Billing Code: 4333-15

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 18

[Docket No. FWS–R7–ES–2016–0060; FF07CAMM00FXFR133707REG01167]

RIN 1018–BA99

Marine Mammals; Incidental Take During Specified Activities

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: In accordance with the Marine Mammal Protection Act of 1972, as amended, and its implementing regulations, we, the U.S. Fish and Wildlife Service, propose incidental take regulations (ITR) 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 activities in the Beaufort Sea and adjacent northern coast of Alaska. Industry operations include similar types of activities covered by the previous 5-year Beaufort Sea ITR effective from August 3, 2011, through August 3, 2016; this rule would also be effective for 5 years. If this rule is finalized, we will issue Letters of Authorization, upon request, for specific proposed activities in accordance with the regulations. We intend that any final action resulting from this proposed rule will be as accurate and as effective as possible. Therefore, we request comments or suggestions on these proposed regulations.

DATES: We will consider comments we receive on or before [INSERT DATE 30 DAYS AFTER THE DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You can view this proposed rule and the associated draft environmental assessment at *http://www.regulations.gov* under Docket No. FWS–R7–ES–2016–0060. You may submit comments on the proposed rule by one of the following methods:

- *U.S. mail or hand-delivery:* Public Comments Processing, Attn: Docket No. FWS–R7–ES–2016–0060, Division of Policy, Performance, and Management Programs, U.S. Fish and Wildlife Service, 5275 Leesburg Pike, MS: BPHC, Falls Church, VA 22041–3803.

- *Electronic submission:* Federal eRulemaking Portal at: *http://www.regulations.gov*. Follow the instructions for submitting comments to Docket No. FWS–R7–ES–2016–0060.

We will post all comments at *http://www.regulations.gov*. You may request that we withhold all personal identifying information from public review. However, we cannot guarantee that we will be able to do so. See **Public Comments** below for more information.

FOR FURTHER INFORMATION CONTACT: Christopher Putnam, Marine Mammals Management Office, U.S. Fish and Wildlife Service, 1011 East Tudor Road MS-341, Anchorage, AK 99503, Telephone 907–786–3844, or Email: *christopher_putnam@fws.gov*. 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

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 incidental take regulations (ITR) 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) activities in the Beaufort Sea and adjacent northern coast of Alaska. Industry operations include similar types of activities covered by the previous 5-year Beaufort Sea ITR effective from August 3, 2011, through August 2, 2016, and found in title 50 of the Code of Federal Regulations (CFR) in part 18, subpart J. If adopted as proposed, this rule would be effective for 5 years from the date of issuance of the final rule.

This proposed rule is based on our finding that the total takings of Pacific walruses (walruses) and polar bears during proposed Industry 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. We base our finding on data from monitoring the encounters and interactions between these species and Industry; research on these species; oil spill risk assessments; potential and documented Industry effects on these species; information regarding the natural history and conservation status of walruses and polar bears; and data reported from Alaska Native subsistence hunters. We have prepared a draft environmental assessment (EA) in conjunction with this rulemaking, and it is available for public review.

The proposed regulations include permissible methods of nonlethal taking; mitigation measures to ensure that Industry activities will have the least practicable

adverse impact on the species, their habitat, and the availability of these species for subsistence uses; and requirements for monitoring and reporting. Compliance with the rule is not expected to result in additional costs to Industry that it has not already been subjected to during all previous ITRs for this area. These costs are minimal in comparison to those related to actual oil and gas exploration, development, and production operations.

Background

Section 101(a)(5)(A) of the MMPA (16 U.S.C. 1371(a)(5)(A)) gives the Secretary of the Interior (Secretary) 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. The Secretary has delegated authority for implementation of the MMPA to the U.S. Fish and Wildlife Service (Service). According to the MMPA, the Service shall allow this incidental taking if we make a finding that the total of such taking for the 5-year regulatory period:

(1) Will affect only small numbers of individuals of these species;

(2) will have no more than a negligible impact on these species;

(3) will not have an unmitigable adverse impact on the availability of these species for taking for subsistence use by Alaska Natives; and

(4) we issue regulations that set forth:

(a) permissible methods of taking,

(b) means of effecting the least practicable adverse impact on the species, their habitat, and the availability of the species for subsistence uses, and

(c) requirements for monitoring and reporting.

If regulations allowing such incidental taking are issued, we may then subsequently issue Letters of Authorization (LOAs), upon request, to authorize incidental take during specified activities.

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).

The terms "negligible impact" and "unmitigable adverse impact" are defined in 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. Also defined in 50 CFR 18.27 is the term "small numbers," however, we do not rely on that definition here as it conflates "small numbers" with "negligible impacts." We recognize "small numbers" and "negligible impacts" as two separate and distinct requirements for promulgating ITRs under the MMPA. Instead, for our small numbers determination, we estimate the likely number of takes of marine mammals, and evaluate if that take is small relative to the size of the population or stock.

In these proposed ITRs, the term "Industry" includes individuals, companies, and organizations involved in exploration, development, production, extraction, processing, transportation, marketing, research, monitoring, and support services of petroleum products, and other substantially similar activities. Industry activities may result in the taking of walruses and polar bears. The MMPA does not require that Industry must obtain incidental take authorization; however, any taking that occurs without authorization is a violation of the MMPA. Since 1993, the oil and gas industry operating in the Beaufort Sea and the adjacent northern coast of Alaska has requested, and we have issued, ITRs for the incidental take of walruses and polar bears in specified areas during specified activities. For a detailed history of our recent Beaufort Sea ITRs, refer to the *Federal Register* at, 76 FR 47010, August 3, 2011; 71 FR 43926, August 2, 2006; and 68 FR 66744, November 28, 2003. These regulations are at 50 CFR part 18, subpart J (§§18.121 to 18.129).

Summary of Current Request

On May 5, 2014, the Service received a petition from the Alaska Oil and Gas Association (AOGA) on behalf of its members and other participating companies to promulgate regulations for nonlethal incidental take of small numbers of walruses and polar bears in the Beaufort Sea and adjacent northern coast of Alaska for a period of 5 years (2016–2021). The anticipated incidental takes would be limited to Level B harassment. We received an amendment to the petition on July 1, 2015. The petition and previous regulations are available at: *http://www.fws.gov/alaska/fisheries/mmm/itr_beaufort.htm*. The petition is also available at *www.regulations.gov* at Docket No. FWS–R7–ES–2016–0060.

The AOGA application requests regulations that will be applicable to any company conducting oil and gas exploration, development, and production activities as described within the application. This includes AOGA members and other non-member companies planning to conduct oil and gas operations in the specified geographic region. Members of AOGA represented in the petition include Alyeska Pipeline Service Company, Apache Corporation, BP Exploration (Alaska) Inc. (BPXA), Caelus Energy Alaska, LLC, Chevron USA, Inc., Eni Petroleum; ExxonMobil Production Company, Flint Hills Resources, Inc., Hilcorp Alaska, LLC, Petro Star Inc., Repsol, Shell Exploration & Production Company (Shell), Statoil, Tesoro Alaska Company, and XTO Energy, Inc.

Non-AOGA companies include ConocoPhillips Alaska, Inc. (CPAI), Brooks Range Petroleum Corporation (BRPC), and Arctic Slope Regional Corporation (ASRC) Energy Services. The activities and geographic region specified in AOGA's request, and

considered in these regulations, are described in the following sections titled **Description of Activities** and **Description of Geographic Region**.

In response to this request, prior to issuing regulations at 50 CFR part 18 subpart J, we have evaluated the level of proposed activities, their associated potential effects upon walruses and polar bears, and their effects on the availability of these species for subsistence use. The information provided by the petitioners indicates that projected oil and gas activities over this period will encompass onshore and offshore exploration, development, and production activities. The Service's task is to analyze the impacts that the proposed lawful activities will have on walruses and polar bears. In addition, we will evaluate the potential for oil spills and associated impacts on walruses and polar bears.

Description of Proposed Regulations

These proposed regulations will not authorize, or "permit," the proposed Industry activities. Rather, they will authorize the nonlethal incidental, unintentional take of small numbers of walruses and polar bears 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, and the Bureau of Land Management (BLM) are responsible for permitting activities associated with Industry activities in Federal waters and on Federal lands. The State of Alaska is responsible for permitting Industry activities on State lands and in State waters. The proposed regulations include:

- Permissible methods of nonlethal taking;

- Measures to ensure the least practicable adverse impact on walruses and polar bears and the availability of these species for subsistence uses; and
- Requirements for monitoring and reporting.

Description of LOAs

If these proposed ITRs are made final, companies, groups, or individuals conducting an Industry, or other substantially similar, activity within the specified geographic region may request an LOA for the authorized nonlethal, incidental, Level B take of walruses and polar bears. We must receive requests for LOAs in writing at least 90 days before the proposed activity is to begin. Requests must include an operations plan for the activity, a walrus and polar bear interaction plan, and a site-specific marine mammal monitoring and mitigation plan that specifies the procedures to monitor and mitigate the effects of the proposed activities on walruses and polar bears. We will evaluate each request for an LOA, including plans of operation and interaction plans, based on the proposed activity and location. We will condition each LOA depending on specific circumstances for the proposed activity and location to ensure the activity and level of take are consistent with our findings in the ITRs. We will issue an LOA if we evaluated the proposed activity in the ITRs and the level of take caused by the activity is consistent with the findings of the ITRs. We must receive an after action report on the monitoring and mitigation activities within 90 days after the LOA expires.

The monitoring and mitigation conditions included in each LOA will minimize interference with the normal behavior and movements of walruses and polar bears to

ensure that the effects of Industry activity are negligible. For example, conditions include, but are not limited to: (1) A reminder that LOAs do not authorize intentional taking of walruses or polar bears, nor lethal incidental take; (2) measures to protect pregnant polar bears during denning activities (e.g., den selection, birthing, nurturing of cubs, and departing the den site); and (3) the requirement of a site-specific plan of operation and a site-specific interaction plan. For more information on requesting and receiving an LOA, refer to 50 CFR 18.27.

Description of Plans of Cooperation (POCs)

A POC is a documented plan with potentially affected subsistence hunting communities that describes measures to mitigate potential conflicts between proposed Industry activities and subsistence hunting. To ensure that Industry activities do not adversely impact subsistence hunting opportunities, applicants requesting an LOA must provide the Service documentation of communication and coordination with potentially affected Alaska Native communities potentially affected by the proposed Industry activity and, as appropriate, with the Eskimo Walrus Commission, the Alaska Nanuuq Commission (ANC), and the North Slope Borough (NSB). As part of the POC process, Industry representatives engage with Native communities to provide information and respond to questions and concerns. Industry representatives inquire whether their proposed activities will adversely affect the availability of walruses and polar bears for subsistence use. If community concerns suggest that Industry activities may have an impact on the subsistence uses of these species, the POC must document the procedures for how Industry will cooperate with the affected subsistence communities and what

actions Industry will take to mitigate adverse impacts on the availability of walruses and polar bears for subsistence uses. We will review these plans and provide guidance to ensure compliance with the MMPA. We will not accept POCs if they fail to provide adequate measures to ensure that Industry activities will not have an unmitigable adverse impact on the availability of walruses and polar bears for subsistence uses.

Description of Geographic Region

The geographic region covered by the requested ITRs (Beaufort Sea ITR region (Figure 1)) encompasses all Beaufort Sea waters east of a north-south line through Point Barrow, Alaska (71°23′29″ N, -156 °28′30″ W, BGN 1944), and extending approximately 322 kilometers (km) (~200 miles (mi)) north, including all Alaska State waters and Outer Continental Shelf (OCS) waters, and east of that line to the Canadian border. The offshore boundary of the Beaufort Sea ITR region matches the boundary of the BOEM Beaufort Sea Planning area, approximately 322 km (~200 mi) offshore. The onshore region is the same north/south line through Point Barrow, extending 40.2 km (25 mi) inland and east to the Canning River. The Arctic National Wildlife Refuge (ANWR) is not included in the Beaufort Sea ITR region. The geographical extent of the proposed Beaufort Sea ITR region (approximately 29.8 million hectares (ha) (~73.6 million acres (ac))) is similar to the region covered in previous regulations (approximately 29.9 million ha (~68.9 million ac)) (76 FR 47010, August 3, 2011). An increase in the geographic area of the proposed Beaufort Sea ITR region versus the region set forth in previous ITRs (approximately 1.9 million ha (~4.7 million ac)) is the result of matching the offshore boundary with that of the BOEM Beaufort Sea Planning area boundary.

Description of Activities

This section summarizes the type and scale of Industry activities proposed to occur in the Beaufort Sea ITR region from 2016 to 2021. Year-round onshore and offshore Industry activities are anticipated. Planned and potential activities considered in our analysis include activities described by the petitioners (AES Alaska 2015) and other potential activities identified by the Service and deemed substantially similar to the activities requested in the petition. During the 5 years that the proposed ITRs will be in place, Industry activities are expected to be generally similar in type, timing, and effect to activities that have been evaluated under the prior ITRs. Due to the large number of variables affecting Industry activities, prediction of exact dates and locations of activities is not possible. However, operators must provide specific dates and locations of proposed activities prior to receiving an LOA. Requests for LOAs for activities and impacts that exceed the scope of analysis and determinations for these proposed ITRs will not be issued. Additional information is available in the AOGA petition for ITRs at: *http://www.fws.gov/alaska/fisheries/mmm/Beaufort_Sea/Beaufort%20Sea%20ITR%20Petition_2015.pdf* and at *www.regulations.gov* in Docket No. FWS–R7–ES–2016–0060.

Exploration Activities

In the Beaufort Sea ITR region, oil and gas exploration occurs onshore, in coastal areas, and in the offshore environment. Exploration activities may include geological and geophysical surveys consisting of: geotechnical site investigations, reflective seismic exploration, vibratory seismic data collection, airgun and water gun seismic data

collection, explosive seismic data collection, vertical seismic profiling, and subsea sediment sampling. Exploratory drilling involves construction and use of drilling structures such as caisson-retained islands, ice islands, bottom-supported or bottom-founded structures such as the steel drilling caisson, or floating drill vessels. Exploratory drilling and associated support activities and features may include: transportation to site; setup and relocation of lodging camps and support facilities (such as lights, generators, snow removal, water plants, wastewater plants, dining halls, sleeping quarters, mechanical shops, fuel storage, landing strips, aircraft support, health and safety facilities, data recording facilities, and communication equipment); building gravel pads; building gravel islands with sandbag and concrete block protection; construction of ice islands, pads, and ice roads; gravel hauling; gravel mining; road building; road maintenance; operating heavy equipment; digging trenches; burying and covering pipelines; security operations; dredging; moving floating drill units; helicopter support; and conducting ice, water, and flood management. Support facilities include pipelines, electrical lines, water lines, buildings and facilities, sea lifts, and large and small vessels. Exploration activities could also include the development of staging facilities; oil spill prevention, response, and cleanup activities; and site restoration and remediation. The level of proposed exploration activities is similar to levels during past regulatory periods, although exploration projects may shift to different locations, particularly to the National Petroleum Reserve–Alaska (NPR–A). During the proposed regulatory period, exploration activities are anticipated to occur in the offshore environment and to continue in the existing oilfield units.

BOEM Outer Continental Shelf Lease Sales

BOEM manages oil and gas leases in the Alaska OCS region, which encompasses 242 million ha (600 million ac). Of that acreage, approximately 26 million ha (~65 million ac) are within the Beaufort Sea Planning Area and within the scope of the proposed ITRs. Ten lease sales have been held in this area since 1979, resulting in 147 active leases, where 32 exploratory wells were drilled. Production has occurred on one joint Federal/State unit, with Federal oil production accounting for more than 28.7 million barrels (bbl) (1 bbl = 42 U.S. gallons or 159 liters) of oil since 2001 (BOEM 2015). Details regarding availability of future leases, locations, and acreages are not yet available, but exploration of the OCS is expected to continue. Lease Sale 242 previously planned in the Beaufort Sea during 2017 (BOEM 2012) was cancelled in 2015. A Draft Programmatic Environmental Impact Statement (EIS) for the 2017–2022 OCS Oil and Gas Leasing Program is planned for public comment in early 2016 and is expected to propose Beaufort Sea Lease Sale 255 for the year 2020 (BOEM 2015).

Shell Exploration and Production Company (Shell) is the majority lease holder of BOEM Alaska OCS leases. In 2015 Shell announced that it would cease exploration activities on its BOEM Alaska OCS leases for the foreseeable future. Nevertheless, it is possible that Shell may pursue some sort of exploration activities on its Beaufort Sea BOEM Alaska OCS leases or State of Alaska offshore leases during the 5-year period of these proposed ITRs. Shell may conduct exploration and/or delineation drilling during the open-water Arctic drilling season from a floating drilling vessel along with attendant ice management and oil spill response (OSR) equipment. For the winter drilling season, Shell may conduct drilling from an ice island or bottom-founded structure, along with attendant

OSR equipment. Shell will provide a detailed exploration plan prior to conducting any activities in the Beaufort Sea BOEM Alaska lease area.

National Petroleum Reserve–Alaska

The BLM manages the 9.2-million-ha (22.8-million-ac) NPR–A of which 1.3 million ha (3.2 million ac) occur within the Beaufort Sea ITR region. Within this area, the BLM has offered approximately 4.7 million ha (~11.8 million ac) for oil and gas leasing (BLM 2013a). Between 1999 and 2014, 2.1 million ha (5.1-million ac) were sold in 10 lease sales. As of January 2015, there were 205 leases amounting to over 0.6 million ha (1.7 million ac) leased (BLM 2015). From 2000 to 2013, Industry drilled 29 wells in federally managed portions of the NPR–A and 3 in adjacent Native lands (BLM 2013b). ConocoPhillips Alaska, Inc. (CPAI) currently holds a majority of the leased acreage and is expected to continue exploratory efforts, especially seismic work and exploratory drilling, within the Greater Mooses Tooth and Bear Tooth Units of the NPR–A. Other operators, including Anadarko E&P Onshore LLC and NORDAQ Energy, Inc. also hold leases in the NPR–A. Caelus Energy Alaska, LLC (Caelus) has recently announced acquisition of leases and intentions to pursue exploratory drilling near Smith Bay in the Tulimaniq prospect. This project would include construction of ice pads, ice roads, temporary camps, and a temporary ice airstrip.

Area-wide Lease Sales

The State of Alaska Department of Natural Resources (ADNR), Oil and Gas Division, holds annual lease sales of State lands available for oil and gas development.

Lease sales are organized by planning area. The approximately 0.8 million ha (~2 million ac) Beaufort Sea planning area occurs in coastal land and shallow waters along the shoreline of the North Slope between the NPR–A and the ANWR (State of Alaska 2015a). It is entirely within the boundary of the Beaufort Sea ITR region. The North Slope planning area includes tracts located to the south and inland from the Beaufort Sea planning area. Of the approximately 2.1 million ha (~5.1-million ac), 0.8 million ha (2 million ac) occur within the Beaufort Sea ITR region. As of August 2015, there were 1,253 active leases on the North Slope, encompassing 1.1 million ha (2.8 million ac), and 261 active leases in the State waters of the Beaufort Sea, encompassing 284,677 ha (703,452 ac; State of Alaska 2015b). The number of acres leased has increased by 25 percent on the North Slope and 14 percent in the Beaufort Sea planning areas since 2013. Although most of the existing oil and gas development in the Southern Beaufort ITR region is concentrated in these State planning areas, the increase in leased acreage suggests that exploration on State lands and waters will continue during the 2016–2021 ITR period.

Development Activities

Industry operations during oil and gas development may include construction of roads, pipelines, waterlines, gravel pads, work camps (personnel, dining, lodging, and maintenance facilities), water production and wastewater treatment facilities, runways, and other support infrastructure. Activities associated with the development phase include transportation activities (automobile, airplane, and helicopter); installation of electronic equipment; well drilling; drill rig transport; personnel support; and

demobilization, restoration, and remediation work. Industry development activities are often planned or coordinated by unit. A unit is composed of a group of leases covering all or part of an accumulation of oil or gas. Alaska's North Slope oil and gas field primary units include Prudhoe Bay, Kuparuk River, Greater Point McIntyre, Milne Point, Endicott, Badami, the Alpine oilfields of the Colville River Unit, Greater Mooses Tooth (GMT), Northstar, Oooguruk, Nikaitchuq, Liberty, Beechey Point and Point Thomson. In addition, some of these fields are associated with satellite oilfields: Tarn, Palm, Tabasco, West Sak, Meltwater, West Beach, North Prudhoe Bay, Niakuk, Western Niakuk, Kuparuk, Schrader Bluff, Sag River, Eider, Sag Delta North, Qannik, and others.

Alpine Satellites and Greater Mooses Tooth Units

Continued expansion of the existing Alpine oilfield within the Colville River Unit is planned for the 2016–2021 ITR period. Three new drill sites, Colville Delta drill site 5 (CD5, also known as Alpine West), GMT–1 (Lookout prospect, formerly CD6), and GMT–2 (Rendezvous prospect, formerly CD7) are located in the Northeast NPR–A. The GMT–1 project would facilitate the first production of oil from Federal lands in the NPR–A (although within NPR–A, CD5 is not on Federal land). These facilities will connect to existing infrastructure at Alpine via a gravel road and four bridges over the Colville River (BLM 2014). Development of CD5 is currently under way, and commercial oil production began in October 2015. The GMT–1 project has received permits, and road, pad, pipeline, and facilities construction is anticipated for 2017–2018, but due to permitting delays and low oil prices, CPAI has slowed construction plans that would have begun production by late 2017 (CPAI 2015). Permitting for GMT–2 has not

yet been completed, but construction and first production is tentatively scheduled for 2019 and 2020. In addition to new drill site development in the NPR–A, expansion of existing drill sites in the Colville River Unit are also being considered. Additional development infrastructure in the area is planned with construction of the Nuiqsut spur road. Although the road is not specifically proposed for Industry purposes, it will provide access to Alpine workers living in Nuiqsut.

