal or spatial limitations in response to the presence of marine mammals in a particular place or time or the occurrence of marine mammals engaged in a particularly sensitive activity (such as feeding), must be used to avoid or minimize interactions with polar bears, walruses, and subsistence users of these resources.

(1) *All applicants.*

(i) We require holders of Letters of Authorization to cooperate with us and other designated Federal, State, and local agencies to monitor the impacts of oil and gas exploration activities on polar bears and Pacific walruses.

(ii) Holders of Letters of Authorization must designate a qualified individual or individuals to observe, record, and report on the effects of their activities on polar bears and Pacific walruses.

(iii) Holders of Letters of Authorization must have an approved polar bear and/or walrus interaction plan on file with the Service and onsite, and polar bear awareness training will be required of certain personnel. Interaction plans must include:

(A) The type of activity and where and when the activity will occur, i.e., a plan of operation;

(B) A food and waste management plan;

(C) Personnel training materials and procedures;

(D) Site at-risk locations and situations;

(E) Walrus and bear observation and reporting procedures; and

(F) Bear and walrus avoidance and encounter procedures.

(iv) All applicants for a Letter of Authorization must contact affected subsistence communities to discuss potential conflicts caused by location, timing, and methods of proposed operations and submit to us a record of communication that documents these discussions. If appropriate, the applicant for a Letter of Authorization must also submit to us a POC that ensures that activities will not interfere with subsistence hunting and that adverse effects on the availability of polar bear or Pacific walruses are minimized (see § 18.114(c)(4)).

(v) If deemed appropriate by the Service, holders of a Letter of Authorization will be required to hire and train polar bear monitors to alert crew of the presence of polar bears and initiate adaptive mitigation responses.

(2) *Operating conditions for operational and support vessels.*

(i) Operational and support vessels must be staffed with dedicated marine mammal observers to alert crew of the presence of walruses and polar bears and initiate adaptive mitigation responses.

(ii) At all times, vessels must maintain the maximum distance possible from concentrations of walruses or polar bears. Under no circumstances, other than an emergency, should any vessel approach within an 805-m (0.5-mi) radius of walruses or polar bears observed on ice. Under no circumstances, other than an emergency, should any vessel approach within 1,610 m (1 mi) of groups of walruses observed on land or within an 805-m (0.5-mi) radius of polar bears observed on land.

(iii) Vessel operators must take every precaution to avoid harassment of concentrations of feeding walruses

when a vessel is operating near these animals. Vessels should reduce speed and maintain a minimum 805-m (0.5-mi) operational exclusion zone around groups of 12 or more walruses encountered in the water. Vessels may not be operated in such a way as to separate members of a group of walruses from other members of the group. When weather conditions require, such as when visibility drops, vessels should adjust speed accordingly to avoid the likelihood of injury to walruses.

(iv) The transit of operational and support vessels through the specified geographic region is not authorized prior to July 1. This operating condition is intended to allow walruses the opportunity to disperse from the confines of the spring lead system and minimize interactions with subsistence walrus hunters. Exemption waivers to this operating condition may be issued by the Service on a case-by-case basis, based upon a review of seasonal ice conditions and available information on walrus and polar bear distributions in the area of interest.

(v) All vessels must avoid areas of active or anticipated subsistence hunting for walrus or polar bear as determined through community consultations.

(vi) We may require a monitor on the site of the activity or on board drillships, drill rigs, aircraft, icebreakers, or other support vessels or vehicles to monitor the impacts of Industry's activity on polar bear and Pacific walruses.

(3) *Operating conditions for aircraft.*

(i) Operators of support aircraft should, at all times, conduct their activities at the maximum distance possible from concentrations of walruses or polar bears.