The Colville-Kuparuk Fairway Units

The region between the Alpine field and the Kuparuk Unit has been called the Colville-Kuparuk Fairway (NSB 2014). Within this region, Brooks Range Petroleum Corporation (BRPC) has proposed development of 3 drill sites by 2020 as part of the 13-well Mustang development. An independent processing center is proposed at the hub of the Mustang Development, but production pipelines will tie into the Kuparuk facilities. Approximately 32.2 km (~20 mi) of gravel road and pipeline will need to be constructed to tie in the drill sites back to the Mustang development and provide year-round access. First production of oil is planned for mid-2016. BRPC has also proposed development within the Tofkat Unit southeast of the Alpine oilfield for the years 2020–2021. If constructed, the Tofkat gravel pad will cover approximately 6.07 ha (~15 ac) and will connect to Alpine infrastructure via an 8-km (5-mi) gravel road and pipeline.

Caelus has begun development of the Nuna prospect within the fairway. This project is located at the northeast end, within the Oooguruk Unit. Estimated date of first production from the Nuna prospect is 2017. Development activities include seismic surveys, continued exploratory drilling, drilling production wells, and construction of

drill pads, roads, and pipeline connections to Kuparuk infrastructure. Spanish oil company, Repsol, has submitted plans for development of five potential well locations beginning in winter 2016 with a three-well exploration program just northwest of the Alpine field. If deemed commercial, a spine-and-spur road system expanded from these drill sites to existing Kuparuk facilities is easily envisaged, along with multiple new drill sites, a centralized processing facility, and a network of flow lines tied into the Alpine Pipeline System.

Kuparuk River Unit

CPAI has pursued ongoing infield and peripheral development at the existing Kuparuk River Unit over the past decade and is likely to do so into the foreseeable future. Efforts have focused on improving technologies, expanding current production, and developing new drill sites. Technological advancements have included hydraulic fracturing, enhanced oil recovery, coil-tube drilling, and 4-D seismic surveys. Two new drill rigs will be brought online in 2016. As of 2015, a new drill site "2S" in the southwest "Shark Tooth" portion of the unit is under construction. It will require approximately 3.2 km (2 mi) of additional gravel road, pipelines, and power lines. Oil production from this well is planned for 2016. The proposed "Northeast West Sak" expansion of the existing "1H" drill site is also under way. The 3.8-ha (9.3-ac) project will accommodate additional wells and is planned to be complete in 2017. Oil from these facilities would be routed through the Kuparuk facilities to the Trans-Alaska pipeline. Other pad expansions and two additional drill sites in the eastern portion of the Kuparuk Unit may be developed later this decade to access additional oil resources.

Prudhoe Bay Unit

New development within the Prudhoe Bay Unit is planned to help offset declining production from older wells. The newer wells employ horizontal and multilateral drilling, improved water and miscible gas injection techniques, multi-stage fracturing, and other technologies to access oil from sediments with low permeability at the periphery of the main oilfield. The BPXA has discussed the possibility of development of as many as 200 new wells within the Greater Prudhoe Bay Unit area during the upcoming decade. Much of this expansion is planned to occur as part of the "West End Development Program." Proposed activities in this program include drilling 16 new wells, improving capacity of existing facilities, adding 25 additional miles of pipeline, construction of the first new pad in more than a decade, adding 2 drill rigs to the fleet, and expanding 2 additional pads within the unit. This program of development has been under way since 2013 and is expected to be completed in 2017 or later.

Beechey Point/East Shore Units

The Beechey Point Unit lies immediately north of the Prudhoe Bay Unit near the shore of Gwydyr Bay. The unit operator, BRPC, is planning to produce oil from several small hydrocarbon accumulations in and near this unit as part of the East Shore Development Project. Existing Prudhoe Bay infrastructure will be incorporated with new development to access the estimated 26 million bbl of recoverable reserves in the Central North Slope region. The proposed East Shore pad will cover approximately 6.07 ha (~15 ac). An 8.9-km (5.5-mi) gravel road will be constructed to provide year-round access to

production facilities. Oil will be transported via a 1.6-km (1-mi) pipeline from the East Shore pad to existing pipelines. Gravel construction is expected to begin in 2018 with first oil planned for 2020.

Liberty Unit

Hilcorp Alaska, LLC (Hilcorp) recently assumed operation of the Liberty Unit, located in nearshore Federal waters in Foggy Island Bay about 17 km (11 mi) west of the Prudhoe Bay Unit. Initial development of the Liberty Unit began in early 2009 but was suspended following changes in production strategy. The current project concept involves production from a gravel island over the reservoir with full on-island processing capacity. Support infrastructure would include a 12.9-km (8-mi) subsea pipeline connecting to the existing Badami pipeline. Pending permit approvals, first oil production is expected by 2020 or later. This project concept supersedes the cancelled Liberty ultraextended-reach drilling project.

Point Thomson Unit

The Point Thomson Unit is located approximately 25 km (~20 mi) east of the Liberty Unit and 97 km (60 mi) east of Prudhoe Bay. The reservoir straddles the coastline of the Beaufort Sea. It consists of a gas condensate reservoir containing up to 8 trillion cubic feet (ft^3) of gas and hundreds of millions of bbl of gas liquids and oil. This amount is an estimated 25 percent of the North Slope's natural gas reserves and is critical to any major gas commercialization project. Operator ExxonMobil is actively pursuing development of a processing facility capable of handling 10,000 bbl per day, a pipeline

with a design capacity of 70,000 bbl per day, a camp, an airstrip, and other ancillary facilities. Production is estimated to begin in 2016. All proposed wells and supporting infrastructure are located onshore. No permanent roads connecting with Prudhoe Bay are currently proposed, but gravel roads will connect the infield facilities. Ice roads and barges are used seasonally to provide equipment and supplies. Potential full field development may include two satellite drill sites, additional liquids production, and sale of gas. The timing and nature of additional expansion will depend upon initial field performance and potential construction of a gas pipeline to export gas from the North Slope.

Natural Gas Pipeline

Two proposals currently exist for construction of a natural gas pipeline to transport natural gas from the Point Thomson and Prudhoe Bay production fields. The Alaska Liquefied Natural Gas (LNG) project is an Industry-sponsored partnership whose members include BP Alaska LNG LLC; ConocoPhillips Alaska LNG Company; and ExxonMobil Alaska LNG LLC. The Alaska LNG project proposes to build a large-diameter (45–106 centimeters (cm), 18–42 inch (in)) natural gas pipeline from the North Slope to Southcentral Alaska. In 2014, the State of Alaska joined in the project as a 25 percent co-investor. Since then, the project has begun the preliminary front end engineering and design phase, which is expected to extend into 2016 with gross spending of more than $500 million. The routing of the proposed Alaska LNG project pipeline is from Prudhoe Bay, generally paralleling the Dalton Highway corridor from the North Slope to Fairbanks. An approximately 56.3-km (~35-mi) lateral pipeline will take off

from the main pipeline and end at Fairbanks. The main pipeline would continue south, terminating at a natural gas liquefaction plant near Nikiski. There the remaining hydrocarbons will be condensed for export to national and international markets.

The second partnership, the Alaska Stand Alone Gas Pipeline (ASAP) project, was originally planned as a 24-in diameter natural gas pipeline with a natural gas flow rate of 500 million ft^3 per day at peak capacity, and is currently considered by many as a backup plan for the larger Alaska LNG project. The Alaska Gasline Development Corporation in partnership with TransCanada Corp. has led the planning effort for ASAP. Production from this pipeline would emphasize in-State distribution, although surplus gas would also likely be condensed and exported.

Either project would include an underground pipeline with elevated bridge stream crossings, compressor stations, possible fault crossings, pigging facilities, and off-take valve locations. Both pipelines would be designed to transport a highly conditioned natural gas product, and would follow the same general route. As currently proposed, approximately 40 km (~25 mi) of pipeline would occur within the Beaufort ITR region. A gas conditioning facility would need to be constructed near Prudhoe Bay and will likely require one or more large equipment modules to be off-loaded at the West Dock loading facility. The West Dock facility is a gravel causeway stretching 4 km (2.5 mi) into Prudhoe Bay. Shipments to West Dock will likely require improvements to the dock facilities including installing breasting dolphins to facilitate berthing and mooring of vessels, and raising the height of the existing dockhead to accept the large shipments. Dredging will be needed to deepen the navigational channel to the dockhead. Continued preconstruction project engineering and design work involving site evaluations and

environmental surveys on the North Slope is likely to occur in the 2016–2021 period. Additional early-phase construction work could occur during this time but would likely be limited to expansion of West Dock beginning in 2020, gravel extraction and placement for pads and roads near Prudhoe Bay beginning in 2019, and ice-road construction in 2018–2021.

Production Activities

North Slope production facilities occur between the oilfields of the Alpine Unit in the west to Badami and Point Thomson in the east. Production activities include building operations, oil production, oil transport, facilities maintenance and upgrades, restoration, and remediation. Production activities are permanent, year-round activities, whereas exploration and development activities are usually temporary and seasonal. Alpine and Badami are not connected to the road system and must be accessed by airstrips, barges, and seasonal ice roads. Transportation on the North Slope is by automobile, airplanes, helicopters, boats, rolligons, tracked vehicles, and snowmobiles. Aircraft, both fixed wing and helicopters, are used for movement of personnel, mail, rush-cargo, and perishable items. Most equipment and materials are transported to the North Slope by truck or barge. Much of the barge traffic during the open water season unloads from West Dock. Maintenance dredging of up to 220,000 cubic yards per year of material is performed at West Dock to ensure continued operation.

Oil pipelines extend from each developed oilfield to the Trans-Alaska Pipeline System (TAPS). The 122-cm (48-in) diameter TAPS pipeline extends 1,287 km (800 mi) from the Prudhoe Bay oilfield to the Valdez Marine Terminal. Alyeska Pipeline Service

Company conducts pipeline operations and maintenance. Access to the pipeline is primarily from established roads, such as the Spine Road and the Dalton Highway, or along the pipeline right-of-way.

Colville River Unit

The Alpine oilfield within the Colville River Unit was discovered in 1994 and began production in 2000. CPAI maintains a majority interest and is the primary operator. Alpine is currently the westernmost production oilfield on the North Slope, located 50 km (31 mi) west of the Kuparuk oilfield and 14 km (9 mi) northeast of the village of Nuiqsut. Facilities include a combined production pad/drill site and 3 additional drill sites with a total of approximately 180 wells. Pads, gravel roads, an airstrip, and processing facilities cover a total surface area of 66.8 ha (165 ac). Crude oil from Alpine is transported 34 mi through a 14-in pipeline to the Trans-Alaska Pipeline System. An ice road is constructed annually between Alpine and the Kuparuk oilfield to support major resupply activities. Small aircraft are used year-round to provide supplies and crew changeovers; camp facilities can support up to approximately 630 personnel.

Oooguruk Unit

The Oooguruk Unit, operated by Caelus, is located at the north end of the Colville-Kuparuk fairway, adjacent to the Kuparuk Unit in shallow waters of Harrison Bay. The Oooguruk drillsite is located on a 6 ac artificial island in the shallow waters of Harrison Bay. A 9.2-km (5.7-mi) system of subsea flowlines, power cables, and communications cables connects the island to onshore support facilities. Production

began in 2008. Expansion of the drill site in 2015 and 2016 will increase the working surface area from 2.4 ha (6 ac) to 3.8 ha (9.5 ac). Drilling of additional production wells are planned and new injection well technology will be employed. Cumulative production was estimated to be 9.8 million bbl as of 2011 (AOGCC 2013)

Kuparuk River Unit

The Kuparuk oilfield, operated by CPAI, is Alaska's second-largest producing oilfield behind Prudhoe Bay. The gross volume of the oilfield has been estimated to be 6 billion bbl; more than 2.5 billion bbl have been produced as of 2014 (CPAI 2014). Nearly 900 wells have been drilled in the Greater Kuparuk Area, which includes the satellite oilfields of Tarn, Palm, Tabasco, West Sak, and Meltwater. The total development area in the Greater Kuparuk Area is approximately 603 ha (~1,508 ac), including 167 km (104 mi) of gravel roads, 231 km (144 mi) of pipelines, 6 gravel mine sites, and over 50 gravel pads. The Kuparuk operations center and construction camp can accommodate up to 1,200 personnel.

Nikaitchuq Unit

The Nikaitchuq Unit, operated by Eni, is north of the Kuparuk River Unit. The offshore portion of Nikaitchuq, the Spy Island Development, is located south of the barrier islands of the Jones Island group and 6.4 km (4 mi) north of Oliktok Point. In 2007, Eni became the operator in the area and subsequently constructed an offshore gravel pad and onshore production facilities at Spy Island and Oliktok Point. The offshore pad is located in shallow water (i.e., 3 meters (m) (10 feet (ft) deep)). A subsea

flowline was constructed to transfer produced fluids from shore. The wells require an electrical submersible pump to produce oil because they are not capable of unassisted flow. The flow can be stopped by turning off the pump. Production began in 2011 at Oliktok Point and in 2012 at Spy Island. Cumulative production at the end of 2011 was approximately 2 million bbl. As of 2015, a program to expand production is under way, including drilling of 20 or more new wells to recover oil from the nearby Schrader Bluff reservoirs.

Milne Point Unit

The Milne Point Unit, operated by Hilcorp, is located approximately 56 km (~35 mi) northwest of Prudhoe Bay and immediately east of the Nikaitchuq Unit. This field consists of more than 220 wells drilled from 12 gravel pads. Milne Point produces oil from three main fields: Kuparuk, Schrader Bluff, and Sag River. Cumulative oil production as of the end of 2012 was 308 million bbl of oil equivalent per day (BOE, the amount of hydrocarbon product containing the energy equivalent of a barrel of oil). Average daily production rate in 2012 was 17,539 BOE with 114 production wells online. The total gravel footprint of Milne Point and its satellites is 182 ha (450 ac). The Milne Point Operations Center has accommodations for up to 180 people. An expansion program is under way for the Milne Point Unit. It is likely to improve technology of existing wells and may also include building a new drill pad, roads, and associated wells.

Prudhoe Bay Unit

The Prudhoe Bay Unit, operated by BPXA, is one of the largest oilfields by production in North America and ranks among the 20 largest oilfields worldwide. Over 12 billion bbl have been produced from a field originally estimated to have 25 billion bbl of oil in place. The Prudhoe Bay oilfield also contains an estimated 26 trillion ft^3 of recoverable natural gas. More than 1,100 wells are currently in operation in the Prudhoe Bay oilfields, approximately 830 of which are producing oil (others are for gas or water injection). Average daily production in 2012 was around 255,500 BOE.

The Prudhoe Bay Unit encompasses several oilfields, including the Point McIntyre, Lisburne, Niakuk, Western Niakuk, West Beach, North Prudhoe Bay, Borealis, Midnight Sun, Polaris, Aurora, and Orion reservoirs. Of these, the largest field by production is the Point McIntyre oilfield, which lies about 11 km (7 mi) north of Prudhoe Bay. Cumulative oil production between 1993 and 2011 was 436 million bbl (AOGCC 2013). In 2014, production at Point McIntyre averaged about 18,700 bbl of oil per day. The Lisburne field is largest by area. It covers about 80,000 ac just northwest of the main Prudhoe Bay field. Production was reported as 7,070 bbl per day in 2011, and cumulative production was approximately 182 million BOE as of 2014. The Niakuk fields have also reached high cumulative yields among the Greater Prudhoe Bay area oilfields. Between 1994 and 2011, these fields produced about 157 million bbl. In 2014, the combined Niakuk fields yielded about 1,200 bbl per day. Orion, Aurora, Polaris, Borealis and Midnight Sun are considered satellite fields and were producing more than 22,500 bbl per day combined in 2014 (BPXA 2015). In total, Prudhoe Bay satellite fields have produced more than 184 million BOE.

The total development area in the Prudhoe Bay Unit is approximately 2,785 ha (~6,883 ac) within an area of about 86,418 ha (213,543 ac). On the east side of the field the main construction camp can accommodate up to 625 people, the Prudhoe Bay operations center houses up to 449 people, and the Tarmac Camp houses 244 people. The base operations center on the western side of the Prudhoe Bay oilfield can accommodate 474 people. Additional personnel are housed at facilities in nearby Deadhorse industrial center or in temporary camps placed on existing gravel pads. Activities in the Prudhoe Bay Unit are likely to emphasize greater production of natural gas if a gas pipeline is approved during the 2016–2021 ITR period.

Northstar Unit

The Northstar oilfield, currently operated by Hilcorp, is located 6 km (4 mi) northwest of the Point McIntyre and 10 km (6 mi) north of the Prudhoe Bay Unit in approximately 10 m (~33 ft) of water. It was developed by BPXA in 1995, and began producing oil in 2001. The 15,360 ha (38,400 ac) reservoir lies offshore in waters up to 40 ft deep. A 2-ha (5-ac) artificial island supports 24 operating wells and all support facilities for this field. A subsea pipeline connects facilities to the Prudhoe Bay oilfield. As of 2013, production had surpassed 158.26 million bbl. The onsite base operations center houses 50 people. Access to Northstar is via helicopter, hovercraft, boat, and seasonal ice road. Of the existing offshore facilities Northstar is located the farthest from shore.

Duck Island Unit

The Endicott oilfield, operated by Hilcorp, is located in the Duck Island Unit approximately 16 km (~10 mi) northeast of Prudhoe Bay. In 1986 it became the first continuously producing offshore field in the U.S. Arctic. The Endicott oilfield was developed from two man-made gravel islands connected to the mainland by a gravel causeway. The operations center and processing facilities are located on the 24-ha (58-ac) main production island approximately 4.8 km (~3 mi) offshore. As of August 2013, 501 million BOE have been produced from Endicott. Production is from the Endicott reservoir in the Kekiktuk formation and two satellite fields (Eider and Sag Delta North) in the Ivishak formation. All wells were drilled from Endicott's main production island. The total area of development is 210 ha (522 ac) of land (including the Liberty satellite drilling island) with 24 km (15 mi) of roads, 43 km (24 mi) of pipelines, and 1 gravel mine site. Approximately 85 people can be housed at Endicott's Liberty camp.

Badami and Point Thomson Units

The Badami and Point Thomson units are located in the eastern portion of the North Slope and Beaufort Sea planning areas. Production from the Badami oilfield began in 1998 and from Point Thomson in 1983, but has not been continuous from either unit. The Badami field is located approximately 56 km (~35 mi) east of Prudhoe Bay and is the most easterly oilfield currently in production on the North Slope. Point Thomson, located 4 km (2.5 mi) east of Badami, was not in production as of 2015. The Badami development area is approximately 34 ha (~85 ac) of tundra including 7 km (4.5 mi) of gravel roads, 56 km (35 mi) of pipeline, 1 gravel mine site, and 2 gravel pads with a total of eight wells. As of 2011, cumulative production had reached 5.7 million bbl. There is

no permanent road connection from Badami to Prudhoe Bay. A pipeline connecting the Badami oilfield to the common carrier pipeline system at Endicott was built from an ice road.

Other Activities

Gas Hydrate Exploration and Research

Growing interest in the North Slope's methane gas hydrate resources is expected to continue in the upcoming 5 years. The U.S. Geological Survey (USGS) has estimated the volume of technically recoverable undiscovered methane gas hydrate on the North Slope is approximately 85 trillion ft^3 (with a range of 25–158 trillion ft^3 (USGS 2013)). Recent gas hydrate test wells drilled on the North Slope have confirmed the presence of viable reservoirs and buoyed interest in long-term testing. International and Gulf of Mexico test well simulations have generated production-level gas yields. Gas hydrate research on the North Slope is supported by Federal funding and State initiatives. In 2013, the State of Alaska temporarily set aside 11 tracts of unleased State lands on the North Slope for methane hydrate research. This support is expected to result in a continued interest in gas hydrate research and exploration, but development of this nonconventional hydrocarbon resource is yet unproven and uncertainties regarding economic feasibility, safety, and environmental impact remain unresolved. For these reasons, a relatively low, but increasing level of gas hydrate exploration and research is expected during the regulatory period.

Barrow Gas Fields

The 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; of these, the Walakpa Gas Field and a portion of the South Gas Field are located within the boundaries of the Chukchi Sea geographical region and, therefore, not discussed here. The East Field and part of the South Field are included in the Beaufort Sea ITR region.

The Barrow Gas Fields provide a source of heat and electricity for the Barrow community. Drilling and testing of the East Barrow Field began in 1974, and regular gas production from the pool began in December 1981. Production peaked at about 2.75 million ft^3 of gas per day in 1983, and then began to decline. In 2011 and 2012, NSB increased production by drilling five new wells, upgrading pipelines, and installing modern wellhead housings. In the winter of 2013, production was about 350 million ft^3 per day. Cumulatively, the field produced more than 8.8 billion ft^3 through July 2013, surpassing the original estimate of 6.2 billion ft^3 of gas in place.

Although activities within the Barrow Gas Fields were not specifically identified by the Applicants, the petition did include this area as part of the request for ITRs. Additionally, a portion of the Barrow Gas Fields are similarly described in ITRs for the Chukchi Sea (78 FR 35364, June 12, 2013), while the remainder is located in the Beaufort Sea geographic region. Therefore, as part of this analysis, we have included the Barrow Gas Fields in the event that LOAs for activities on the Beaufort Sea side of the field are requested. Gas production is expected to continue at its current rate during the next 5 years, and will be accompanied by maintenance and support activities, including possible access by air or over land, ice road construction, survey work, or on-pad construction.

Evaluation of the Nature and Level of Activities

Based on the Industry request, we assume that the proposed activities will increase the area of the industrial footprint with the addition of new facilities, such as drill pads, pipelines, and support facilities at a rate consistent with prior 5-year regulatory periods. However, oil production volume is expected to continue a long-term decline during this 5-year regulatory period despite new development. This prediction is due to declining production from currently producing fields. During the period covered by the regulations, we assume the annual level of activity at existing production facilities, as well as levels of new annual exploration and development activities, will be similar to that which occurred under the previous regulations, although exploration and development may shift to new locations and new production facilities will add to the overall Industry footprint. Additional onshore and offshore production facilities are being considered within the timeframe of these regulations, potentially adding to the total permanent activities in the area. The rate of progress is similar to prior production schedules, but there is a potential increase in the accumulation of the industrial footprint, with an increase mainly in onshore facilities.

Biological Information

Pacific Walrus

Pacific walruses constitute a single panmictic population inhabiting the shallow continental shelf waters of the Bering and Chukchi seas (Lingqvist *et al.* 2009, Berta and Churchill 2012). The distribution of walruses is largely influenced by the extent of the

seasonal pack ice and prey densities. From April to June, most of the walrus population migrates from the Bering Sea through the Bering Strait and into the Chukchi Sea. Walruses tend to migrate into the Chukchi Sea along lead systems that develop in the sea-ice. Walruses are closely associated with the edge of the seasonal pack ice during the open-water season. By July, thousands of animals can be found along the edge of the pack ice from Russian waters to areas west of Point Barrow, Alaska. The pack-ice usually advances rapidly southward in late fall, and most walruses return to the Bering Sea by mid- to late-November. During the winter breeding season walruses are found in three concentration areas of the Bering Sea where open leads, polynyas, or thin ice occur (Fay *et al.* 1984, Garlich-Miller *et al.* 2011a). While the specific location of these groups varies annually and seasonally depending upon the extent of the sea-ice, generally one group occurs near the Gulf of Anadyr, another south of St. Lawrence Island, and a third in the southeastern Bering Sea south of Nunivak Island into northwestern Bristol Bay.

Although most walruses remain in the Chukchi Sea throughout the summer months, a few occasionally range into the Beaufort Sea in late summer. Industry monitoring reports have observed no more than 35 walruses in the area of these proposed ITRs between 1995 and 2012, with only a few instances of disturbance to those walruses (AES Alaska 2015, Kalxdorff and Bridges 2003, USFWS unpubl. data). Beginning in 2008, the USGS, and since 2013 the Alaska Department of Fish and Game (ADF&G), have fitted about 30−60 walruses with satellite transmitters each year during spring and summer. In 2014, a female tagged by ADF&G spent about 3 weeks in Harrison Bay (ADF&G 2014). The USGS tracking data indicates that at least one instrumented walrus ventured into the Beaufort Sea for brief periods in all years except 2011. Most of these

movements extend northeast of Barrow to the continental shelf edge north of Smith Bay (USGS 2015). All available information indicates that few walruses enter the Beaufort Sea and those that do spend little time there. The Service and USGS are conducting multiyear studies on the walrus population to investigate movements and habitat use patterns. It is possible that as sea-ice diminishes in the Chukchi Sea beyond the 5-year period of this rule, walrus distribution and habitat use may change.

Walruses are generally found in waters of 100 m (328 ft) or less although they are capable of diving to greater depths. They use sea-ice as a resting platform over feeding areas, as well as for giving birth, nursing, passive transportation and avoiding predators (Fay 1982, Ray *et al.* 2006). They feed almost exclusively on benthic invertebrates. Native hunters have also reported incidences of walruses preying on seals, and other items such as fish and birds are occasionally taken (Sheffield and Grebmeier 2009, Seymour *et al.* 2014). Foraging trips may last for several days with walruses diving to the bottom nearly continuously. Most foraging dives last between 5 and 10 minutes, with a 1-–2-minute surface interval. The disturbance of the sea floor by foraging walruses releases nutrients into the water column, provides food for scavenger organisms, contributes to the diversity of the benthic community, and is thought to have a significant influence on the ecology of the Bering and Chukchi seas (Ray *et al.* 2006).

Walruses are social and gregarious animals. They travel and haul-out onto ice or land in groups. Walruses spend approximately 20−30 percent of their time out of the water. Hauled-out walruses tend to be in close physical contact. Young animals often lie on top of adults. The size of the hauled out groups can range from a few animals up to several thousand individuals. The largest aggregations occur at land haulouts. In recent

years, the barrier islands north of Point Lay, Alaska, have held large aggregations of walruses (20,000−40,000) in late summer and fall (Monson *et al.* 2013).

The size of the walrus population has never been known with certainty. Based on large sustained harvests in the 18th and 19th centuries, Fay (1957) speculated that the pre-exploitation population was represented by a minimum of 200,000 animals. Since that time, population size following European contact is believed to have fluctuated markedly in response to varying levels of human exploitation. Large-scale commercial harvests are believed to have reduced the population to 50,000–100,000 animals in the mid-1950s (Fay *et al.* 1989). The population increased rapidly in size during the 1960s and 1970s in response to harvest regulations that limited the take of females. The population likely reached or exceeded the food-based carrying capacity (K) of the region by 1980 (Fay *et al.* 1989, Fay *et al.* 1997, Garlich-Miller *et al.* 2006, MacCracken *et al.* 2014).

Between 1975 and 1990, aerial surveys conducted jointly by the United States and Russia at 5-year intervals produced population estimates ranging from about 200,000 to 255,000 individuals, with large confidence intervals. Efforts to survey the walrus population were suspended by both countries after 1990 because problems with survey methods produced population estimates with unknown bias and unknown variances that severely limited their utility. In 2006, the United States and Russia conducted another joint aerial survey in the pack ice of the Bering Sea using thermal imaging systems to more accurately count walruses hauled out on sea-ice and satellite transmitters to account for walruses in the water. The number of walruses within the surveyed area was estimated at 129,000 with 95 percent confidence limits of 55,000 to 507,000 individuals.

This estimate should be considered a minimum, as weather conditions forced termination of the survey before large areas of the Bering Sea were surveyed (Speckman *et al.* 2011).

Taylor and Udevitz (2015) used both the aerial survey population estimates described above and ship-based age and sex composition counts that occurred in 1981–1984, 1998, and 1999 (Citta *et al.* 2014) in a Bayesian integrated population model to estimate population trend and vital rates from 1975–2006. They recalculated the 1975–1990 aerial survey estimates based on a lognormal distribution for inclusion in their model. Their results generally agreed with the large-scale population trends identified by the previous efforts, but with slightly different population estimates in some years along with more precise confidence intervals. They were careful to note that all of the demographic rates in their model were estimated based on age structure data from 1981 to 1999, when the population was in decline, and that projections outside those years are extrapolations of demographic functions that may not accurately reflect dynamics for different population trends. Ultimately, they concluded (i) that though their model provides improved clarity on past walrus population trends and vital rates, it cannot overcome the large uncertainties in the available population size data, and (ii) that the absolute size of the Pacific walrus population will continue to be speculative until accurate empirical estimation of the population size becomes feasible.

A detailed description of the Pacific walrus stock can be found in the Pacific Walrus (*Odobenus rosmarus divergens*) Stock Assessment Report (announced at 79 FR 22154, April 21, 2014). A digital copy of the Stock Assessment Report is available at: *http://www.fws.gov/alaska/fisheries/mmm/stock/Revised_April_2014_Pacific_Walrus_SAR.pdf*.

Polar bears are known to prey on walruses, particularly calves, and killer whales *(Orcinus orca)* have been known to take all age classes of walruses (Frost *et al.* 1992, Melnikov and Zagrebin 2005). Predation rates are unknown but are thought to be highest near terrestrial haulout sites where large aggregations of walruses can be found. However, few observations exist of predation upon walruses farther offshore.

Walruses have been hunted by coastal Natives in Alaska and Chukotka for thousands of years. Exploitation of the walrus population by Europeans has also occurred in varying degrees since beginning with the arrival of exploratory expeditions, but ceased in 1972 in the United States with the passage of the MMPA and in 1990 in Russia. Presently, walrus hunting in Alaska and Chukotka is restricted to subsistence use by aboriginal peoples. Harvest mortality from 2000−2014 for both the United States and Russian Federation averaged 3,207 (SE = 194) walruses per year. This mortality estimate includes corrections for under-reported harvest (U.S. only) and struck and lost animals. Harvests have been declining by about 3 percent per year since 2000 and were exceptionally low in the United States in 2012−2014. Resource managers in Russia have concluded that the population has declined and reduced harvest quotas in recent years accordingly (Kochnev 2004; Kochnev 2005; Kochnev 2010; pers. comm.; Litovka 2015, pers. comm.), based in part on the lower abundance estimate generated from the 2006 survey. However, Russian hunters have never reached the quota (Litovka 2015, pers. comm.).

Intra-specific trauma at coastal haulouts is also a known source of injury and mortality (USFWS 2015). Disturbance events can cause walruses to stampede into the water and have been known to result in injuries and mortalities. The risk of stampede-

related injuries increases with the number of animals hauled out. Calves and young animals are particularly vulnerable to trampling injuries and mortality. Management and protection programs in both the United States and Russian Federation have been successful in reducing disturbances and large mortality events at coastal haulouts (USFWS 2015).

The Service announced a 12-month petition finding to list the Pacific walrus as endangered or threatened and to designate critical habitat on February 10, 2011 (76 FR 7634). The listing of walruses was found to be warranted, but precluded due to higher priority listing actions and, the Pacific walrus was added to the list of candidate species under the Endangered Species Act (ESA; 16 U.S.C. 1533 et seq.). We will make any determination on critical habitat during development of the proposed listing rule.

Polar Bear

Polar bears are found throughout the ice-covered seas and adjacent coasts of the Arctic with a current population estimate of approximately 26,000 individuals (95 percent Confidence Interval (CI) = 22,000–31,000) (Wiig *et al.* 2015). Polar bears live up to 30 years, have no natural predators, though cannibalism is known to occur, and they do not often die from diseases or parasites. Polar bears typically occur at low densities throughout their circumpolar range (DeMaster and Stirling 1981). They are generally found in areas where the sea is ice-covered for much of the year; however, polar bears are not evenly distributed throughout their range. They are typically most abundant on sea-ice, near the ice edges or openings in the ice, over relatively shallow continental shelf

waters with high marine productivity (Durner *et al.* 2004). Their primary prey is ringed *(Pusa hispida)* and bearded *(Erignathus barbatus)* seals, although diet varies regionally with prey availability (Thiemann *et al.* 2008, Cherry *et al.* 2011). Polar bears use the sea-ice as a platform to hunt seals. Over most of their range, polar bears remain on the sea-ice year-round or spend only short periods on land. They may, however, be observed throughout the year in the onshore and nearshore environments, where they will opportunistically scavenge on beached marine mammal carcasses (Kalxdorff and Fischbach 1998). Their distribution in coastal habitats is often influenced by the movement of seasonal sea-ice.

Females can initiate breeding at 5 to 6 years of age. Females without dependent cubs breed in the spring. Pregnant females enter maternity dens by late November, and the young are usually born in late December or early January. Only pregnant females den for an extended period during the winter; other polar bears may excavate temporary dens to escape harsh winter winds. On average two cubs are born per reproductive event, and, therefore, reproductive potential (intrinsic rate of increase) is low. The average reproductive interval for a polar bear is 3 to 4 years, and a female polar bear can produce 8–10 cubs in her lifetime, in healthy populations, and 50–60 percent of the cubs will survive.

In late March or early April, the female and cubs emerge from the den. If the mother moves young cubs from the den before they can walk or withstand the cold, mortality to the cubs increases. Therefore, it is thought that successful denning, birthing, and rearing activities require a relatively undisturbed environment. Radio and satellite telemetry studies elsewhere indicate that denning can occur in multiyear pack ice and on

land. In the Southern Beaufort Sea (SBS) population the proportion of dens on pack ice declined from approximately 60 percent from 1985 through 1994 to 40 percent from 1998 through 2004 (Fischbach *et al.* 2007). This change is likely in response to reductions in stable old ice, increases in unconsolidated ice, and lengthening of the melt season (Fischbach *et al.* 2007). If sea-ice extent in the Arctic continues to decrease and the amount of unstable ice increases, a greater proportion of polar bears may seek to den on land (Durner *et al.* 2006, Fischbach *et al.* 2007).

In Alaska, maternal polar bear dens appear to be less densely concentrated than those in Canada and Russia. In Alaska, 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. Maternal denning occurs on tundra-bearing barrier islands along the Beaufort Sea and also in the large river deltas, such as those associated with the Colville and Canning rivers.

During the late summer/fall period (August through October), polar bears are most likely to be encountered along the coast and barrier islands. They use these areas as travel corridors and hunting areas. Based on Industry observations, encounter rates are higher during the fall (August to October) than any other time period. The duration of time the bears spend in these coastal habitats depends on a variety of factors including storms, ice conditions, and the availability of food. In recent years, polar bears have been observed in larger numbers than previously recorded during the fall period. The remains of subsistence-harvested bowhead whales at Cross and Barter islands provide a readily

available food source for bears in these areas and appear to play a role in this increase (Schliebe *et al.* 2006). Based on Industry observations and coastal survey data acquired by the Service, up to 125 individuals of the SBS bear population have been observed annually during the fall period between Barrow and the Alaska-Canada border.

In 2008, the Service listed polar bears as threatened under the ESA due to the loss of sea-ice habitat caused by climate change (73 FR 28212, May 15, 2008). The Service later published a final rule under section 4(d) of the ESA for the polar bear, which was vacated then reinstated when procedural requirements were satisfied (78 FR 11766, February 20, 2013). This special rule provides for measures that are necessary and advisable for the conservation of polar bears. Specifically, the 4(d) rule: (a) adopts the conservation regulatory requirements of the MMPA and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) for the polar bear as the appropriate regulatory provisions, in most instances; (b) provides that incidental, nonlethal take of polar bears resulting from activities outside the bear's current range is not prohibited under the ESA; (c) clarifies that the special rule does not alter the Section 7 consultation requirements of the ESA; and (d) applies the standard ESA protections for threatened species when an activity is not covered by an MMPA or CITES authorization or exemption.

The Service designated critical habitat for polar bear populations in the United States effective January 6, 2011 (75 FR 76086, December 7, 2010). On January 13, 2013, the U.S. District Court for the District of Alaska issued an order that vacated and remanded the polar bear critical habitat final rule to the Service (*Alaska Oil and Gas Association and American Petroleum Institute* v. *Salazar, Case No. 3:11–cv–0025–RRB*).

On February 29, 2016, the United States Court of Appeals for the 9th Circuit reversed that order and remanded it back to the U.S. District Court for the District of Alaska for entry of judgment in favor of FWS (*Alaska Oil and Gas Association* v. *Jewell, Case No. 13-35619*).

Critical habitat identifies geographic areas that contain features that are essential for the conservation of a threatened or endangered species and that may require special management or protection. Under section 7 of the ESA, if there is a Federal action, we will analyze the potential impacts of the action upon polar bear critical habitat. Polar bear critical habitat units include: 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; it 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 km^2 (~187,157 mi^2), and is entirely within the lands and waters of the United States. Polar bear critical habitat is described in detail in the final rule that designated polar bear critical habitat (75 FR 76086, December 7, 2010). A digital copy of the final critical habitat rule is available at: *http://alaska.fws.gov/fisheries/mmm/polarbear/pdf/federal_register_notice.pdf*.

Management and conservation concerns for the SBS and Chukchi/Bering Seas (CS) polar bear populations include sea-ice loss due to climate change, bear–human

conflict, oil and gas industry activity, oil spills and contaminants, increased marine shipping, increased disease, and the potential for overharvest. Research has linked declines in sea-ice to reduced physical condition, growth, and survival of polar bears (Bromaghin *et al.* 2015). Projections indicate continued climate warming at least through the end of this century (IPCC 2013). The associated reduction of summer Arctic sea-ice is expected to be a primary threat to polar bear populations (Amstrup *et al.* 2008, Stirling and Derocher 2012).

Stock Definition, Range, and Status

Polar bears are distributed throughout the circumpolar Arctic region. 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). A detailed description of the SBS and CS polar bear stocks can be found in the Polar Bear *(Ursus maritimus)* Stock Assessment Reports (announced at 74 FR 69139, December 30, 2009). Digital copies of the Stock Assessment Reports are available at: *http://www.fws.gov/alaska/fisheries/mmm/stock/final_sbs_polar_bear_sar.pdf* and *http://www.fws.gov/alaska/fisheries/mmm/stock/final_cbs_polar_bear_sar.pdf*. A summary of the Alaska polar bear stocks are described below.

Southern Beaufort Sea

The SBS polar bear population is shared between Canada and Alaska. Radio-telemetry data, combined with eartag returns from harvested bears, suggest that the SBS

population occupies a region with a western boundary near Icy Cape, Alaska, and an eastern boundary near Pearce Point, Northwest Territories, Canada (USFWS 2010).

Early estimates from the mid-1980s suggested the size of the SBS population was approximately 1,800 polar bears, although uneven sampling was known to compromise the accuracy of that estimate. A population analysis of the SBS stock was completed in June 2006 through joint research coordinated between the United States and Canada. That analysis indicated the population of the region between Icy Cape and Pearce Point was approximately 1,500 polar bears (95 percent confidence intervals approximately 1,000–2,000). Although the confidence intervals of the 2006 population estimate overlapped the previous population estimate of 1,800, other statistical and ecological evidence (e.g., high recapture rates encountered in the field) suggest that the current population is actually smaller than has been estimated for this area in the past. The most recent population estimate for the SBS population was produced by the USGS in 2015. Bromaghin *et al.* (2015) developed mark–recapture models to investigate the population dynamics of polar bears in the SBS from 2001 to 2010. They estimated that in 2010 there were approximately 900 polar bears (90 percent CI 606–1212) in the SBS population (Bromaghin *et al.* 2015). That study showed a 25 to 50 percent decline in abundance of SBS bears due to low survival from 2004 through 2006. Though survival of adults and cubs began to improve in 2007, and abundance was comparatively stable from 2008 to 2010, survival of subadult bears declined throughout the entire period.

Chukchi/Bering Seas

The CS polar bear population is shared between Russia and Alaska. The CS stock is widely distributed on the pack-ice in the Chukchi Sea, northern Bering Sea, and adjacent coastal areas in Alaska and Chukotka, Russia. Radio-telemetry data indicate that the northeastern boundary of the CS population is near the Colville Delta in the central Beaufort Sea and the western boundary is near the Kolyma River in northeastern Siberia (Garner *et al.*1990; Amstrup 1995; Amstrup *et al.* 2005). The population's southern boundary is determined by the extent of annual sea-ice in the Bering Sea. There is an extensive area of overlap between the SBS and CS populations roughly between Icy Cape, Alaska, and the Colville Delta (Garner *et al.* 1990; Garner *et al.* 1994; Amstrup *et al.* 2000; Amstrup *et al.* 2004; Obbard *et al.* 2010; Wiig *et al.* 2015).

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 the Russian Federation, and budget limitations (Amstrup and DeMaster 1988; Garner *et al.* 1992; Garner *et al.* 1998; Evans *et al.* 2003).

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, those estimates have wide confidence intervals and are outdated. The most recent estimate of the CS stock was approximately 2,000 animals, based on extrapolation of aerial den surveys (Lunn *et al.* 2002; USFWS 2010; Wiig *et al.* 2015). However, accurate estimates of the size and trend of the CS stock are difficult to obtain and not currently available. Ongoing and planned research studies for the period 2016–2018 will result in improved information, although the wide distribution of polar bears on sea ice, the vast

size of the region, and the lack of infrastructure to support research studies will continue to make it difficult to obtain up-to-date and accurate estimates of vital rates and population size. More information about polar bears can be found at: *http://www.fws.gov/alaska/fisheries/mmm/polarbear/pbmain.htm*.

Climate Change

As atmospheric greenhouse gas concentrations increase so will global temperatures (Pierrehumbert 2011). The Arctic has warmed at twice the global rate (IPCC 2007), and long-term data sets show that substantial reductions in both the extent and thickness of Arctic sea-ice cover have occurred over the past 40 years (Meier *et al.* 2014, Frey *et al.* 2015). Stroeve *et al.* (2012) estimated that, since 1979, the minimum area of fall Arctic sea-ice declined by over 12 percent per decade through 2010. Record minimum areas of fall Arctic sea-ice extent were recorded in 2002, 2005, 2007, and 2012 (lowest on record). The overall trend of continued decline of Arctic sea-ice is expected to continue for the foreseeable future (Stroeve *et al.* 2007, Amstrup *et al.* 2008, Hunter *et al.* 2010, Overland and Wang 2013, 73 FR 28212, May 15, 2008).