(ii) Under no circumstances, other than an emergency, should fixed wing aircraft operate at an altitude lower than 457 m (1,500 ft) within 805 m (0.5 mi) of walrus groups observed on ice, or within 1,610 m (1 mi) of walrus groups observed on land. Under no circumstances, other than an emergency, should rotary winged aircraft (helicopters) operate at an altitude lower than 914 m (3,000 ft) within 1,610 m (1 mi) of walrus groups observed on land. Under no circumstances, other than an emergency, should aircraft operate at an altitude lower than 457 m (1,500 ft) within 805 m (0.5 mi) of polar bears observed on ice or land. Helicopters may not hover or circle above such areas or within 805 m (0.5 mile) of such areas. When weather conditions do not allow a 457-m (1,500-ft) flying altitude, such as during severe storms or when cloud cover is low, aircraft may be operated below the required altitudes stipulated above. However, when aircraft are operated at altitudes below 457 m (1,500 ft) because of weather conditions, the operator must avoid areas of known walrus and polar bear concentrations and should take precautions to avoid flying directly over or within 805 m (0.5 mile) of these areas.

(iii) Plan all aircraft routes to minimize any potential conflict with active or anticipated walrus or polar bear hunting activity as determined through community consultations.

(4) *Additional mitigation measures for offshore exploration activities.*

(i) Offshore exploration activities will be authorized only during the open water season, defined as the period July 1 to November 30. Exemption waivers to the specified open water season may be issued by the Service on a case-by-case basis, based upon a review of seasonal ice conditions and available information on walrus and polar bear distributions in the area of interest.

(ii) To avoid significant additive and synergistic effects from multiple oil and gas exploration activities on foraging or migrating walruses, operators must maintain a minimum spacing of 24 km (15 mi) between all active seismic source vessels and/or exploratory drilling operations. No more than two simultaneous seismic operations and three offshore exploratory drilling operations will be authorized in the Chukchi Sea region at any time.

(iii) No offshore exploration activities will be authorized within a 64-km (40-mi) radius of the communities of Barrow, Wainwright, Point Lay, or Point Hope, unless provided for in a Service-approved, site-specific Plan of Cooperation as described in paragraph (a)(7) of this section.

(iv) Aerial monitoring surveys or an equivalent monitoring program acceptable to the Service will be required to estimate the number of walruses and polar bears in a proposed project area.

(5) *Additional mitigation measures for offshore seismic surveys.* Any offshore exploration activity expected to include the production of pulsed underwater sounds with sound source levels ≥160 dB re 1 μPa will be required to establish and monitor acoustic exclusion and disturbance zones and implement adaptive mitigation measures as follows:

(i) *Monitor zones.* Establish and monitor with trained marine mammal observers an acoustically verified exclusion zone for walruses surrounding seismic airgun arrays where the received level would be ≥ 180 dB re 1 μPa; an acoustically verified exclusion zone for polar bear surrounding seismic airgun arrays where the received level would be ≥ 190 dB re 1 μPa; and an acoustically verified walrus disturbance zone ahead of and perpendicular to the seismic vessel track where the received level would be ≥ 160 dB re 1 μPa.

(ii) *Ramp-up procedures.* For all seismic surveys, including airgun testing, use the following ramp-up procedures to allow marine mammals to depart the exclusion zone before seismic surveying begins:

(A) Visually monitor the exclusion zone and adjacent waters for the absence of polar bears and walruses for at least 30 minutes before initiating ramp-up procedures. If no polar bears or walruses are detected, you may initiate ramp-up procedures. Do not initiate ramp-up procedures at night or when you cannot visually monitor the exclusion zone for marine mammals.

(B) Initiate ramp-up procedures by firing a single airgun. The preferred airgun to begin with should be the smallest airgun, in terms of energy output (dB) and volume (in^3).

(C) Continue ramp-up by gradually activating additional airguns over a period of at least 20 minutes, but no longer than 40 minutes, until the desired operating level of the airgun array is obtained.

(iii) *Power down/Shutdown.* Immediately power down or shutdown the seismic airgun array and/or other acoustic sources whenever any walruses are sighted approaching close to or within the area delineated by the 180 dB re 1 μPa walrus exclusion zone, or polar bears are sighted approaching close to or within the area delineated by the 190 dB re 1 μPa polar bear exclusion zone. If the power down operation cannot reduce the received sound pressure level to 180 dB re 1 μPa (walrus) or 190 dB re 1 μPa (polar bears), the operator must immediately shutdown the seismic airgun array and/or other acoustic sources.