For walruses, climate-driven trends in the Chukchi Sea have resulted in seasonal fall sea-ice retreat beyond the continental shelf over deep Arctic Ocean waters. Reasonably foreseeable impacts to walruses as a result of diminishing sea-ice cover include potential shifts in range, habitat use, local abundance, increased frequency and duration at coastal haulouts, increased vulnerability to predation and disturbance, and localized declines in prey. It is unknown if walruses will utilize the Beaufort Sea more in

the future due to climate change effects. Currently, and for the next 5 years, it appears that walruses will remain uncommon in the Beaufort Sea.

For polar bears, sea-ice habitat loss due to climate change has been identified as the primary cause of conservation concern. Amstrup *et al.* (2007) projected a 42 percent loss of optimal summer polar bear habitat by 2050. They concluded that, if current Arctic sea-ice declines continue, polar bears may eventually be excluded from onshore denning habitat in the Polar Basin Divergent Ecoregion, where ice is formed and then drawn away from near-shore areas, especially during the summer minimum ice season. The SBS and CS polar bear populations inhabit this ecoregion, and Amstrup *et al.* (2008) projected that these populations may be extirpated within the next 45–75 years if sea-ice declines continue at current rates.

Climate change is likely to have serious consequences for the worldwide population of polar bears and their prey (Amstrup *et al.* 2007, Amstrup *et al.* 2008, Hunter *et al.* 2010). Climate change is expected to impact polar bears in a variety of ways including increased movements, changes in bear distributions, changes to the access and allocation of denning areas, increased energy expenditure from open-water swimming, and possible decreased fitness. The timing of ice formation and breakup will impact seal distributions and abundance and, consequently, how efficiently polar bears can hunt seals. Reductions in sea-ice are expected to require polar bears to use more physiological energy, as moving through fragmented sea-ice and open water requires more energy than walking across consolidated sea-ice (Cherry *et al.* 2009, Pagano *et al.* 2012, Rode *et al.* 2014).

Decreased sea-ice extent may impact the reproductive success of denning polar bears. In the 1990s, approximately 50 percent of the maternal dens of the SBS polar bear population occurred annually on the pack-ice in contrast to terrestrial sites (Amstrup and Gardner 1994). The proportion of dens on sea-ice declined from 62 percent in 1985–1994 to 37 percent in 1998–2004 (Fischbach *et al.* 2007) causing a corresponding increase in terrestrial dens. This trend in terrestrial denning appears to have continued. Polar bears require a stable substrate for denning. As sea-ice conditions deteriorate and become less stable, coastal dens become vulnerable to erosion from storm surges. Polar bear dens on land, especially on the North Slope of Alaska, are also at greater risk of conflict with human activities.

Polar bear use of Beaufort Sea coastal areas in Alaska during the fall open-water period (June through October) have increased over time. The Service anticipates that polar bear use of the Beaufort Sea coast will continue to increase during the open-water season. This change in distribution has been correlated with the distance of the pack-ice from the coast at that time of year (i.e., the farther from shore the leading edge of the pack-ice, the more bears observed onshore) (Schliebe *et al.* 2006). The current trend for sea-ice in the region will result in increased distances between the ice edge and land, likely resulting in more bears coming ashore during the open-water period. More polar bears on land for a longer period of time may increase human–bear interactions during this time period.

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

Pacific Walrus

Few walruses are harvested in the Beaufort Sea along the northern coast of Alaska since their primary range is in the Bering and Chukchi seas. Walruses constitute a small portion of the total marine mammal harvest for the village of Barrow. Hunters from Barrow harvested 451 walruses in the past 20 years with 78 harvested since 2009. Walrus harvest from Nuiqsut and Kaktovik is opportunistic. They have reported taking four walruses since 1993. Less than 1.5 percent of the total walrus harvest for Barrow, Nuiqsut, and Kaktovik from 2009 to 2014 has occurred within the geographic range of the incidental take regulations.

Polar Bear

Based on subsistence harvest reports, polar bear hunting is less prevalent in communities on the north coast of Alaska than it is in west coast communities. There are no quotas under the MMPA for Alaska Native polar bear harvest in the Southern Beaufort Sea; however, there is a Native-to-Native agreement between the Inuvialuit in Canada and the Inupiat in Alaska, created in 1988. This agreement, referred to as the Inuvialuit-Inupiat Polar Bear Management Agreement, established quotas and recommendations concerning protection of denning females, family groups, and methods of take. Although this Agreement does not have the force of law from either the Canadian or the U.S. Governments, the users have abided by its terms. In Canada, users are subject to provincial regulations consistent with the Agreement. Commissioners for the Inuvialuit-Inupiat Agreement set the original quota at 76 bears in 1988, split evenly

between the Inuvialuit in Canada and the Inupiat in the United States. In July 2010, the quota was reduced to 70 bears per year.

The Alaska Native subsistence harvest of polar bears from the SBS population has remained relatively consistent since 1980 and averages 36 bears annually. From 2005 through 2009, Alaska Natives harvested 117 bears from the SBS population, an average of approximately 23 bears annually. From 2010 through 2014, Alaska Natives harvested 98 polar bears from the SBS population, an average of approximately 20 bears annually. The reason for the decline of harvested polar bears from the SBS population is unknown. Alaska Native subsistence hunters and harvest reports have not indicated a lack of opportunity to hunt polar bears or disruption by Industry activity.

Evaluation of Effects of Activities on Subsistence Uses of Pacific Walruses and Polar Bears

Barrow and Kaktovik are expected to be affected to a lesser degree by Industry activities than Nuiqsut. Nuiqsut is located within 5 mi of ConocoPhillips' Alpine production field to the north and ConocoPhillips' Alpine Satellite development field to the west. However, Nuiqsut hunters typically harvest polar bears from Cross Island during the annual fall bowhead whaling. Cross Island is approximately 16 km (~10 mi) offshore from the coast of Prudhoe Bay. We have received no evidence or reports that bears are altering their habitat use patterns, avoiding certain areas, or being affected in other ways by the existing level of oil and gas activity near communities or traditional hunting areas that would diminish their availability for subsistence use.

Changes in activity locations may trigger community concerns regarding the effect on subsistence uses. Industry will need to remain proactive to address potential impacts on the subsistence uses by affected communities through consultations, and where warranted, POCs. Open communication through venues such as public meetings, which allow communities to express feedback prior to the initiation of operations, will be required as part of an LOA application. If community subsistence use concerns arise from new activities, appropriate mitigation measures are available and will be applied, such as a cessation of certain activities at certain locations during specified times of the year, i.e., hunting seasons.

No unmitigable concerns from the potentially affected communities regarding the availability of walruses or polar bears for subsistence uses have been identified through Industry consultations with the potentially affected communities of Barrow, Kaktovik, and Nuiqsut. Based on Industry reports, aerial surveys, direct observations, community consultations, and personal communication with hunters, it appears that subsistence hunting opportunities for walruses and polar bears have not been affected by past Industry activities, and we do not anticipate that the proposed activities for this ITR will have different effects.

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

Individual walruses and polar bears can be affected by Industry activities in numerous ways. These include (1) noise disturbance, (2) physical obstructions, (3) human encounters, and (4) effects on prey. In order to evaluate effects to walruses and polar

bears, we analyzed both documented and potential effects, including those that could have more than negligible impacts. The effects analyzed included the loss or preclusion of habitat, harassment, lethal take, and exposure to oil spills.

Pacific Walrus

Walruses do not utilize the Beaufort Sea frequently and the likelihood of encountering walruses during Industry operations is low. During the time period of these regulations, Industry operations may occasionally encounter small groups of walruses swimming in open water or hauled out onto ice floes or along the coast. Industry monitoring data have reported 35 walruses between 1995 and 2012, with only a few instances of disturbance to those walruses (AES Alaska 2015, USFWS unpublished data). From 2009 through 2014 no interactions between walrus and Industry were reported in the Beaufort Sea ITR region. We have no evidence of any physical effects or impacts to individual walruses due to Industry activity. If an interaction did occur, it could potentially result in some level of disturbance. The response of walruses to disturbance stimuli is highly variable. Anecdotal observations by walrus hunters and researchers suggest that males tend to be more tolerant of disturbances than females and individuals tend to be more tolerant than groups. Females with dependent calves are considered least tolerant of disturbances. In the Chukchi Sea disturbance events are known to cause walrus groups to abandon land or ice haulouts and occasionally result in trampling injuries or cow-calf separations, both of which are potentially fatal. Calves and young animals at terrestrial haulouts are particularly vulnerable to trampling injuries.

Noise Disturbance

Walruses hear sounds both in air and in water. Kastelein *et al.* (1996) tested the in-air hearing of a walrus from 125 hertz (Hz) to 8 kilohertz (kHz) and determined the walrus could hear all frequency ranges tested but the best sensitivity was between 250 Hz and 2 kHz. Kastelein *et al.* (2002) tested underwater hearing and determined that range of hearing was between 1 kHz and 12 kHz with greatest sensitivity at 12 kHz. The small sample size warrants caution; other pinnipeds can hear up to 40 kHz. Many of the noise sources generated by Industry activities, other than the very high frequency seismic profiling, are likely to be audible to walruses.

Seismic operations, pile driving, ice breaking, and various other Industry activities introduce substantial levels of noise into the marine environment. Greene *et al.* (2008) measured underwater and airborne noise from ice road construction, heavy equipment operations, auguring, and pile driving during construction of a gravel island at Northstar. Underwater sound levels from construction ranged from 103 decibels (dB) at 100 m (328 ft) for auguring to 143 dB at 100 m (328 ft) for pile driving. Most of the energy of these sounds was below 100 Hz. Airborne sound levels from these activities ranged from 65 dB at 100 m (328 ft) for a bulldozer and 81 dB at 100 m (328 ft) for pile driving. Most of the energy for in-air levels was also below 100 Hz. Airborne sound levels and frequencies typically produced by Industry are unlikely to cause hearing damage unless marine mammals are very close to the sound source, but may cause disturbance.

Typical source levels associated with underwater marine 3D and 2D seismic surveys are 230–240 dB. Airgun arrays produce broadband frequencies from 10 Hz to 2

kHz with most of the energy concentrated below 200 Hz. Frequencies used for high-resolution oil and gas exploration surveys are typically 200 Hz–900 kHz. Commercial sonar systems may also generate lower frequencies audible to marine mammals (Deng et al 2012). Some surveys use frequencies as low as 50 Hz or as high as 2 MHz. Broadband source levels for high-resolution surveys can range from 210 to 226 dB at 1 m. Sound attenuates in air more rapidly than in water, and underwater sound levels can be loud enough to cause hearing loss in nearby animals and disturbance of animals at greater distances.

Noise generated by Industry activities, whether stationary or mobile, has the potential to disturb walruses. Marine mammals in general have variable reactions to noise sources, particularly mobile sources such as marine vessels. 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 source. Walruses are typically more sensitive to disturbance when hauled out on land or ice than when they are in the water. In addition, females and young are generally more sensitive to disturbance than adult males.

Potential impacts of Industry-generated noise include displacement from preferred foraging areas, increased stress, energy expenditure, interference with feeding, and masking of communications. Any impact of Industry noise on walruses is likely to be limited to a few individuals due to their geographic range and seasonal distribution. Walruses typically inhabit the pack-ice of the Bering and Chukchi seas and do not often move into the Beaufort Sea.

In the nearshore areas of the Beaufort Sea, stationary offshore facilities could produce high levels of noise that has the potential to disturb walruses. These include Endicott, BPXA's Saltwater Treatment Plant (located on the West Dock Causeway), Oooguruk, and Northstar facilities. The Liberty project will also have this potential when it commences operations. From 2009 through 2014 there were no reports of walruses hauling out at Industry facilities in the Beaufort Sea ITR region. Previous observations have been reported of walruses hauled out on Northstar Island and swimming near the Saltwater Treatment Plant. In 2007, a female and a subadult walrus were observed hauled-out on the Endicott Causeway. In instances where walruses have been seen near these facilities, they have appeared to be attracted to them, possibly as a resting area or haulout.

In the open waters of the Beaufort Sea, seismic surveys and high-resolution site-clearance surveys will be the primary source of high levels of underwater sound. Such surveys are typically carried out away from the edge of the seasonal pack-ice. This scenario will minimize potential interactions with large concentrations of walruses, which typically favor sea-ice habitats. The most likely response of walruses to acoustic disturbances in open water will be for animals to move away from the source of the disturbance. Displacement from a preferred feeding area may reduce foraging success, increase stress levels, and increase energy expenditures. Potential adverse effects of Industry noise on walruses can be reduced through the implementation of the monitoring and mitigation measures identified in this ITR.

Potential acoustic injuries from high levels of sound such as those produced during seismic surveys may manifest in the form of temporary or permanent changes in

hearing sensitivity. The underwater hearing abilities of the Pacific walrus have not been studied sufficiently to develop species-specific criteria for preventing harmful exposure. Sound pressure level thresholds have been developed for other members of the pinniped taxonomic group, above which exposure is likely to cause behavioral responses and injuries (Finneran 2015).

Historically, the National Oceanic and Atmospheric Administration (NOAA) has used 190 dB_{rms} as a threshold for predicting injury to pinnipeds and 160 dB_{rms} as a threshold for behavioral impacts from exposure to impulse noise (NMFS 1998, HESS 1999). The behavioral response threshold was developed based primarily on observations of marine mammal responses to airgun operations (e.g., Malme *et al.*, 1983a, 1983b; Richardson *et al.*, 1986, 1995). Southall *et al.* 2007 assessed relevant studies, found considerable variability among pinnipeds, and determined that exposures between ~90 and 140 dB generally do not appear to induce strong behavioral responses in pinnipeds in water, but an increasing probability of avoidance and other behavioral effects exists in the 120 to 160 dB range.

The NOAA 190-dB_{rms} injury threshold is an estimate of the sound level likely to cause a permanent shift in hearing threshold (permanent threshold shift or PTS). This value was modelled from temporary threshold shifts (TTS) observed in pinnipeds (NMFS 1998, HESS 1999). More recently, Kastak *et al.* (2005) found exposures resulting in TTS in pinniped test subjects ranging from 152 to 174 dB (183 to 206 dB SEL). Southall *et al.* (2007) reviewed the literature and derived behavior and injury thresholds based on peak sound pressure levels of 212 dB (peak) and 218 dB (peak) respectively. Because onset of TTS can vary in response to duration of exposure, Southall *et al.* (2007) also derived

thresholds based on sound exposure levels (SEL). Sound exposure level can be thought of as a composite metric that represents both the magnitude of a sound and its duration. The study proposed threshold SELs weighted at frequencies of greatest sensitivities for pinnipeds of 171 dB (SEL) and 186 dB (SEL) for behavioral impacts and injury respectively (Southall *et al.* 2007). Reichmuth *et al.* (2008) demonstrated a persistent TTS, if not a PTS, after 60 seconds of 184 dB SEL. Kastelein (2012) found small but statistically significant TTSs at approximately 170 dB SEL (136 dB, 60 min) and 178 dB SEL (148 dB, 15 min).

Based on these data, and applying a precautionary approach in the absence of empirical information, we assume it is possible that walruses exposed to 190-dB or greater sound levels from underwater activities (especially seismic surveys) could suffer injury from PTS. Walruses exposed to underwater sound pressure levels greater than 180 dB could suffer temporary shifts in hearing thresholds. Repeated or continuous exposure to sound levels between 160 and 180 dB may also result in TTS, and exposures above 160 dB are more likely to elicit behavioral responses than lower level exposures. The Service's underwater sound mitigation measures include employing protected species observers (PSOs) to establish and monitor 160-dB, 180-dB, and 190-dB isopleth mitigation zones centered on any underwater sound source greater than 160 db. The 160-dB zone must be monitored; walruses in this zone will be assumed to experience Level B take. The 180-dB and 190-dB zones shall be free of marine mammals before the sound-producing activity can begin and must remain free of marine mammals during the activity. The proposed ITRs incorporate slight changes in the mitigation zones when compared to previous ITRs for the region. Previous ITRs have required separate actions for groups of greater than 12 walruses. Industry activities are unlikely to encounter large

aggregations of walruses in the Beaufort Sea. This stipulation was originally developed for and is more applicable to mitigation of impacts to walruses in the Chukchi Sea and is not likely to be applicable in the Beaufort Sea.

The acoustic thresholds for marine mammals under NOAA's jurisdiction are currently being revised (NOAA 2015, NOAA 2016). New thresholds will estimate PTS onset levels for impulsive (e.g., airguns, impact pile drivers) and nonimpulsive (e.g., sonar, vibratory pile drivers) sound sources. Thresholds will be specific to marine mammal functional hearing groups; separate thresholds for otariid and phocid pinnipeds will be adopted. Auditory weighting functions will be incorporated into calculation of PTS threshold levels. The updated acoustic thresholds will also account for accumulation of injury due to repeated or ongoing exposure by adopting dual metrics of sound (cumulative sound exposure level and peak sound pressure level). The updated criteria will not provide specification for modeling sound exposures from various activities. They will not update thresholds for preventing behavioral responses, nor will they provide any new information regarding the Pacific walrus.

Once NOAA's new criteria for preventing harm to marine mammals from sound exposure are finalized, the Service will evaluate the new thresholds for applicability to walruses. In most cases, the Service's existing thresholds for Pacific walrus will result in greater separation distances or shorter periods of exposure to Industry sound sources than would NOAA's new pinniped thresholds. Assuming walrus hearing sensitivities are similar to other pinnipeds, the Service's sound exposure thresholds are, in some situations, likely to be more conservative than necessary to prevent injury from PTS and TTS. However, animals may be exposed to multiple stressors beyond acoustics during an

activity, with the possibility of additive or synergistic effects (e.g., Crain *et al.* 2008). The Service's mitigation measures will prevent acoustic injury as well as minimize noise exposures that may cause biologically significant behavioral reactions in walruses.

To reduce the likelihood of Level B harassment, and prevent behavioral responses capable of causing Level A harassment, the Service has established an 805-m (0.5-mile) operational exclusion zone around groups of walruses feeding in water or any walrus observed on land or ice. As mentioned previously, walruses show variable reactions to noise sources. Relatively minor reactions, such as increased vigilance, are not likely to disrupt biologically important behavioral patterns and, therefore, do not reach the level of harassment, as defined by the MMPA. However, more significant reactions have been documented in response to noise. Industry monitoring efforts in the Chukchi Sea suggest that icebreaking activities can displace some walrus groups up to several kilometers away (Brueggeman *et al*. 1990). Approximately 25 percent of walrus groups on pack-ice responded by diving into the water, and most reactions occurred within 1 km (0.6 mi) of the ship (Brueggeman *et al.* 1991). Reactions such as fleeing a haulout or departing a feeding area have the potential to disrupt biologically significant behavioral patterns, including nursing, feeding, and resting, and may result in decreased fitness for the affected animal. These reactions meet the criteria for Level B harassment under the MMPA. Industry activities producing high levels of noise or occurring in close proximity also have the potential to illicit extreme reactions (Level A harassment) including separation of mothers from young or instigation of stampedes. However, most groups of hauled out walruses showed little reaction to icebreaking activities beyond 805 m (0.5 mi; Brueggeman *et al*. 1990).

Because some seismic survey activities are expected to occur in nearshore regions of the Beaufort Sea, impacts associated with support vessels and aircraft are likely to be locally concentrated, but distributed over time and space. Therefore, noise and disturbance from aircraft and vessel traffic associated with seismic surveys are expected to have relatively localized, short-term effects. The mitigation measures stipulated in these ITRs will require seismic survey vessels and associated support vessels to apply acoustic mitigation zones, maintain an 805-m (0.5-mile) distance from Pacific walrus groups, introduce noise gradually by implementing ramp-up procedures, and to maintain a 457-m (1,500-ft) minimum altitude above walruses. These measures are expected to reduce the intensity of disturbance events and to minimize the potential for injuries to animals.

With the low occurrence of walruses in the Beaufort Sea and the adoption of the mitigation measures required by this ITR, the Service concludes that the only anticipated effects from Industry noise in the Beaufort Sea would be short-term behavioral alterations of small numbers of walruses.

Vessel Traffic

Although seismic surveys and offshore drilling operations are expected to occur in areas of open water away from the pack ice, support vessels and aircraft servicing seismic and drill operations may encounter aggregations of walruses hauled out onto sea-ice. The sight, sound, or smell of humans and machines could potentially displace these animals from any ice haulouts. Walruses react variably to noise from vessel traffic; however, 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 vessel traffic typically avoids these areas. The reaction of walruses to vessel traffic is dependent upon vessel type, distance, speed, and previous exposure to disturbances. Walruses in the water appear to be less readily disturbed by vessels than walruses hauled out on land or ice. Furthermore, barges and vessels associated with Industry activities travel in open water and avoid large ice floes or land where walruses are likely to be found. In addition, walruses can use a vessel as a haul-out platform. In 2009, during Industry activities in the Chukchi Sea, an adult walrus was found hauled out on the stern of a vessel. It eventually left once confronted.

Drilling operations are expected to involve drill ships attended by icebreaking vessels to manage incursions of sea-ice. Ice management operations are expected to have the greatest potential for disturbances since walruses are more likely to be encountered in sea-ice habitats and ice management operations typically require the vessel to accelerate, reverse direction, and turn rapidly, thereby maximizing propeller cavitation and producing significant noise. Previous monitoring efforts in the Chukchi Sea suggest that icebreaking activities can displace some walrus groups up to several kilometers away; however, most groups of hauled-out walruses showed little reaction beyond 805 m (0.5 mi).

Monitoring programs associated with exploratory drilling operations in the Chukchi Sea since 1990 noted that approximately 25 percent of walrus groups encountered in the pack-ice during icebreaking responded by diving into the water, with most reactions occurring within 1 km (0.6 mi) of the ship. The monitoring report noted

that: (1) walrus distributions were closely linked with pack-ice; (2) pack-ice was near active prospects for relatively short time periods; and (3) ice passing near active prospects contained relatively few animals. The report concluded that effects of the drilling operations on walruses were limited in time, geographical scale, and the proportion of population affected.

When walruses are present, underwater noise from vessel traffic in the Beaufort Sea may "mask" ordinary communication between individuals by preventing them from locating one another. It may also prevent walruses from using potential habitats in the Beaufort Sea and may have the potential to impede movement. Vessel traffic will likely increase if offshore Industry expands and may increase if warming waters and seasonally reduced sea-ice cover alter northern shipping lanes.

Because offshore exploration activities are expected to move throughout the Beaufort Sea, impacts associated with support vessels and aircrafts are likely to be distributed in time and space. Therefore, the only effect anticipated would be short-term behavioral alterations impacting small numbers of walruses in the vicinity of active operations. Adoption of mitigation measures that include an 805-m (0.5-mi) exclusion zone for marine vessels around walrus groups observed on ice are expected to reduce the intensity of disturbance events and minimize the potential for injuries to animals.

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-

winged aircraft are less likely to elicit a response than helicopter overflights. Walruses are particularly sensitive to changes in engine noise and are more likely to stampede when planes turn or fly low overhead. Researchers conducting aerial surveys for walruses in sea-ice habitats have observed little reaction to fixed-winged aircraft above 457 m (1,500 ft) (USFWS 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 (100 m (328 ft) above ground level) or aircraft that change or alter speed or direction. In the Chukchi Sea there are recent examples of walruses being disturbed by aircraft flying in the vicinity of haulouts. It appears that walruses are more sensitive to disturbance when hauled out on land versus sea-ice.

Physical Obstructions

Based on known walrus distribution and the very low numbers found in the Beaufort Sea, it is unlikely that walrus movements would be displaced by offshore stationary facilities, such as the Northstar Island or causeway-linked Endicott complex, or by vessel traffic. There is no indication that the few walruses that used Northstar Island as a haulout in the past were displaced from their movements. 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.

Human Encounters

Human encounters with walruses could occur in the course of Industry activities, although such encounters would be rare due to the limited distribution of walruses in the Beaufort Sea. These encounters may occur within certain cohorts of the population, such as calves or animals under stress. In 2004, a suspected orphaned calf hauled-out on the armor of Northstar Island numerous times over a 48-hour period, causing Industry to cease certain activities and alter work patterns before it disappeared in stormy seas. Additionally, a walrus calf was observed for 15 minutes during an exploration program 60 ft from the dock at Cape Simpson in 2006. From 2009 through 2014, Industry reported no similar interactions with walruses.

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, as well as altered metabolic and growth rates. Relatively few walruses are present in the central Beaufort Sea. It is important to note that, although the status of walrus prey species within the Beaufort Sea are poorly known, it is unclear to what extent, if any, prey abundance plays in limiting the use of the Beaufort Sea by walruses. Further study of the Beaufort Sea benthic community as it relates to walruses is warranted. The low likelihood of an oil spill large enough to affect prey populations (see the section titled **Risk Assessment of Potential Effects Upon Polar Bears from a Large Oil Spill in the Beaufort Sea**) combined with the fact that

walruses are not present in the region during the ice-covered season and occur only infrequently during the open-water season indicates that Industry activities will likely have limited indirect effects on walruses through effects on prey species.

Polar Bear

Noise Disturbance

Noise produced by Industry activities during the open-water and ice-covered seasons could disturb polar bears. The impact of noise disturbances may affect bears differently depending upon their reproductive status (e.g., denning versus non-denning bears). The best available scientific information indicates that female polar bears entering dens, or females in dens with cubs, are more sensitive than other age and sex groups to noises.

Noise disturbance can originate from either stationary or mobile sources. Stationary sources include construction, maintenance, repair and remediation activities, operations at production facilities, gas flaring, and drilling operations from either onshore or offshore facilities. Mobile sources include vessel and aircraft traffic, open-water seismic exploration, winter vibroseis programs, geotechnical surveys, ice road construction, vehicle traffic, tracked vehicles and snowmobiles, drilling, dredging, and ice-breaking vessels.

Noise produced by stationary activities could elicit variable responses from polar bears. The noise may act as a deterrent to bears entering the area, or the noise could potentially attract bears. Attracting bears to these facilities, especially exploration

facilities in the coastal or nearshore environment, could result in human-bear encounters, unintentional harassment, intentional hazing, or lethal take of the bear.

Industry activities may potentially disturb polar bears at maternal den sites. The timing of potential Industry activity compared with the timing of the maternal denning period can have variable impacts on the female bear and her cubs. Disturbance, including noise, may negatively impact bears less during the early stages of denning when the pregnant female has less investment in a den site before giving birth. She may abandon the site in search of another one and still successfully den and give birth. Premature den site abandonment after the birth of cubs may also occur. If den site abandonment occurs before the cubs are able to survive outside of the den, or if the female abandons the cubs, the cubs will die.

An example of a den abandonment in the early stages of denning occurred in January 1985, where a female polar bear appears to have abandoned her den in response to Rolligon traffic within 500 m (1,640 ft) of the den site. In spring 2002, noise associated with a polar bear research camp in close proximity to a bear den is thought to have caused a female bear and her cub(s) to abandon their den and move to the ice prematurely. In spring 2006, a female with two cubs emerged from a den 400 m (1,312 ft) from an active river crossing construction site. The den site was abandoned within hours of cub emergence, and 3 days after the female had emerged. In spring 2009, a female with two cubs emerged from a den within 100 m (328 ft) of an active ice road with heavy traffic and quickly abandoned the site. In January 2015 a freshly dug polar den was discovered in an active gravel pit adjacent to an active landfill and busy road. The bear abandoned the den after 56 days. During the time the bear occupied the den,

Industry activity in the area was restricted, and the den was constantly monitored. A subsequent investigation of the den found no evidence that the bear gave birth. It is unknown if or to what extent Industry activity contributed to the bear leaving the den. While such events may have occurred, information indicates they have been infrequent and isolated. It is important to note that the knowledge of these recent examples occurred because of the monitoring and reporting program established by the ITRs.

Conversely, during the denning seasons of 2000–2002, two dens known to be active were located within approximately 0.4 km and 0.8 km (~0.25 mi and ~0.5 mi) of remediation activities on Flaxman Island in the Beaufort Sea with no observed impact to the polar bears. This observation suggests that polar bears exposed to routine industrial noises may habituate to those noises and show less vigilance than bears not exposed to such stimuli. This observation came from a study that occurred in conjunction with industrial activities performed on Flaxman Island in 2002 and a study of undisturbed dens in 2002 and 2003 (N = 8) (Smith *et al.* 2007). Researchers assessed vigilant behavior with two potential measures of disturbance: (1) the proportion of time scanning their surroundings; and (2) the frequency of observable vigilant behaviors. The two bears exposed to the industrial activity spent less time scanning their surroundings than bears in undisturbed areas and engaged in vigilant behavior significantly less often.

The potential for disturbance increases once the female emerges from the den. She is more vigilant against perceived threats and easier to disturb. As noted earlier, in some cases, while the female is in the den, Industry activities have progressed near den site with no observed disturbance. In the 2006 denning example previously discussed, it was believed that Industry activity commenced in the area after the den had been

established. Industry activities occurred within 50 m (164 ft) of the den site with no apparent disturbance while the female was in the den. Ongoing activity most likely had been occurring for approximately 3 months in the vicinity of the den.

Likewise, in 2009, two bear dens were located along an active ice road. The bear at one den site appeared to establish her site prior to ice road activity and was exposed to approximately 3 months of activity 100 m (328 ft) away and emerged at the appropriate time. The other den site was discovered after ice road construction commenced. This site was exposed to ice road activity, 100 m (328 ft) away, for approximately 1 month. Known instances of polar bears establishing dens prior to the onset of Industry activity within 500 m (1,640 ft) or less of the den site, but remaining in the den through the normal denning cycle and later leaving with her cubs, apparently undisturbed despite the proximity of Industry activity, occurred in 2006, 2009, 2010, and 2011.

Industry observation data suggests that, with proper mitigation measures in place, activities can continue in the vicinity of dens until the emergence by the female bear. Mitigation measures such as activity shutdowns near the den and 24-hour monitoring of the den site can minimize impacts to the animals and allow the female bear to naturally abandon the den when she chooses. For example, in the spring of 2010, an active den site was observed approximately 60 m (197 ft) from a heavily used ice road. A 1.6-km (1-mi) exclusion zone was established around the den, closing a 3.2 km (2-mi) section of the road. Monitors were assigned to observe bear activity and monitor human activity to minimize any other impacts to the bear group. These mitigation measures minimized disturbance to the bears and allowed them to abandon the den site naturally.

Mobile sources of sound, e.g., vessel-based exploration activities, seismic surveys, or geophysical surveys, may disturb polar bears. In the open-water season, Industry activities are generally limited to relatively ice-free, open water. During this time in the Beaufort Sea, polar bears are typically found either on land or on the pack ice, which limits the chances of the interaction of polar bears with offshore Industry activities. Though polar bears have been observed in open water, miles from the ice edge or ice floes, the encounters are relatively rare. However, if bears come in contact with Industry operations in open water, the effects of such encounters may include short-term behavioral disturbance. Bears in the water could be affected by sound in the water, but received sound in the water would be attenuated near the surface due to the pressure release effect of airgun sounds near the water's surface (Greene and Richardson 1988, Richardson *et al.* 1995). Because polar bears generally do not dive far or for long below the surface and they normally swim with their heads above the surface, it is likely that they would be exposed to very little sound in the water. Exposure to sound in the water would also be short term and temporary for only the time a bear's head was below the surface. It is likely that offshore seismic exploration activities or other geophysical surveys during the open-water season would result in no more than short-term and temporary behavioral disturbance to polar bears, similar to that discussed earlier.

In 2012, during the open-water season, Shell vessels encountered a few polar bears swimming in ice-free water more than 70 mi (112.6 km) offshore in the Chukchi Sea. In those instances the bears were observed to either swim away from or approach the Shell vessels. Sometimes a polar bear would swim around a stationary vessel before

leaving. In at least one instance a polar bear approached, touched, and investigated a stationary vessel from the water before swimming away.

Polar bears are more likely to be affected by on-ice or in-ice Industry activities versus open-water activities. From 2009 through 2014 there were a few Industry observation reports of polar bears during on-ice activities. Those observations were primarily of bears moving through an area during winter seismic surveys on near-shore ice. The disturbance to bears, if any, was minimal, short-term, and temporary due to the mobility of such projects and limited to small-scale alterations to bear movements.

Vessel Traffic

During the open-water season, most polar bears remain offshore associated with the multiyear pack ice and are not typically present in the ice-free areas where vessel traffic occurs. Barges and vessels associated with Industry activities travel in open water and avoid large ice floes. As demonstrated in the 2012 Shell example previously, encounters between vessels and polar bears would most likely result in short-term and temporary behavioral disturbance only.

Aircraft Traffic

Routine Industry aircraft traffic should have little to no effect on polar bears, though frequent and chronic aircraft activity may cause more significant disturbance. Observations of polar bears during fall coastal surveys, which flew at much lower altitudes than is required of Industry aircraft (see mitigation measures), indicate that the reactions of non-denning polar bears should be limited to short-term changes in behavior

ranging from no reaction to running away. Such disturbance should have no more than short-term, temporary, and minor impacts on individuals and no discernible impacts on the polar bear population, unless it was chronic and long-term. In contrast, denning bears could prematurely abandon their dens in response to repeated aircraft overflight noise. Mitigation measures, such as minimum flight elevations over polar bears, habitat areas of concern, and flight restrictions around known polar bear dens, will be required, as appropriate, to reduce the likelihood that polar bears are disturbed by aircraft.

Physical Obstructions

Industry facilities may act as physical barriers to movements of polar bears. Most facilities are located onshore and inland where polar bears are less frequently found. The offshore and coastal facilities are more likely to be approached by polar bears. The majority of Industry bear observations occur within 1.6-km (1-mi) of the coastline as bears use this area as travel corridors. As bears encounter these facilities, the chances for human-bear interactions increase. The Endicott and West Dock causeways, as well as the facilities supporting them, have the potential to act as barriers to movements of polar bears because they extend continuously from the coastline to the offshore facility. However, polar bears have frequently been observed crossing existing roads and causeways and appear to traverse the human-developed areas as easily as the undeveloped areas. Offshore production facilities, such as Northstar, Spy Island, and Oooguruk, have frequently been approached by polar bears, but appear to present only a small-scale, local obstruction to the bears' movement. Of greater concern is the increased potential for polar bear-human interaction at these facilities.

Human Encounters

Historically, polar bear observations are seasonally common, but close encounters with Industry personnel are uncommon. These encounters can be dangerous for both polar bears and humans.

Encounters are more likely to occur during the fall at facilities on or near the coast. Polar bear interaction plans, training, and monitoring required by the ITRs have proven effective at reducing polar bear–human encounters and the risks to bears and humans when encounters occur. Polar bear interaction plans detail the policies and procedures that Industry facilities and personnel will implement to avoid attracting and interacting with polar bears as well as minimizing impacts to the bears. Interaction plans also detail how to respond to the presence of polar bears, the chain of command and communication, and required training for personnel.

Industry has also developed and uses technology to aid in detecting polar bears, including bear monitors, closed-circuit television (CCTV), video cameras, thermal cameras, radar devices, and motion-detection systems. In addition, some companies take steps to actively prevent bears from accessing facilities using safety gates and fences.

Known polar bear dens around the oilfield, discovered opportunistically, or as a result of planned surveys, such as tracking marked bears or den detection surveys, are monitored by the Service. However, these sites are only a small percentage of the total active polar bear dens for the SBS stock in any given year. Each year Industry coordinates with the Service to conduct surveys to determine the location of Industry's activities relative to known dens and denning habitat. Industry activities are required to

avoid known polar bear dens by 1 mi. There is the possibility that an unknown den may be encountered during Industry activities. When a previously unknown den is discovered in proximity to Industry activity, the Service implements mitigation measures such as the 1.6-km (1-mi) activity exclusion zone around the den and 24-hour monitoring of the site.

Effect on Prey Species

The effects of Industry activity upon polar bear prey, primarily ringed seals, will be similar to that of effects upon walruses, and primarily through noise disturbance or exposure to an oil spill. Seals may be displaced by disturbance from habitat areas such as pupping lairs or haulouts and abandon breathing holes near Industry activity. However, these disturbances appear to have minor, short-term, and temporary effects (NMFS 2013). Effects of contamination from oil discharges for seals are described in the following section.

Evaluation of Effects of Oil and Gas Industry Activity on Pacific Walruses and Polar Bears

Pacific Walrus

Proposed Industry activities may result in some incremental cumulative effects to the relatively few walruses exposed to these activities through the potential exclusion or avoidance of walruses from resting areas and disruption of associated biological behaviors. However, based on the habitat use patterns of walruses and their close association with seasonal pack-ice, relatively few animals are likely to be encountered during the open-water season when marine activities are expected to occur. Required

monitoring and mitigation measures designed to minimize interactions between Industry activities and walruses are also expected to limit these impacts. Hunting pressure, climate change, and the increase of other human activities in walrus habitat all have potential to impact walruses. But those activities and their impacts are mostly a concern in the Bering and Chukchi seas where large numbers of walruses are found. Therefore, we conclude that in the Beaufort Sea, Industry activities during the 5-year period covered by these regulations, as mitigated through the regulatory process, are not expected to add significantly to the cumulative impacts on the walrus population.

Polar Bear

The effects of Industry activity are evaluated, in part, through information gained in monitoring reports, which are required for each LOA issued. Information from these reports provides a history of past effects on polar bears from interactions with Industry activities. In addition, information used in our effects evaluation includes published and unpublished polar bear research and monitoring reports, information from the 2008 ESA polar bear listing, stock assessment reports, status reviews, conservation plans, Alaska Native traditional knowledge, anecdotal observations, and professional judgment.

Since 1993, the documented impacts of incidental take by Industry activity in the Beaufort Sea ITR region affected only small numbers of bears, were primarily short-term changes to behavior, and had no long-term impacts on individuals and no impacts on the polar bear population. Industry monitoring data has documented various types of interactions between polar bears and Industry. The most significant impacts to polar bears

from Industry activity have been the result of close bear–human encounters, some of which have led to deterrence events.

For the analysis of Industry take of polar bears, we included both incidental and intentional takes that occurred from 2010 through 2014. We included intentional takes to provide a transparent and complete analysis of Industry-related polar bear takes on the North Slope of Alaska. Intentional take of polar bears is a separate authorization under sections 101(a)(4)(A), 109(h), and 112(c) of the MMPA and is distinct from the ITRs. Intentional take authorizations allow citizens conducting activities in polar bear habitat to take polar bears by nonlethal, noninjurious harassment for the protection of both human life and polar bears. The purpose of the intentional take authorization is to deter polar bears prior to a bear–human encounter escalating to the use of deadly force against a polar bear. The Service provides guidance and training as to the appropriate harassment response necessary for polar bears. The MMPA-specific authorizations have proven to be successful in preventing injury and death to humans and polar bears.

From 2010 through 2014, a total of 107 LOAs were issued to Industry, and polar bear observations were recorded for 36.4 percent (39) of those LOAs. Industry reported 1,234 observations of 1,911 polar bears. The highest number of bears was observed during the months of August and September. Industry polar bear observations have increased from previous regulatory time periods. The higher number of bear sightings was most likely the result of an increased number of bears using terrestrial habitat as a result of changes in sea-ice, multiple vessel-based projects occurring near barrier islands, and the increased compliance and improved monitoring of Industry projects. This trend in observations is consistent with the anticipation that polar bears will increase their use of

coastal habitats during the months when sea-ice is far from shore and over deep water. Because some of the reports were repeat observations of the same bears on different dates, the actual number of individual bears encountered is lower than reported. However, due to the nature of the information in the Industry observation reports, we must accept the information "as is" while acknowledging that it collectively over-reports bear numbers.

When we compared the reported bear numbers to the SBS population (i.e., 900 bears), we found that 42 percent of the SBS polar bear population may have been observed by Industry personnel from 2010 to 2014. When we evaluated the effects upon the 1,911 bears observed, we found that 81 percent (1,549) resulted in instances of non-taking. Of the remaining 362 encounters, 78 resulted in Level B takes by incidental disturbance, 260 Level B takes by deterrence, 23 instances of unknown effect, and 1 Level A take associated with Industry activity. Over those 5 years, 338 Level B takes of polar bears occurred, which is approximately 18 percent of the observed bears, or 7.5 percent of the SBS population.

For the 2011–2016 ITR, the Service estimated that takes of polar bears by all Level B harassment events would not exceed 150 per year. Our analysis of Industry polar bear observation reports shows that from 2010 through 2014 an average of 68 Level B harassment events occurred per year, well below our estimated value. Industry activities that occur on or near the Beaufort Sea coast continue to have the greatest potential for encountering polar bears rather than Industry activities occurring inland or far offshore.

From 2010 through 2014, intentional harassment by deterrence of 260 polar bears (14 percent of the observed 1,911) resulted in Level B take. The percentage of polar bear

deterrence events that result in Level B take has decreased over time from a high of 39 percent of observed bears in 2005. The Service attributes this long-term decrease in deterrence events to increased polar bear safety and awareness training of Industry personnel as well as our ongoing deterrence education, training, and monitoring programs. We have no indication that nonlethal, noninjurious harassment by deterrence, which temporarily alters the behavior and movement of some bears, has an effect on survival and recruitment in the SBS polar bear population.

Lethal take of polar bears by Industry activity is very rare. Since 1968, three documented cases of lethal take of polar bears associated with oil and gas activities have occurred. In winter 1968–1969, an Industry employee shot and killed a polar bear in defense of human life. In 1990, a female polar bear was killed at a drill site on the west side of Camden Bay, also in defense of human life. Since the beginning of the incidental take program in 1993, which includes measures that minimize impacts to the species, one polar bear has been killed due to encounters associated with current Industry activities on the North Slope. In August 2011, a female polar bear was accidentally killed on the Endicott causeway when an attempt to nonlethally deter the bear was not conducted properly. After the 2011 lethal take incident, the Service reviewed the circumstances that contributed to the death of the bear and implemented a series of corrective actions with Industry. The Service believes that the corrective actions significantly reduce the potential for a similar situation to arise in the future. Therefore, we do not anticipate any lethal take of polar bears during the 5-year period of these proposed ITRs.

The activities proposed by Industry are likely to result in incremental cumulative effects to polar bears during the 5-year regulatory period. Based on Industry monitoring

information, for example, deflection from travel routes along the coast appears to be a common occurrence, where bears move around coastal facilities rather than traveling through them. Incremental cumulative effects could also occur through the potential exclusion or temporary avoidance of polar bears from feeding, resting, or denning areas and disruption of associated biological behaviors. However, based on monitoring results acquired from past ITRs, the level of cumulative effects, including those of climate change, during the 5-year regulatory period would result in negligible effects on the bear population.