(iv) *Emergency shutdown.* If observations are made or credible reports are received that one or more walruses and/or polar bears are within the area of the seismic survey and are in an injured or mortal state, or are indicating acute distress due to seismic noise, the seismic airgun array will be immediately shutdown and the Service contacted. The airgun array will not be restarted until review and approval has been given by the Service. The ramp-up procedures provided in paragraph (a)(5)(ii) of this section must be followed when restarting.

(v) *Adaptive response for walrus aggregations.* Whenever an aggregation

of 12 or more walruses are detected within an acoustically verified 160 dB re 1 μPa disturbance zone ahead of or perpendicular to the seismic vessel track, the holder of this Authorization must:

(A) Immediately power down or shutdown the seismic airgun array and/or other acoustic sources to ensure sound pressure levels at the shortest distance to the aggregation do not exceed 160-dB re 1 μPa; and

(B) Not proceed with powering up the seismic airgun array until it can be established that there are no walrus aggregations within the 160 dB zone based upon ship course, direction, and distance from last sighting. If shutdown was required, the ramp-up procedures provided in paragraph (a)(5)(ii) of this section must be followed when restarting.

(6) *Additional mitigation measures for onshore exploration activities.*

(i) *Polar bear monitors.* If deemed appropriate by the Service, holders of a Letter of Authorization will be required to hire and train polar bear monitors to alert crew of the presence of polar bears and initiate adaptive mitigation responses.

(ii) *Efforts to minimize disturbance around known polar bear dens.* As part of potential terrestrial activities during the winter season, holders of a Letter of Authorization must take efforts to limit disturbance around known polar bear dens.

(A) *Efforts to locate polar bear dens.* Holders of a Letter of Authorization seeking to carry out onshore exploration activities in known or suspected polar bear denning habitat during the denning season (November to April) must make efforts to locate occupied polar bear dens within and near proposed areas of operation, utilizing appropriate tools, such as forward looking infrared (FLIR) imagery and/or polar bear scent trained dogs. All observed or suspected polar bear dens must be reported to the Service prior to the initiation of exploration activities.

(B) *Exclusion zone around known polar bear dens.* Operators must observe a 1-mile operational exclusion zone around all known polar bear dens during the denning season (November to April, or until the female and cubs leave the areas). Should previously unknown occupied dens be discovered within 1 mile of activities, work in the immediate area must cease and the Service contacted for guidance. The Service will evaluate these instances on a case-by-case basis to determine the appropriate action. Potential actions may range from cessation or modification of work to conducting additional monitoring, and the holder of the authorization must comply with any additional measures specified.

(7) *Mitigation measures for the subsistence use of walruses and polar bears.* Holders of Letters of Authorization must conduct their activities in a manner that, to the greatest extent practicable, minimizes adverse impacts on the availability of Pacific walruses and polar bears for subsistence uses.

(i) *Community Consultation.* Prior to receipt of a Letter of Authorization, applicants must consult with potentially affected communities and appropriate subsistence user organizations to discuss potential conflicts with subsistence hunting of walrus and polar bear caused by the location, timing, and methods of proposed operations and support activities (see § 18.114(c)(4) for details). If community concerns suggest that the proposed activities may have an adverse impact on the subsistence uses of these species, the applicant must address conflict avoidance issues through a Plan of Cooperation as described below.

(ii) *Plan of Cooperation (POC).* Where prescribed, holders of Letters of Authorization will be required to develop and implement a Service approved POC.

(A) The POC must include:

(*1*) A description of the procedures by which the holder of the Letter of Authorization will work and consult with potentially affected subsistence hunters; and

(*2*) A description of specific measures that have been or will be taken to avoid or minimize interference with subsistence hunting of walruses and polar bears and to ensure continued availability of the species for subsistence use.

(B) The Service will review the POC to ensure that any potential adverse effects on the availability of the animals are minimized. The Service will reject POCs if they do not provide adequate safeguards to ensure the least practicable adverse impact on the availability of walruses and polar bears for subsistence use.

(b) *Monitoring.*

Depending on the siting, timing, and nature of proposed activities, holders of Letters of Authorization will be required to:

(1) Maintain trained, Service-approved, on-site observers to carry out monitoring programs for polar bears and walruses necessary for initiating adaptive mitigation responses.

(i) Marine Mammal Observers (MMOs) will be required on board all operational and support vessels to alert crew of the presence of walruses and polar bears and initiate adaptive mitigation responses identified in paragraph (a) of this section, and to carry out specified monitoring activities identified in the marine mammal monitoring and mitigation plan (see paragraph (b)(2) of this section) necessary to evaluate the impact of authorized activities on walruses, polar bears, and the subsistence use of these subsistence resources. The MMOs must have completed a marine mammal observer training course approved by the Service.

(ii) Polar bear monitors. Polar bear monitors will be required under the monitoring plan if polar bears are known to frequent the area or known polar bear dens are present in the area. Monitors will act as an early detection system concerning proximate bear activity to Industry facilities.

(2) Develop and implement a site-specific, Service-approved marine mammal monitoring and mitigation plan to monitor and evaluate the effects of authorized activities on polar bears, walruses, and the subsistence use of these resources.

(i) The marine mammal monitoring and mitigation plan must enumerate the number of walruses and polar bears encountered during specified exploration activities, estimate the number of incidental takes that occurred during specified exploration activities (i.e., document immediate behavioral responses as well as longer term when possible), and evaluate the effectiveness of prescribed mitigation measures. The Service needs comprehensive observations to determine if encounters with Industry activities have a negligible impact. This not only includes the type of behavioral response, but also the duration of the response until previous behaviors are resumed. Ideally, this will involve a random sampling of individuals and observations of those individuals prior to, during, and following an encounter. This may require the use of additional vessels or aircraft or telemetry equipment to track animals encountered for extended periods of time. For example, resting walruses flushed from an ice floe would need to be tracked until they subsequently hauled out on the ice to rest. In addition, such a project could involve both opportunistic data collection (during the course of normal activities) and planned experimentation.

(ii) Applicants must fund an independent peer review of proposed monitoring plans and draft reports of monitoring results. This peer review will consist of independent reviewers

who have knowledge and experience in statistics, marine mammal behavior, and the type and extent of the proposed operations. The applicant will provide the results of these peer reviews to the Service for consideration in final approval of monitoring plans and final reports. The Service will distribute copies of monitoring reports to appropriate resource management agencies and co-management organizations.

(3) Cooperate with the Service and other designated Federal, State, and local agencies to monitor the impacts of oil and gas exploration activities in the Chukchi Sea on walruses or polar bears. Where insufficient information exists to evaluate the potential effects of proposed activities on walruses, polar bears, and the subsistence use of these resources, holders of Letters of Authorization may be required to participate in joint monitoring and/or research efforts to address these information needs and insure the least practicable impact to these resources. These monitoring and research efforts must employ rigorous study designs (e.g., before-after, control-impact [BACI]) and sampling protocols (e.g., ground-truthed remote sensing) in order to provide useful information. Information needs in the Chukchi Sea include, but are not limited to:

(i) Distribution, abundance, movements, and habitat use patterns of walruses and polar bears in offshore environments;

(ii) Patterns of subsistence hunting activities by the Native Villages of Kivalina, Point Hope, Point Lay, Wainwright, and Barrow for walruses and polar bears;

(iii) Immediate and longer term (when possible) behavioral and other responses of walruses and polar bears to seismic airguns, drilling operations, vessel traffic, and fixed wing aircraft and helicopters;

(iv) Contaminant levels in walruses, polar bears, and their prey;

(v) Cumulative effects of multiple simultaneous operations on walruses and polar bears; and

(vi) Oil spill risk assessment for the marine and shoreline environment of walruses, polar bears, their prey, and important habitat areas (e.g., coastal haulouts and den sites).

(c) *Reporting requirements.*

Holders of Letters of Authorization must report the results of specified monitoring activities to the Service's Alaska Regional Director (see 50 CFR 2.2 for address).