Mitigation measures required for all projects will include a polar bear interaction plan, training of personnel, a record of communication with potentially affected communities, and a POC when appropriate. Mitigation measures that may be used on a case-by-case basis include the use of trained marine mammal monitors associated with marine activities, the use of den habitat maps developed by the USGS, surveys to locate polar bear dens, timing of the activity to limit disturbance around dens, the 1.6-km (1-mi) buffer surrounding known dens, and suggested work actions around known dens. The Service implements certain mitigation measures based on need and effectiveness for specific activities based largely on timing and location. For example, the Service will implement different mitigation measures for a 2-month-long exploration project 20 mi inland from the coast, than for an annual nearshore development project in shallow waters.

An example of the application of this process would be in the case of Industry activities occurring around a known bear den, where a standard condition of an LOA requires Industry projects to have developed a polar bear interaction plan and to maintain

a 1.6-km (1-mi) buffer between Industry activities and any known denning sites. In addition, we may require Industry to avoid working in known denning habitat until bears have left their dens. To further reduce the potential for disturbance to denning females, we have conducted research, in cooperation with Industry, to enable us to accurately detect active polar bear dens through the use of remote sensing techniques, such as maps of denning habitat along the Beaufort Sea coast and FLIR imagery.

FLIR imagery, as a mitigation tool, is used in cooperation with coastal polar bear denning habitat maps. Industry activity areas, such as coastal ice roads, are compared to polar bear denning habitat, and transects are then created to survey the specific habitat within the Industry area. FLIR heat signatures within a standardized den location protocol are noted, and further mitigation measures are placed around these locations. FLIR surveys are more effective at detecting polar bear dens than visual observations. The effectiveness increases when FLIR surveys are combined with site-specific, scent-trained dog surveys. These techniques will continue to be required as conditions of LOAs when appropriate.

Industry has sponsored cooperative research evaluating how polar bears perceive and respond to various types of disturbance. This information has been useful to refine site-specific mitigation measures. Using current mitigation measures, Industry activities have had no known polar bear population-level effects during the period of previous regulations. We anticipate that, with continued mitigation measures, the impacts to denning and non-denning polar bears will be at the same low level as in previous regulations.

The Service believes that the required mitigation measures will be effective in minimizing the impacts of Industry activity upon polar bears during the 5-year timeframe of this proposed ITR as they have in the past.

For further information on the cumulative effects of oil and gas development on polar bears in Alaska, refer to the Service's 2008 "Range-Wide Status Review of the Polar Bear (*Ursus maritimus*)" at: *http://www.fws.gov/alaska/fisheries/mmm/polarbear/pdf/Polar_Bear_%20Status_Assessment.pdf*.

Potential Effects of Oil Spills on Pacific Walruses and Polar Bears

Walrus and polar bear ranges overlap with many active and planned Industry activities. There is a risk of oil spills from facilities, ships, and pipelines in both offshore and onshore habitat. To date, no major offshore oil spills have occurred in the Alaska Beaufort Sea. Though numerous small onshore spills have occurred on the North Slope, there have been no documented effects to polar bears.

Oil spills are unintentional releases of oil or petroleum products. In accordance with the National Pollutant Discharge Elimination System Permit Program, all North Slope oil companies must submit an oil spill contingency plan. It is illegal to discharge oil into the environment, and a reporting system requires operators to report spills. Between 1977 and 1999, an average of 70 oil and 234 waste product spills occurred annually on the North Slope oilfields. Although most spills have been small by Industry standards (less than 50 bbl), larger spills (more than 500 bbl) accounted for much of the annual volume. Seven large spills occurred between 1985 and 2009 on the North Slope.

The largest spill occurred in the spring of 2006 when approximately 6,190 bbl leaked from flow lines near an oil gathering center. More recently, several large spills have occurred. In 2012, 1,000 bbl of drilling mud and 100 bbl of crude were spilled in separate incidents, in 2013, approximately 166 bbl of crude oil was spilled, and in 2014, 177 bbl of drilling mud was spilled. Those spills occurred primarily in the terrestrial environment in heavily industrialized areas not utilized by walruses or polar bears and posed little risk to the animals.

Walruses and polar bears could encounter spilled oil from exploratory operations, existing offshore facilities, pipelines, or from marine vessels. The shipping of crude oil, oil products, or other toxic substances, as well as the fuel for the shipping vessels, increases the risk of a spill. Future reductions in Arctic sea-ice extent are expected to improve access to Arctic shipping lanes and extend the Arctic shipping season, also increasing the risk of a spill.

Oil spills in the sea-ice environment, at the ice edge, in leads, polynyas, and similar areas of importance to walruses and polar bears, are of particular concern. Oil spilled in those areas presents an even greater challenge because of both the difficulties associated with cleaning oil in sea-ice, and the presence of wildlife in those areas. As additional offshore Industry projects are planned, the potential for large spills in the marine environment increases.

Oiling of food sources, such as ringed seals, may result in indirect effects on polar bears, such as a local reduction in ringed seal numbers, or a change to the local distribution of seals and bears. More direct effects on polar bears could occur from: (1) ingestion of oiled prey, potentially resulting in reduced survival of individual bears; (2)

oiling of fur and subsequent ingestion of oil from grooming; (3) oiling and fouling of fur with subsequent loss of insulation, leading to hypothermia; and (4) disturbance, injury, or death from interactions with humans during oil spill response activities. Polar bears may be particularly vulnerable to disturbance when nutritionally stressed and during denning. Cleanup operations that disturb a den could result in death of cubs through abandonment, and perhaps death of the sow as well. In spring, females with cubs of the year that denned near or on land and migrate to contaminated offshore areas may encounter oil following a spill (Stirling in Geraci and St. Aubin 1990).

In the event of an oil spill, the Service follows oil spill response plans to respond to the spill, coordinate with partners, and reduce the impact of a spill on wildlife. Several factors will be considered when responding to an oil spill. They include 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 human–bear interactions. Response efforts will be conducted under a three-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 vigorously applied. Tertiary response capability has been developed by

the Service and partners, though such response efforts would most likely only be able to handle a few animals at a time. More information is available in the Service's oil spill response plans for walruses and polar bears in Alaska is located at: *http://www.fws.gov/alaska/fisheries/contaminants/pdf/Polar%20Bear%20WRP%20final%20v8_Public%20website.pdf* and *https://dec.alaska.gov/spar/ppr/plans/uc/Annex%20G%20(Oct%202012).pdf*.

BOEM has acknowledged that there are difficulties in effective oil-spill response 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." BOEM advocates the use of nonmechanical methods of spill response, such as in-situ burning, during periods when broken-ice would hamper an effective mechanical response (MMS 2008b). 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, the resulting smoke plume may contain toxic chemicals and high levels of particulates that can pose health risks to marine mammals, birds and other wildlife, as well as to humans. Smoke trajectories must be considered before making the decision to burn spilled oil. Another potential nonmechanical response strategy is the use of chemical dispersants to speed dissipation of oil from the water surface and disperse it within the water column in small droplets. Dispersant use presents environmental trade-offs. While walruses and polar bears would likely benefit from reduced surface or shoreline oiling, dispersant use could have negative impacts on the aquatic food chain. Oil spill cleanup in the broken-ice and open-water conditions that characterize Arctic waters is problematic.

Evaluation of Effects of Oil Spills on Pacific Walruses and Polar Bears

The MMPA does not authorize the incidental take of marine mammals as the result of illegal actions, such as oil spills. Any event that results in an injurious or lethal outcome to a marine mammal is not authorized under this ITR. However, for the purpose of determining whether Industry activity would have a negligible effect on walruses and polar bears, the Service evaluated the potential impacts of oil spills within the Beaufort Sea ITR region.

Pacific Walrus

As stated earlier, the Beaufort Sea is not within the primary range for walruses. Therefore, the probability of walruses encountering oil or waste products as a result of a spill from Industry activities is low. Onshore oil spills would not impact walruses unless oil moved into the offshore environment. In the event of a spill that occurs during the open-water season, oil in the water column could drift offshore and possibly encounter a small number of walruses. Oil spills from offshore platforms could also contact walruses under certain conditions. 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.

Little is known about the effects of oil specifically on walruses as no studies have been conducted. Hypothetically, walruses may react to oil much like other pinnipeds. Walruses are not likely to ingest oil while grooming since walruses have very little hair

and exhibit no grooming behavior. Adult walruses may not be severely affected by the oil spill through direct contact, but they will be extremely sensitive to any habitat disturbance by human noise and response activities. In addition, due to the gregarious nature of walruses, an oil spill would most likely affect multiple individuals in the area. Walruses may also expose themselves more often to the oil that has accumulated at the edge of a contaminated shore or ice lead if they repeatedly enter and exit the water.

Walrus calves are most likely to suffer the effects of oil contamination. Female walruses with calves are very attentive, and the calf will stay close to its mother at all times, including when the female is foraging for food. Walrus calves can swim almost immediately after birth and will often join their mother in the water. It is possible that an oiled calf will be unrecognizable to its mother either by sight or by smell, and be abandoned. However, the greater threat may come from an oiled calf that is unable to swim away from the contamination and a devoted mother that would not leave without the calf, resulting in the potential mortality of both animals. Further, a nursing calf might ingest oil if the cow was oiled, also increasing the risk of injury or mortality.

Walruses have thick skin and blubber layers for insulation. Heat loss is regulated by control of peripheral blood flow through the animal's skin and blubber. The peripheral blood flow is decreased in cold water and increased at warmer temperatures. Direct exposure of 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.

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. Direct exposure to oil can also result in conjunctivitis. Like other pinnipeds, walruses are susceptible to oil contamination in their eyes. Continuous exposure to oil will 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.

Walruses are benthic feeders, and much of the benthic prey contaminated by an oil spill would be killed immediately. Others that survived would become contaminated from oil in bottom sediments, possibly resulting in slower growth and a decrease in reproduction. 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. Specifically, bivalve mollusks bioconcentrate polycyclic aromatic hydrocarbons (PAHs), a particularly toxic fraction of oil. PAHs may cause a variety of chronic toxic effects in exposed organisms, including enzyme induction, immune impairment, or cancer, among others. In addition, because walruses feed primarily on mollusks, they may be more vulnerable to a loss of this prey species than other pinnipeds that feed on a larger variety of prey. Furthermore,

complete recovery of a bivalve mollusk population may take 10 years or more, forcing walruses to find other food resources or move to nontraditional areas.

The relatively few walruses in the Beaufort Sea and the low potential for a large oil spill (1,000 bbl or more), which is discussed in the following Risk Assessment Analysis, limit potential impacts to walruses to only certain events (i.e., a large oil spill) and then only to a limited number of individuals. 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 respond immediately. A detailed discussion of oil spill prevention and response for walruses can be found at: *https://dec.alaska.gov/spar/ppr/plans/uc/Annex%20G%20(Oct%202012).pdf*.

Polar Bear

To date, large oil spills from Industry activities in the Beaufort Sea and coastal regions that would impact polar bears have not occurred, although the interest in, and the development of, offshore hydrocarbon reservoirs 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, in the event of a large spill equal to a rupture in the Northstar pipeline and a complete drain of the subsea portion of the pipeline (approximately 5,900 bbl), oil would be influenced by seasonal weather and sea conditions including temperature, winds, wave action, and currents. Weather and sea conditions also affect the type of equipment needed for spill response and the effectiveness of spill cleanup. Based on the experiences of cleanup efforts following the Exxon Valdez oil spill, where logistical support was readily

available, spill response may be largely unsuccessful in open-water conditions. Indeed, spill response drills have been unsuccessful in the cleanup of oil in broken-ice conditions.

Small spills of oil or waste products throughout the year could potentially impact some 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, northeast of Oliktok Point. The cause of death was determined to be due to a mixture that included ethylene glycol and Rhodamine B dye (Amstrup *et al.* 1989). Again, in 2012, two dead polar bears that had been exposed to Rhodamine B were found on Narwhal Island, northwest of Endicott. While those bears' deaths were clearly human-caused, investigations were unable to identify a source for the chemicals. Rhodamine B is commonly used on the North Slope of Alaska by many people for many uses, including Industry. Without identified sources of contamination, those bear deaths cannot be attributed to Industry activity.

During the ice-covered season, mobile, non-denning bears would have a higher probability of encountering oil or other production wastes than non-mobile, denning females. 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 impacting the population.

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 of time) 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 (Oritsland *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 were 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 sublethal amounts of oil can have various physiological effects on polar bears, 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 toxic, volatile organic compounds from petroleum vapors. Vapor inhalation by polar bears

could result in damage to the respiratory and central nervous systems, depending on the amount of exposure.

Oil may also affect food sources of polar bears. Seals that die as a result of an oil spill could be scavenged by polar bears. This food source would increase exposure of the bears to hydrocarbons and could result in lethal impacts or reduced survival to individual bears. A local reduction in ringed seal numbers as a result 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.

Spilled oil can concentrate and accumulate in leads and openings that occur during spring breakup 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. To access ringed and bearded seals, polar bears in the SBS concentrate in shallow waters less than 300 m (984 ft) deep over the continental shelf and in areas with greater than 50 percent ice cover (Durner *et al.* 2004).

Due to their seasonal use of nearshore habitat, the times of greatest impact from an oil spill to polar bears are likely the open-water and broken-ice periods (summer and fall). This scenario is important because distributions of polar bears are not uniform through time. Nearshore and offshore polar bear densities are greatest in fall, and polar bear use of coastal areas during the fall open-water period has increased in recent years in the Beaufort Sea. An analysis of data collected from 2001–2005 during the fall open-water period concluded: (1) on average approximately 4 percent of the estimated polar

bears in the Southern Beaufort population were observed onshore in the fall; (2) 80 percent of bears onshore occurred within 15 km (9 mi) of subsistence-harvested bowhead whale carcasses, where large congregations of polar bears have been observed feeding; and (3) sea-ice conditions affected the number of bears on land and the duration of time they spent there (Schliebe *et al.* 2006). Hence, bears concentrated in areas where beach-cast marine mammal carcasses occur during the fall would likely be more susceptible to oiling.

The persistence of toxic subsurface oil and chronic exposures, even at sublethal levels, can have long-term effects on wildlife (Peterson *et al.* 2003). Exposure to PAHs can have chronic effects because some effects are sublethal (e.g., enzyme induction or immune impairment) or delayed (e.g., cancer). Although it is true that some bears may be directly affected by spilled oil initially, the long-term impact could be much greater. Long-term effects could be substantial through complex environmental interactions and compromised health of exposed animals. For example, PAHs can impact the food web by concentrating in filter-feeding organisms, thus affecting fish that feed on those organisms, and the predators of those fish, such as the ringed seals that polar bears prey upon. How these complex interactions would affect polar bears is not well understood, but sublethal, chronic effects of an oil spill may affect the polar bear population due to reduced fitness of surviving animals.

Polar bears are biological sinks for some pollutants, such as polychlorinated biphenyls or organochlorine pesticides, because they are an apex predator of the Arctic ecosystem and are also 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 seal-eating walruses and polar bears 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, which could affect their reproduction, survival, and immune systems.

In addition, subadult polar bears are more vulnerable than adults to environmental effects (Taylor *et al.* 1987). Subadult polar bears would be most prone to the lethal and sublethal effects of an oil spill due to their proclivity for scavenging (thus increasing their exposure to oiled marine mammals) and their inexperience in hunting. 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).

Evaluation of the potential impacts of spilled Industry waste products and oil suggest that individual bears could be adversely impacted by exposure to these substances (Oritsland *et al.* 1981). The major concern regarding a large oil spill is the impact such a spill would have on the rates of recruitment and survival of the SBS polar bear population. If an oil spill killed a small number of bears, the SBS population may be able to survive and continue to sustain the current level of subsistence harvest. However, if a large oil spill killed large numbers of polar bears, the SBS population may experience reduced rates of recruitment and survival and subsistence harvest could become unsustainable. Polar bear deaths from an oil spill could be caused by direct exposure to the oil. However, indirect effects, such as a reduction of prey or scavenging contaminated carcasses, could also cause health effects, death, or otherwise affect rates of recruitment

and survival. Depending on the type and amount of oil or wastes involved and the timing and location of a spill, impacts could be acute, chronic, temporary, or lethal. In order for the rates of polar bear reproduction, recruitment, or survival to be impacted, a large-volume oil spill would have to take place. The following section analyzes the likelihood and potential effects of such a large-volume oil spill.

Risk Assessment of Potential Effects Upon Polar Bears from a Large Oil Spill in the Beaufort Sea

In this section, we qualitatively assess the likelihood that polar bears may be oiled by a large oil spill. We considered: (1) the probability of a large oil spill occurring in the Beaufort Sea; (2) the probability of that oil spill impacting coastal polar bear habitat; (3) the probability of polar bears being in the area and coming into contact with that large oil spill; and (4) the number of polar bears that could potentially be impacted by the spill. Although the majority of the information in this evaluation is qualitative, the probability of all of these factors occurring sequentially in a manner that impacts polar bears in the Beaufort Sea is low. Since walruses are not often found in the Beaufort Sea, and there is little information available regarding the potential effects of an oil spill upon walruses, this analysis emphasizes polar bears.

The analysis was based on polar bear distribution and habitat use using four sources of information that, when combined, allowed the Service to make conclusions on the risk of oil spills to polar bears. This information included: (1) the description of existing offshore oil and gas production facilities previously discussed in the **Description of Activities** section; (2) polar bear distribution information previously discussed in the

Biological Information section; (3) BOEM Oil-Spill Risk Analysis (OSRA) for the OCS, including polar bear environmental resource areas (ERAs) and land segments (LSs), which allowed us to qualitatively analyze the risk to polar bears and their habitat from a marine oil spill; and (4) the most recent polar bear risk assessment from the previous ITRs.

Development of offshore production facilities with supporting pipelines increases the potential for large offshore spills. The probability of a large oil spill from offshore oil and gas facilities and the risk to polar bears is a scenario that has been considered in previous regulations (71 FR 43926, August 2, 2006 and 76 FR 47010, August 3, 2011). With the limited background information available regarding the effects of large oil spills on polar bears in the marine Arctic environment, the impact of a large oil spill is uncertain. As far as is known, polar bears have not been affected by oil spilled as a result of North Slope Industry activities.

In order to effectively evaluate how a large oil spill may affect polar bears, we considered the following factors in developing our oil spill assessment for polar bears: The origin (location) of a large spill; the volume of a spill; oil viscosity; 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 polar bears that are (or likely to be) affected; degree of contact; importance of affected habitat; and mitigation measures to prevent bears from encountering spilled oil.

The oil-spill scenario for this analysis considers the potential impacts of a large oil spill (i.e., 1,000 bbl or more) from one of the offshore Industry facilities: Northstar,

Spy Island, Oooguruk, Endicott, or the future Liberty. Estimating a large oil-spill occurrence is accomplished by examining a wide variety of probabilities. Uncertainty exists regarding the location, number, and size of a large oil spill and the wind, ice, and current conditions at the time of a spill, but we have made every effort to identify the most likely spill scenarios and sources of risk to polar bears. Conditional probabilities analysis assumes that a large spill has occurred and that no cleanup takes place. The probability of a spill occurring would be different for each site depending upon oil type, depth, oil flow rates, etc.

BOEM Oil Spill Risk Analysis

Because the BOEM OSRA provides the most current and rigorous treatment of potential oil spills in the Beaufort Sea Planning Area, our analysis of potential oil spill impacts applied BOEM's OSRA (MMS 2008a) to help analyze potential impacts of a large oil spill originating in the Beaufort Sea ITR region to polar bears. The OSRA is a computer model that analyzes how and where large offshore spills will likely move (Smith *et al.* 1982). To estimate the likely trajectory of large oil spills, the OSRA model used information about the physical environment, including data on wind, sea-ice, and currents. As a conditional model, the OSRA is a hypothetical analysis of an oil spill.

The BOEM OSRA model was developed for the Federal offshore waters and does not include analysis of oil spills in the State of Alaska-controlled nearshore waters. Northstar, Oooguruk, Spy Island, and the Endicott/Liberty complex are located in nearshore State waters. Northstar has one Federal well, and Liberty is a Federal reservoir to be developed from State waters. Although the OSRA cannot calculate trajectories of

oil spills originating from specific locations in the nearshore area, it can be used to help examine how habitat may be affected by a spill should one originate in the OCS. We can then compare the location of the affected habitat to habitat use by bears.

The OSRA model predicted where the oil trajectory would go if the oil persisted as a slick at a particular time of year. Oil spills of less than 1,000 bbl are not expected to persist on the water long enough to warrant a trajectory analysis. For this reason, we only analyzed the effects of a large oil spill. Although no large spills from oil and gas activities have occurred on the Alaska OCS to date, the large spill volume assumptions used by BOEM were based on the reported spills from oil exploration and production in the Gulf of Mexico and Pacific OCS regions. BOEM used the median spill size in the Gulf of Mexico and Pacific OCS in the period 1985–1999 as the likely large spill size for analysis purposes. The median size of a large crude oil spill from a pipeline in the period 1985–1999 on the U.S. OCS was 4,600 bbl, and the average was 6,700 bbl (Anderson and LaBelle 2000). The median large spill size for a platform on the OCS over the entire record in the period 1964–1999 is 1,500 bbl, and the average is 3,300 bbl (Anderson and LaBelle 2000).