(1) *In-season monitoring reports.*

(i) *Activity progress reports.* Operators must keep the Service informed on the progress of authorized activities by:

(A) Notifying the Service at least 48 hours prior to the onset of activities;

(B) Providing weekly progress reports of authorized activities noting any significant changes in operating state and or location; and

(C) Notifying the Service within 48 hours of ending activity.

(ii) *Walrus observation reports.* The operator must report, on a weekly basis, all observations of walruses during any Industry operation. Information within the observation report will include, but is not limited to:

(A) Date, time, and location of each walrus sighting;

(B) Number, sex, and age of walruses (if determinable);

(C) Observer name, company name, vessel name or aircraft number, LOA number, and contact information;

(D) Weather, visibility, and ice conditions at the time of observation;

(E) Estimated distance from the animal or group when initially sighted, at closest approach, and end of the encounter;

(F) Industry activity at time of sighting and throughout the encounter. If a seismic survey, record the estimated radius of the zone of ensonification;

(G) Behavior of animals at initial sighting, any change in behavior during the observation period, and distance from the observers associated with those behavioral changes;

(H) Detailed description of the encounter;

(I) Duration of the encounter;

(J) Duration of any behavioral response (e.g., time and distance of a flight response) and;

(K) Actions taken.

(iii) *Polar bear observation reports.* The operator must report, within 24 hours, all observations of polar bears during any Industry operation. Information within the observation report will include, but is not limited to:

(A) Date, time, and location of observation;

(B) Number, sex, and age of bears (if determinable);

(C) Observer name, company name, vessel name, LOA number, and contact information;

(D) Weather, visibility, and ice conditions at the time of observation;

(E) Estimated closest point of approach for bears from personnel and/or vessel/facilities;

(F) Industry activity at time of sighting, and possible attractants present;

(G) Behavior of animals at initial sighting and after contact;

(H) Description of the encounter;

(I) Duration of the encounter; and

(J) Actions taken.

(iv) *Notification of incident report.* Reports should include all information specified under the species observation report, as well as a full written description of the encounter and actions taken by the operator. The operator must report to the Service within 24 hours:

(A) Any incidental lethal take or injury of a polar bear or walrus; and

(B) Observations of walruses or polar bears within prescribed mitigation monitoring zones.

(2) *After-action monitoring reports.*

The results of monitoring efforts identified in the marine mammal monitoring and mitigation plan must be submitted to the Service for review within 90 days of completing the year's activities. Results must include, but are not limited to, the following information:

(i) A summary of monitoring effort including: Total hours, total distances, and distribution through study period of each vessel and aircraft;

(ii) Analysis of factors affecting the visibility and detectability of walruses and polar bears by specified monitoring;

(iii) Analysis of the distribution, abundance, and behavior of walrus and polar bear sightings in relation to date, location, ice conditions, and operational state;

(iv) Estimates of take based on the number of animals encountered/kilometer of vessel and aircraft operations by behavioral response (no response, moved away, dove, etc.), and animals encountered per day by behavioral response for stationary drilling operations; and

(v) Raw data in electronic format (i.e., Excel spreadsheet) as specified by the Service in consultation with Industry representatives.

§ 18.119 What are the information collection requirements?

(a) The Office of Management and Budget has approved the collection of information contained in this subpart and assigned control number 1018–0070. You must respond to this information collection request to obtain a benefit pursuant to section 101(a)(5) of the Marine Mammal Protection Act. We will use the information to:

(1) Evaluate the application and determine whether or not to issue specific Letters of Authorization.

(2) Monitor impacts of activities conducted under the Letters of Authorization.

(b) You should direct comments regarding the burden estimate or any

other aspect of this requirement to the Information Collection Clearance Officer, U.S. Fish and Wildlife Service, Department of the Interior, Mail Stop 2042–PDM, 1849 C Street NW., Washington, DC 20240.

Dated: December 11, 2012.

Michael J. Bean,

Acting Principal Deputy Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 2012–31347 Filed 1–8–13; 8:45 am]

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