The OSRA estimated that the statistical mean number of large spills is less than one over the 20-year life of past, present, and reasonably foreseeable developments in the Beaufort Sea Planning Area. In addition large spills are more likely to occur during development and production than during exploration in the Arctic (MMS 2008). Our oil spill assessment during a 5-year regulatory period was predicated on the same assumptions.

Between 1971 and 2007, OCS operators have produced almost 15 billion bbl of oil in the United States. During this period, 2,645 spills totaled approximately 164,100 bbl spilled (~0.001 percent of bbl produced), or about 1 bbl spilled for every 91,400 bbl produced. Between 1993 and 2007, almost 7.5 billion bbl of oil were produced. During this period, 651 spills totaled approximately 47,800 bbl spilled (~0.0006 percent of bbl produced), or approximately 1 bbl spilled for every 156,900 bbl produced.

Between July 1, 2009, and June 30, 2014, the North Slope industrial area reported an average of 59,043 gallons of spilled substances annually, with a total of 138 crude oil spills. Statewide during this period, approximately 5.6 percent of the total volume of spilled material consisted of crude oil. The volume of spilled crude on the North Slope was, therefore, estimated to be approximately 79 bbl (~1,406 × 0.056 = ~79). Recent large spills of crude oil have included a subsurface release of 166 bbl from a well at Milne Point, and a 100 bbl spill from a tank. Secondary containment retained the smaller of these spills.

Two large onshore terrestrial oil spills have occurred as a result of pipeline failures. In the spring of 2006, approximately 6,200 bbl of crude oil spilled from a corroded pipeline operated by BP Exploration (Alaska). The spill impacted approximately 0.8 ha (~2 ac). In November 2009, a spill of approximately 1,150 bbl from a "common line" carrying oil, water, and natural gas operated by BP occurred as well, impacting approximately 780 m^2 (~8,400 ft^2). None of these spills were known to impact polar bears, in part due to the locations and timing. Both sites were within or near Industry facilities not frequented by polar bears, and they are not typically observed in the affected areas during the time of the spills and subsequent cleanup.

The BLM and BOEM modelled the likelihood of spills occurring during exploration and development in the NPR-A and in the Beaufort and Chukchi Sea planning area (BLM 2012 and BOEM 2011, respectively). Large (≥ 1,000 bbl) or very large spills (≥120,000 bbl) were considered extremely unlikely to occur during oil and gas exploration. The two sources of potential large crude oil spills are from pipelines and long-duration blowout resulting from a well-control incident. The loss of the entire volume in an onshore pipeline between two valves would also result in a large spill of crude oil. The BLM estimated a 28 percent chance that one or more large crude oil spills would occur during 50 years. Based on information on past spills, spill volumes close to the lower end of the "large spill" range (1,000 bbl) are much more likely than spill volumes in the upper end of the range (119,999 bbl). BOEM (2014) considered spill sizes of 1,700 and 5,100 bbl to be the largest spill size likely to occur from a pipeline or facility, respectively. BOEM estimated that the occurrence and frequency of large and very large spills from OCS exploratory and delineation wells at 0.003 (mean spill frequency per 1,000 years) and 2.39×10^{-5} (mean spill frequency per well), respectively (BOEM 2011). The approximate occurrence rates worldwide for very large oil spills are about one for every 270 billion bbl produced (BLM 2012). More locally (at Northstar), the statistical frequency of a blowout well leading to a very large oil spill was estimated at 9.4×10^{-7} per well drilled (for volumes > 130,000 bbl (BLM 2012)). Thus, while small spills (<50 bbl) are reasonably likely to occur, very large oil spills are extremely unlikely to occur, and none have occurred on Alaska's North Slope or in the Beaufort Sea to date.

Across the United States, in the period 1971–2010, one well control incident resulted in a spill volume estimated at 4.9 million bbl (210 million gal) and that was the

Deepwater Horizon event. The large oil spill estimates for the draft Environmental Impact Statement (DEIS) of the Beaufort Sea and Chukchi Sea Planning Areas are still considered valid despite the Deepwater Horizon oil spill. Geologic and other conditions in the Arctic OCS are substantially different from those in the Gulf of Mexico, including much shallower well depth and the resulting lower pressures, such that BOEM currently does not believe that the Deepwater horizon incident serves as a predictor for the likelihood or magnitude of a very large oil spill event in the Beaufort Sea. Considering the low number of exploratory wells (84) that have occurred in the Beaufort Sea Alaska OCS (BOEM 2011), the low rate of exploratory drilling blowouts per well drilled, and the low rate of well control incidents that spill fluids, it is reasonable to conclude that the chance of a large spill occurring during OCS exploration drilling in the Beaufort is small. In addition, it is important to note that Industry does not plan to conduct drilling operations at more than three exploration sites in the Beaufort Sea OCS for the duration of the 5-year regulatory period.

Trajectory Estimates of Large Offshore Oil Spills

Although it is reasonable to conclude that the chance of one or more large spills occurring during the period of these regulations on the Alaskan OCS from production activities is low, for analysis purposes, we assume that a large spill does occur in order to evaluate potential impacts to polar bears. The BOEM OSRA model analyzes the likely paths of more than two million simulated oil spills in relation to the shoreline and biological, physical, and sociocultural resource areas specific to the Beaufort Sea. The chance that a large oil spill will contact a specific ERA of concern within a given time of

travel from a certain location (launch area or pipeline segment) is termed a "conditional probability." Conditional probabilities assume that no cleanup activities take place, and that there are no efforts to contain the spill. We used the BOEM OSRA analysis from the Arctic Multi-sale DEIS to estimate the conditional probabilities of a large spill contacting sensitive ERAs pertinent to polar bears.

Oil-Spill Persistence

How long an oil spill persists on water or on the shoreline can vary, depending upon the size of the oil spill, the environmental conditions at the time of the spill, and the substrate of the shoreline. In its large oil spill analysis, BOEM assumed 1,500-bbl and 4,600-bbl spills could last up to 30 days on the water as a coherent slick based on oil weathering properties and dispersal data specific to North Slope crude oils. Therefore, we assumed that winter spills (October–June) could last up to 180 days as a coherent slick (i.e., if a coherent slick were to freeze into ice over winter, it would melt out as a slick in spring).

We used three BOEM launch areas (LAs), LA 8, LA 10, LA 12, and three pipeline segments (PLs), PL 10, PL 11, and PL 12, from Appendix A of the Arctic Multi-sale DEIS (Map A.1-4) to represent the oil spills moving from hypothetical offshore areas. These LAs and PLs were selected because of their close proximity to current offshore facilities.

Oil-Spill-Trajectory Model Assumptions

For purposes of its oil spill trajectory simulation, BOEM made the following assumptions: all spills occur instantaneously; large oil spills occur in the hypothetical origin areas or along the hypothetical pipeline segments noted above; large spills do not weather for purposes of trajectory analysis; weathering is calculated separately; the model does not simulate cleanup scenarios; the oil spill trajectories move as though no oil spill response action is taken; and large oil spills stop when they contact the mainland coastline.

Analysis of the Conditional Probability Results

As noted above, the chance that a large oil spill will contact a specific ERA of concern within a given time of travel from a certain location (LA or PL), assuming a large spill occurs and that no cleanup takes place, is termed a "conditional probability." From the DEIS, Appendix A, we chose ERAs and LSs to represent areas of concern pertinent to polar bears (MMS 2008a). Those ERAs and LSs and the conditional probabilities that a large oil spill originating from the selected LAs or PLs could affect those ERAs and LSs are presented in Table 1. From Table 1, we noted the highest chance of contact and the range of chances of contact that could occur should a large spill occur from LAs or PLs.

Table 1. Conditional oil spill probabilities (percent) in regards to Environmental Resource Areas and Land Segments for LAs and PLs offshore of four oil and gas industry sites. Values in parentheses are for pipeline segments. * = Less than one-half percent.

Launch Area (Pipeline Segment)	Season of Spill (Duration of Spill)	ERA 55	ERA 92	ERA 93	ERA 94	ERA 95	ERA 96	ERA 100	LS 85	LS 97	LS 102	LS 107	LS 138	LS 144	LS 145
LA 08 (PL 10)	Summer (60 days)	5 (3)	5(8)	*(2)	*(*)	*(*)	1(3)	*(1)	2(1)	1(2)	*(*)	*(*)	*(1)	54(34)	*(*)
	Winter (180 days)	1(1)	2(3)	*(*)	*(*)	*(*)	*(1)	*(*)	2(4)	*(1)	*(*)	*(*)	1(2)	39(29)	*(1)
LA10 (PL 10)	Summer (60 days)	3(3)	11(8)	2(2)	*(*)	*(*)	4(3)	1(1)	1(1)	5(2)	*(*)	*(*)	2(1)	33(34)	*(*)
	Winter (180 days)	1(1)	2(3)	*(*)	*(*)	*(*)	1(1)	*(*)	3(4)	2(1)	*(*)	*(*)	2(2)	29(29)	1(1)
LA 12 (PL 11)	Summer (60 days)	*(2)	12(12)	7(3)	2(1)	1(*)	13(6)	3(2)	*(*)	7(6)	1(1)	1 (1)	9(3)	33(29)	1(*)
	Winter (180 days)	1(1)	11(8)	1(*)	1(*)	*(*)	12(2)	1(*)	3(3)	4(4)	*(*)	*(*)	3(2)	31(28)	2(1)
LA 12 (PL 12)	Summer (60 days)	*(*)	12(9)	7(7)	2(3)	1(1)	13(12)	3(5)	*(*)	7(5)	1(2)	1(3)	9(11)	33(32)	1(1)

Definitions of ERAs and LSs, from Tables A.1-13, A.1-20, and A.1-22 (MMS, 2008)
ERA 55: Point Barrow, Plover Islands (Aug–Nov)
ERA 92: Thetis, Jones, Cottle and Return Islands, West Dock (Jan–Dec)
ERA 93: Cross and No Name Island (Aug–Nov)
ERA 94: Maguire Islands, Flaxman Island, Barrier Islands (Jan–Dec)
ERA 95: Arey and Barter Islands and Bernard Spit (Aug–Nov)
ERA 96: Midway, Cross and Bartlett Islands (May–October)
ERA 100: Jago and Tapkaurak Spits (May–October)
Seasonal LS 85: Barrow, Browerville, Elson Lagoon (August–November)
LS 97: Beechey Point, Bertoncini, Bodfish, Cottle and, Jones Islands, Milne Point, Simpson Lagoon
LS 102: Flaxman Island, Maguire Islands, North Star Island, Point Hopson, Point Sweeney, Point Thomson, Staines River
LS 107: Bernard Harbor, Jago Lagoon, Kaktovik, Kaktovik Lagoon
Grouped LS 138: Arctic National Wildlife Refuge (Jan–Dec)
Grouped LS 144: United States Beaufort Coast (Jan–Dec)
Grouped LS 145: Canada Beaufort Coast (Jan–Dec)

Polar bears are most vulnerable to a large oil spill during the open-water period when bears form aggregations onshore. In the Beaufort Sea these aggregations often form in the fall near subsistence-harvested bowhead whale carcasses. Specific aggregation areas include Point Barrow, Cross Island, and Kaktovik. In recent years, more than 60 polar bears have been observed feeding on whale carcasses just outside of Kaktovik, and in the autumn of 2002, NSB and Service biologists documented more than 100 polar bears in and around Barrow. In order for significant impacts to polar bears to occur, (1) a large oil spill would have to occur, (2) oil would have to contact an area where polar bears aggregate, and (3) the aggregation of polar bears would have to occur at the same time as the spill. The risk of all three of these events occurring simultaneously is low.

We identified polar bear aggregations in environmental resource areas and non-grouped land segments (ERA 55, 93, 95, 96, 100; LS 85, 107). Assuming a spill occurs during summer or winter, the OSRA estimates the chance of contacting these aggregations is less than 13 percent (Table 1). The OSRA estimates for LA12 has the highest chance of a large spill contacting ERA 96 (Midway, Cross, and Bartlett islands). Some polar bears will aggregate at these islands during August–October (3 months). If a large oil spill occurred and contacted those aggregation sites outside of the timeframe of use by polar bears, potential impacts to polar bears would be reduced.

Coastal areas provide important denning habitat for polar bears, such as the ANWR and nearshore barrier islands (containing tundra habitat) (Amstrup 1993, Amstrup and Gardner 1994, Durner *et al.* 2006, USFWS unpubl. data). Considering that 65 percent of confirmed terrestrial dens found in Alaska in the period 1981–2005 were on coastal or island bluffs (Durner *et al.* 2006), oiling of such habitats could have negative

effects on polar bears, although the specific nature and ramifications of such effects are unknown.

Assuming a large oil spill occurs, and extrapolating the OSRA estimates to tundra relief barrier islands (ERA 92, 93, and 94, LS 97 and 102), these areas have up to a 12 percent chance of a large spill contacting them (a range of less than 0.5 percent to 12 percent) from LA 12 (Table 1). The OSRA estimates suggest that there is an 11 percent chance that oil would contact the coastline of the ANWR (LS 138). The Kaktovik area (ERA 95 and 100, LS 107) has up to a 5 percent chance of a spill contacting the coastline, assuming spills occur during the summer season and contact the coastline within 60 days. The chance of a spill contacting the coast near Barrow (ERA 55, LS 85) would be as high as 5 percent (Table 1).

All barrier islands are important resting and travel corridors for polar bears, and larger barrier islands that contain tundra relief are also important denning habitat. Tundra-bearing barrier islands within the geographic region and near oilfield development are the Jones Island group of Pingok, Bertoncini, Bodfish, Cottle, Howe, Foggy, Tigvariak, and Flaxman islands. In addition, Cross Island has gravel relief where polar bears have denned. The Jones Island group is located in ERA 92 and LS 97. If a spill were to originate from an LA 8 pipeline segment during the summer months, the probability that this spill would contact these land segments could be as great as 8 percent. The probability that a spill from LA 10 would contact the Jones Island group would range from 1 percent to as high as 11 percent. Likewise, for LA 12, PL 11 the range would be from 4 percent to as high as 12 percent, and for LA 12, PL 12 the range would be from 3 percent to as high as 12 percent.

Risk Assessment from Prior ITRs

In previous ITRs, we used a risk assessment method that considered oil spill probability estimates for two sites (Northstar and Liberty), oil spill trajectory models, and a polar bear distribution model based on location of satellite-collared females during September and October (68 FR 66744, November 28, 2003;71 FR 43926, August 2, 2006; and 76 FR 47010, August 3, 2011). To support the analysis for this action, we reviewed the previous analysis and used the data to compare the potential effects of a large oil spill in a nearshore production facility (less than 5 mi), such as Liberty, and a facility located further offshore, such as Northstar. Even though the risk assessment of 2006 did not specifically model spills from the Oooguruk or Nikaitchuq sites, we believed it was reasonable to assume that the analysis for Liberty, and indirectly Northstar, adequately reflected the potential impacts likely to occur from an oil spill at either of these additional locations due to the similarity in the nearshore locations.

Methodology of Prior Risk Assessment

The first step of the risk assessment analysis was to examine oil spill probabilities at offshore production sites for the summer (July–October) and winter (November–June) seasons based on information developed for the original Northstar and Liberty EISs. We assumed that one large spill occurred during the 5-year period covered by the regulations. A detailed description of the methodology can be found at 71 FR 43926 (August 2, 2006). The second step in the risk assessment was to estimate the number of polar bears that could be impacted by a large spill. All modeled polar bear grid cell locations that

were intersected by one or more cells of a rasterized spill path (a modeled group of hundreds of oil particles forming a trajectory and pushed by winds and currents and impeded by ice) were considered "oiled" by a spill. For purposes of the analysis, if a bear contacted oil, the contact was assumed to be lethal. This analysis involved estimating the distribution of bears that could be in the area and overlapping polar bear distributions and seasonal aggregations with oil spill trajectories. The trajectories previously calculated for Northstar and Liberty sites were used. The trajectories for Northstar and Liberty were provided by the BOEM and reported in Amstrup *et al.* (2006). BOEM estimated probable sizes of oil spills from a pinhole leak to a rupture in the transportation pipeline. These spill sizes ranged from a minimum of 125 to a catastrophic release event of 5,912 bbl. Researchers set the size of the modeled spill at the scenario of 5,912 bbl, caused by a pinhole or small leak for 60 days under ice without detection.

The second step of the risk assessment analysis incorporated polar bear densities overlapped with the oil spill trajectories. To accomplish this, in 2004, USGS completed an analysis investigating the potential effects of hypothetical oil spills on polar bears. Movement and distribution information was derived from radio and satellite locations of collared adult females. Density estimates were used to determine the distribution of polar bears in the Beaufort Sea. Researchers then created a grid system centered over the Northstar production island and the Liberty site to estimate the number of bears expected to occur within each 1-km^2 grid cell. Each of the simulated oil spills were overlaid with the polar bear distribution grid. Finally, the likelihood of occurrence of bears oiled during the duration of the 5-year incidental take regulations was estimated. This likelihood was

calculated by multiplying the number of polar bears oiled by the spill by the percentage of time bears were at risk for each period of the year.

In summary, the maximum numbers of bears potentially oiled by a 5,912 bbl spill during the September open-water season from Northstar was 27, and the maximum from Liberty was 23, assuming a large oil spill occurred and no cleanup or mitigation measures take place. Potentially oiled polar bears ranged up to 74 bears with up to 55 bears during October in mixed-ice conditions for Northstar and Liberty, respectively. Median number of bears oiled by the 5,912 bbl spill from the Northstar simulation site in September and October were 3 and 11 bears, respectively. Median numbers of bears oiled from the Liberty simulation site for September and October were 1 and 3 bears, respectively. Variation occurred among oil spill scenarios and was the result of differences in oil spill trajectories among those scenarios and not the result of variation in the estimated bear densities. For example, in October, 75 percent of trajectories from the 5,912 bbl spill affected 20 or fewer polar bears from spills originating at the Northstar simulation site and 9 or fewer bears from spills originating at the Liberty simulation site.

When calculating the probability that a 5,912 bbl spill would oil 5 or more bears during the annual fall period, we found that oil spills and trajectories were more likely to affect fewer than 5 bears versus more than 5 bears. Thus, for Northstar, the chance that a 5,912 bbl oil spill affected (resulting in mortality) 5 or more bears was 1.0–3.4 percent; 10 or more bears was 0.7–2.3 percent; and 20 or more bears was 0.2–0.8 percent. For Liberty, the probability of a spill that would affect 5 or more bears was 0.3–7.4 percent; 10 or more bears, 0.1–0.4 percent; and 20 or more bears, 0.1–0.2 percent.

Discussion of Prior Risk Assessment

After reviewing the prior risk assessment, we have concluded that it remains a valid methodology and analysis for use in the current proposed rule. The key conditions and considerations used in the analysis remain valid today. For this reason, we find that it is appropriate to continue to rely on the results of the analysis as it was set forth in 71 FR 43926, August 2, 2006.

The location of Industry sites within the marine environment is important when analyzing the potential for polar bears to contact a large oil spill. Simulations from the prior risk assessment suggested that bears have a higher probability of being oiled from facilities located further offshore, such as Northstar. Northstar Island is nearer the active ice zone and in deeper water than Endicott/Liberty, Oooguruk, and Nikaitchuq, areas where higher bear densities were calculated. Furthermore, Northstar is not sheltered by barrier islands. By comparison through modeling, the land-fast ice inside the shelter of the barrier islands appeared to dramatically restrict the extent of most oil spills in comparison to Northstar, which lies outside the barrier islands and in deeper water. However, it should be noted that while oil spreads more in deep water and breaks up faster in deeper waters where wind and wave action are higher, oil persists longer in shallow waters and along the shore.

Based on the simulations, a nearshore island production site (less than 5 mi from shore) would potentially involve less risk of polar bears being oiled than a facility located further offshore (greater than 5 mi). For any spill event, seasonality of habitat use by bears will be an important variable in assessing risk to polar bears. During the fall season when a portion of the SBS bear population aggregate on terrestrial sites and use barrier

islands for travel corridors, spill events from nearshore industrial facilities may pose more chance of exposing bears to oil due to its persistence in the nearshore environment. Conversely, during the ice-covered and summer seasons, Industry facilities located further offshore (greater than 5 mi) may increase the chance of bears being exposed to oil as bears will be associated with the ice habitat.

Conclusion of Risk Assessment

In summary, to date documented oil spill-related impacts in the marine environment to polar bears in the Beaufort Sea by the oil and gas Industry are minimal. No large spills by Industry in the marine environment have occurred in Arctic Alaska. Nevertheless, the possibility of oil spills from Industry activities and the subsequent impacts on polar bears that contact oil remain a major concern.

There has been much discussion about effective techniques for containing, recovering, and cleaning up oil spills in Arctic marine environments, particularly the concern that effective oil spill cleanup during poor weather and broken-ice conditions has not been proven. Given this uncertainty, limiting the likelihood of a large oil spill becomes an even more important consideration. Industry oil spill contingency plans describe methodologies in place to prevent a spill from occurring. For example, all current offshore production facilities have spill containment systems in place at the well heads. In the event an oil discharge should occur, containment systems are designed to collect the oil before it contacts the environment.

With the limited background information available regarding oil spills in the Arctic environment, it is unknown what the outcome of such a spill event would be if one

were to occur. Polar bears could encounter oil spills during the open-water and ice-covered seasons in offshore or onshore habitat. Although most polar bears in the SBS population spend a large amount of their time offshore on the pack-ice, it is likely that some bears would encounter oil from a large spill that persisted for 30 days or more.

Although the extent of impacts from a large oil spill would depend on the size, location, and timing of spills relative to polar bear distributions and on the effectiveness of spill response and cleanup efforts, under some scenarios, population-level impacts could be expected. A large spill originating from a marine oil platform could have significant impacts on polar bears if an oil spill contacted an aggregation of polar bears. Likewise, a spill occurring during the broken-ice period could significantly impact the SBS polar bear population in part because polar bears may be more active during this season.

In the event that an offshore oil spill contaminated numerous bears, a potentially significant impact to the SBS population could result. This effect would be magnified in and around areas of polar bear aggregations. Bears could also be affected indirectly either by food contamination or by chronic lasting effects caused by exposure to oil. During the 5-year period of these regulations, however, the chance of a large spill occurring is low.

While there is uncertainty in the analysis, certain factors must align for polar bears to be impacted by a large oil spill occurring in the marine environment. First, a large spill must occur. Second, the large spill must contaminate areas where bears may be located. Third, polar bears must be seasonally distributed within the affected region when the oil is present. Assuming a large spill occurs, BOEM's OSRA estimated that there is up to a 13 percent chance that a large spill from the analyzed sites (LAs 8, 10, and 12 and

PLs 10, 11, and 12) would contact Cross Island (ERA 96) within 60 days, as much as an 11 percent chance that it would contact Barter Island and/or the coast of the ANWR (ERA 95 and 100, LS 107 and 138), and up to a 5 percent chance that an oil spill would contact the coast near Barrow (ERA 55, LS 85) during the summer time period. Data from polar bear coastal surveys indicate that polar bears are unevenly and seasonally distributed along the coastal areas of the Beaufort Sea ITR region. Seasonally only a portion of the SBS population utilizes the coastline between the Alaska/Canada border and Barrow and only a portion of those bears could be in the oil-spill-affected region.

As a result of the information considered here, the Service concludes that the likelihood of an offshore spill from an offshore production facility in the next 5 years is low. Moreover, in the unlikely event of a large spill, the likelihood that spills would contaminate areas occupied by large numbers of bears is low. While individual bears could be negatively affected by a spill, the potential for a population-level effect is low unless the spill contacted an area where large numbers of polar bears were gathered. Known polar bear aggregations tend to be seasonal during the fall, further minimizing the potential of a spill to impact the population. Therefore, we conclude that the likelihood of a large spill occurring is low, but if a large spill does occur, the likelihood that it would contaminate areas occupied by large numbers of polar bears is also low. If a large spill does occur, we conclude that only small numbers of polar bears are likely to be affected, though some bears may be killed, and there would be only a negligible impact to the SBS population.

Take Estimates for Pacific Walruses and Polar Bears

Small Numbers Determination

The following analysis concludes that only small numbers of walruses and polar bears are likely to be subjected to Level B take by harassment incidental to the described Industry activities relative to their respective populations.

1. The number of walruses and polar bears that will be harassed by Industry activity is expected to be small relative to the number of animals in their populations.

As stated previously, walruses are extralimital in the Beaufort Sea with nearly the entire walrus population found in the Chukchi and Bering seas. Industry monitoring reports have observed no more than 35 walruses between 1995 and 2012, with only a few observed instances of disturbance to those walruses (AES Alaska 2015, USFWS unpublished data). Between those years, Industry walrus observations in the Beaufort Sea ITR region averaged approximately two walruses per year, although the actual observations were of a single or a few animals, often separated by several years. We do not anticipate that seasonal movements of a few walruses into the Beaufort Sea will increase. We conclude that over the 5-year period of these ITRs, Industry activities will potentially result in a small number of Level B takes of walruses.

As we stated previously, from 2010 through 2014, Industry made 1,234 reports of polar bears comprising 1,911 bears. We found that as much as 42 percent of the SBS polar bear population may have been observed by Industry personnel over that time period, though this is likely an overestimate due to the nature of the Industry observation data. When we evaluated the effects upon the 1,911 bears observed, we found that 81 percent (1,549) resulted in instances of non-taking. Over those 5 years, Level B takes of

polar bears totaled 338, approximately 18 percent of the observed bears, or 7.5 percent of the SBS population. We conclude that over the 5-year period of these ITRs, Industry activities will result in a similarly small number of Level B takes of polar bears.

2. Within the specified geographical region, the area of Industry activity is expected to be small relative to the range of walruses and polar bears.

Walruses and polar bears range well beyond the boundaries of the proposed Beaufort Sea ITR region. The facts that walruses are extralimital in the Beaufort Sea and polar bears move through the areas of Industry activity seasonally suggest that Industry activities in the geographic area of this proposed rule will have relatively few interactions with walruses and polar bears. As reported by AOGA, the total area of infrastructure on the North Slope as of 2012 was approximately 7,462 ha (~18,439 ac), or approximately 0.1 percent of the Arctic Coastal Plain between the Colville and Canning rivers. The 2012 estimated area of Industry activity was approximately .025 percent of the geographic region of this proposed rule. This area is smaller when compared to the proportion of the range of walruses or the SBS polar bear population. Allowing for Industry activity area growth from 2012 through 2015, and anticipating the level of activity proposed for the 5-year period of this proposed rule, the Service concludes that the area of Industry activity will be relatively small compared to the range of walruses and polar bears.

3. Monitoring requirements and adaptive mitigation measures are expected to significantly limit the number of incidental takes of animals.

Holders of an LOA will be required to adopt monitoring requirements and mitigation measures designed to reduce potential impacts of their operations on walruses and polar bears. For Industry activities in terrestrial environments, where denning polar bears may be a factor, mitigation measures will require that den detection surveys be conducted at least a 1.6-km (1-mi) distance from any known polar bear den. A full description of the mitigation, monitoring, and reporting requirements associated with an LOA can be found in 50 CFR 18.128.

Conclusion

We expect that only a small proportion of the Pacific walrus population or the SBS polar bear population are likely to be affected by Industry activities because: (1) only a small proportion of the walrus or polar bear population will occur in the areas where Industry activities will occur; (2) only small numbers will be impacted because walruses are extralimital in the Beaufort Sea and SBS polar bears are widely distributed throughout their expansive range, which encompasses areas beyond the Beaufort Sea ITR region; and (3) the monitoring requirements and mitigation measures described below will further reduce potential impacts.

Negligible Impacts Determination

Based upon our review of the nature, scope, and timing of Industry activities and required mitigation measures, and in consideration of the best available scientific information, we have determined that the proposed activities will have a negligible

impact on walruses and polar bears. Factors considered in our negligible effects determination include:

1. The behavior and distribution of walruses and polar bears in areas that overlap with Industry activities are expected to limit interactions of walruses and polar bears with those activities.

The distribution and habitat use patterns of walruses and polar bears indicates that relatively few animals will occur in the proposed areas of Industry activity at any particular time, and, therefore, few animals are likely to be affected. As discussed previously, only small numbers of walruses are likely to be found in the Beaufort Sea where and when offshore Industry activities are proposed. Likewise, SBS polar bears are widely distributed, are most often closely associated with pack-ice, and are unlikely to interact with open-water industrial activities, and their range is greater than the geographic region of the proposed ITRs.

2. The predicted effects of Industry activities on walruses and polar bears will be nonlethal, temporary takes of animals.

The documented impacts of previous Industry activities on walruses and polar bears, taking into consideration cumulative effects, suggests that the types of activities analyzed for this ITR will have minimal effects and will be short-term, temporary behavioral changes. The vast majority of reported polar bear observations have been of polar bears moving through the oilfields, undisturbed by the Industry activity.

3. The footprint of the proposed Industry activities is expected to be small relative to the range of the walrus and polar bear populations.

The relatively small area of Industry activity compared to the range of walruses and polar bears will reduce the potential of their exposure to and disturbance from Industry activities.

4. Mitigation measures will limit potential effects of Industry activities.

Holders of an LOA will be required to adopt monitoring requirements and mitigation measures designed to reduce the potential impacts of their operations on walruses and polar bears. Seasonal restrictions, early detection monitoring programs, den detection surveys for polar bears, and adaptive mitigation and management responses based on real-time monitoring information (described in these regulations) will be used to avoid or minimize interactions with walruses and polar bears and, therefore, limit potential Industry disturbance of these animals.

Conclusion

We, therefore, conclude that any incidental take reasonably likely to or reasonably expected to occur in association with the proposed Industry activities addressed under these regulations will have no more than a negligible impact on walruses and polar bears within the Beaufort Sea region. We do not expect any resulting disturbance to negatively impact the rates of recruitment or survival for the walrus and polar bear populations. These regulations do not authorize lethal take, and we do not anticipate that any lethal take will occur.

Findings

We make the following findings regarding this action:

Small Numbers

Pacific Walrus

Walruses are extralimital in the Beaufort Sea, thus, the number of walruses exposed to the impacts of the proposed Industry activities will be inherently small. Between 1995 and 2012 Industry observed no more than 35 walruses in the Beaufort Sea ITRs region, with only a few instances of disturbance to some of those walruses. We do not anticipate the potential for any lethal take from the proposed Industry activities. We estimate that there will be no more than 10 Level B harassment takes of Pacific walruses by Industry activities during the 5-year period of these ITRs.

Polar Bear

Industry observation reports from the period 2010–2014 indicate that on average 383 polar bears were observed annually during Industry activities. Some of these observations are sightings of the same bears on different occasions. While the majority of observations were sightings with no interaction between polar bears and Industry activity (~81 percent of observed bears), takes by harassment do occur. According to Industry monitoring data, the number of Level B takes has averaged 68 per year from 2010 through 2014.

Based on this information, we estimate that there will be no more than 340 Level B harassment takes of polar bears during the 5-year period of these ITRs. All takes are anticipated to be nonlethal Level B harassment involving short-term and temporary changes in bear behavior. The required mitigation and monitoring measures described in the regulations are expected to prevent injurious Level A takes, and, therefore, the number of lethal takes is estimated to be zero.

Negligible Impact

Based on the best scientific information available, the results of Industry monitoring data from the previous ITRs, 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, the ongoing analysis of the petition to list the Pacific walrus as a threatened species under the ESA, the results of our modeling assessments, and the status of the population, we find that any incidental take reasonably likely to result from the effects of Industry activities during the period of the proposed ITRs, in the Beaufort Sea and adjacent northern coast of Alaska, will have no more than a negligible impact on walruses and polar bears. We do not expect that the total of these disturbances will affect rates of recruitment or survival for walruses or polar bears. In making this finding, we considered the following: the distribution of the species; the biological characteristics of the species; the nature of Industry activities; the potential effects of Industry activities and potential oil spills on the species; the probability of oil spills occurring; the documented impacts of Industry activities on the species, taking into consideration cumulative effects; the potential impacts of climate change, where both walruses and

polar bears can potentially be displaced from preferred habitat; mitigation measures designed to minimize Industry impacts through adaptive management; and 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 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 walruses and polar bears, 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 walrus and polar bear, we conclude that any incidental take reasonably likely to or reasonably expected to occur as a result of projected activities will have a negligible impact on the walrus and polar bear populations. Furthermore, we do not expect these disturbances to affect the rates of recruitment or survival for the walrus and polar bear populations. These regulations do not authorize lethal take, and we do not anticipate any lethal take will occur.

The probability of an oil spill that will cause significant impacts to walruses and polar bears appears extremely low. We have included information from both offshore and onshore projects in our oil spill analysis. We have analyzed the likelihood of a marine oil spill of the magnitude necessary to lethally take a significant number of polar bears for offshore projects and, through a risk assessment analysis, found that it is unlikely that there will be any lethal take associated with a release of oil. 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.

After considering the cumulative effects of existing and future development, production, and exploration activities, and the likelihood of any impacts, both onshore and offshore, we find that the total expected takings resulting from oil and gas Industry activities will affect no more than small numbers and will have no more than a negligible impact on the walrus and polar bear populations inhabiting the Beaufort Sea area on the North Slope coast of Alaska.

Our finding of negligible impact applies to incidental take associated with the petitioner's oil and gas exploration, development, and production 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 will 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.

Within the described geographic region of this rule, Industry effects on walruses and polar bears are expected to occur at a level similar to what has taken place under previous regulations. We anticipate that there will be an increased use of terrestrial habitat in the fall period by polar bears. We also anticipate a continued increased use of terrestrial habitat by denning bears. Nevertheless, we expect no significant impact to these species as a result of these anticipated changes. The mitigation measures will be effective in minimizing any additional effects attributed to seasonal shifts in distribution or denning polar bears during the 5-year timeframe of the 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 Industry may have to implement mitigation measures more often, possibly increasing polar bear deterrence events. In addition, if additional polar bear den locations are detected within industrial activity areas, spatial and temporal mitigation measures, including cessation of activities, may be instituted more frequently during the 5-year period of the rule.

We have evaluated climate change in regard to walruses and polar bears. Climate change is a global phenomenon and was considered as the overall driver of effects that could alter walrus and polar bear habitat and behavior. Though climate change is a pressing conservation issue for walruses and polar bears, we have concluded that the authorized taking of walruses and polar nears during the activities proposed by Industry during this 5-year rule will not adversely impact the survival of these species and will have no more than negligible effects. The Service is currently involved in research to

help us understand how climate change may affect walruses and polar bears. As we gain a better understanding of climate change effects, we will incorporate the information in future actions.

Impacts on Subsistence Uses

Based on community consultations, locations of hunting areas, the potential overlap of hunting areas and Industry projects, the best scientific information available, and the results of monitoring data, we find that take caused by oil and gas exploration, development, and production activities in the Beaufort Sea and adjacent northern coast of Alaska will not have an unmitigable adverse impact on the availability of walruses and polar bears for taking for subsistence uses during the period of the rule. In making this finding, we considered the following: records on subsistence harvest from the Service's Marking, Tagging, and Reporting Program; community consultations; effectiveness of the POC process between Industry and affected Native communities; and anticipated 5-year effects of Industry activities on subsistence hunting.

Walruses and polar bears represent a small portion, in terms of the number of animals, of the total subsistence harvest for the communities of Barrow, Nuiqsut, and Kaktovik. However, the low numbers do not mean that the harvest of these species is not important to Alaska Natives. Prior to receipt of an LOA, Industry must provide evidence to us that community consultations have occurred or that an adequate POC has been presented to the subsistence communities. Industry will 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 walruses and polar bear are minimized. Although multiple meetings for multiple projects from numerous operators have already taken place, no official concerns have been voiced by the Native communities with regard to Industry activities limiting availability of walruses or polar bears for subsistence uses. However, should such a concern be voiced as Industry continues to reach out to the Native communities, development of POCs, which must identify measures to minimize any adverse effects, will be required. The POC will ensure that oil and gas activities will not have an unmitigable adverse impact on the availability of the species or stock for subsistence uses. This POC must provide the procedures addressing how Industry will work with the affected Native communities and what actions will be taken to avoid interference with subsistence hunting of walruses and polar bears, as warranted.

The Service has not received any reports and is aware of no information that indicates that walruses or polar bears 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 oil and gas activity. If there is evidence during the 5-year period of the regulations that oil and gas activities are affecting the availability of walruses or polar bears for take for subsistence uses, we will 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 walruses and polar bears and 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 walrus and polar bear 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, 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 walruses and polar bears. To the extent possible, monitors will record group size, age, sex, reaction, duration of interaction, and closest approach to Industry onshore. Activities within 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 will 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 will be implemented to statistically monitor observation trends of walruses or polar bears in the nearshore areas where they usually occur.

Monitoring activities will be 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 expiration of the LOA. 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 bear 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.

Public Comments

Clarity of This 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 common, everyday words and 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 **ADDRESSES**. 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 you find unclear, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

Public Participation

It is the policy of the Department of the Interior, whenever practicable, to afford the public an opportunity to participate in the rulemaking process. Accordingly, interested persons may submit written comments regarding this proposed rule by one of the methods listed in **ADDRESSES**. Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Required Determinations

Treaty Obligations

The ITRs are consistent with the 1973 Agreement on the Conservation of Polar Bears, a multilateral treaty executed in Oslo, Norway among the Governments of Canada, Denmark, Norway, Russia, and the United States. Article II of this Polar Bear Agreement lists three obligations of the Parties in protecting polar bear habitat. Parties are obliged to: (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 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 1.6-km (1-mi) 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.

National Environmental Policy Act (NEPA) Considerations

We have prepared a draft environmental assessment (EA) in conjunction with this rulemaking. Subsequent to the 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–2016–0060 or contact the individual identified above in **FOR FURTHER INFORMATION CONTACT**.

Endangered Species Act

In 2008, the Service listed the polar bear as a threatened species under the ESA (73 FR 28212, May 15, 2008) and later designated critical habitat for polar bear

populations in the United States, effective January 6, 2011 (75 FR 76086, December 7, 2010). Section 7(a)(1) and (2) of the ESA (16 U.S.C. 1536(a)(1) and (2)) directs 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 these statutory requirements, the Service's Marine Mammal Management Office has initiated Intra-Service section 7 consultation regarding the effects of these regulations 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 provides that the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget will review all significant rules. OIRA has determined that this proposed 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 uncertainty, 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 proposed rule in a manner consistent with these requirements.

OIRA bases its determination upon the following four criteria: (a) Whether the rule will have an annual effect of $100 million or more on the economy or adversely affect an economic sector, productivity, jobs, the environment, or other units of the government; (b) Whether the rule will create inconsistencies with other Federal agencies' actions; (c) Whether the rule will materially affect entitlements, grants, user fees, loan programs, or the rights and obligations of their recipients; (d) Whether the rule raises novel legal or policy issues.

Expenses will 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 proposed rule is not expected to result in additional costs to Industry that it has not already borne under all previous ITRs. 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 do not exceed

$500,000 per year, short of the "major rule" threshold that would require preparation of a regulatory impact analysis. As is presently the case, profits will accrue to Industry; royalties and taxes will accrue to the Government; and the proposed rule will have little or no impact on decisions by Industry to relinquish tracts and write off bonus payments.

Small Business Regulatory Enforcement Fairness Act

We have determined that this proposed rule is not a major rule under 5 U.S.C. 804(2), the Small Business Regulatory Enforcement Fairness Act. The rule is also 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 United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

Regulatory Flexibility Act

We have also determined that this proposed rule will 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 regulations, and these potential applicants have not been identified as small businesses. Therefore, neither a Regulatory Flexibility Analysis nor a Small Entity Compliance Guide is required. The analysis for this rule is available from the individual identified above in the section **FOR FURTHER INFORMATION CONTACT**.

Takings Implications

This proposed rule does not have takings implications under Executive Order 12630 because it authorizes the nonlethal, incidental, but not intentional, take of walruses and polar bears by oil and gas Industry companies and, thereby, exempts 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 Assessment 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 proposed rule will 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 rulemaking will not impose a cost of $100 million or more in any given year on local or State governments or private entities. This rule will 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 Native American Tribal Governments

In accordance with the President's memorandum of April 29, 1994, "Government-to-Government Relations with Native American Tribal Governments" (59 FR 22951, May 4, 1994), Executive Order 13175, Department of the Interior Secretarial Order 3225 of January 19, 2001 (Endangered Species Act and Subsistence Uses in Alaska (Supplement to Secretarial Order 3206)), Department of the Interior Secretarial Order 3317 of December 1, 2011 (Tribal Consultation and Policy), Department of the Interior Memorandum of January 18, 2001 (Alaska Government-to-Government Policy), the Department of the Interior's manual at 512 DM 2, and the Native American Policy of the U.S. Fish and Wildlife Service, January 20, 2016, we readily acknowledge our responsibility to communicate and work directly on a Government-to-Government basis with federally recognized Tribes in developing programs for healthy ecosystems, to seek their full and meaningful participation in evaluating and addressing wildlife conservation concerns, to remain sensitive to Alaska Native culture, and to make information available to Alaska Natives.

Furthermore, and in accordance with Department of the Interior Policy on Consultation with Alaska Native Claims Settlement Act of 1971 (ANCSA) Corporations, August 10, 2012, we likewise acknowledge our responsibility to communicate and work directly with ANCSA Corporations.

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.

In addition, to facilitate co-management activities, the Service maintains cooperative agreements with the EWC, the ANC, and the 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, EWC, ANC, and QWC 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 proposed 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. OMB has reviewed and approved the information collection requirements included in this rule and assigned OMB control number 1018–0070, which expires March 31, 2017. This control number covers the information collection, recordkeeping, and reporting requirements in 50 CFR 18, subpart J, 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 provides exceptions from the taking prohibitions of the MMPA for entities engaged in the exploration of oil and gas in the Beaufort Sea and adjacent coast of Alaska. By providing certainty regarding compliance with the MMPA, this proposed rule will have a positive effect on Industry and its activities. Although the proposed rule requires 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 proposd 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

For a list of the references cited in this proposed rule, see Docket No. FWS–R7–ES–2016–0060, available at *http://www.regulations.gov*.

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 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 revising subpart J to read as follows:

Subpart J—Nonlethal Taking of Marine Mammals Incidental to Oil and Gas Exploration, Development, Production and Other Substantially Similar Activities in the Beaufort Sea and Adjacent Northern Coast of Alaska

Sec.

§ 18.121 Specified activities covered by this subpart.

Regulations in this subpart apply to the nonlethal incidental, but not intentional, take of small numbers of polar bear and Pacific walrus by U.S. citizens (as defined in § 18.27(c)) while engaged in oil and gas exploration, development, production, and/or other substantially similar activities in the Beaufort Sea and adjacent northern coast of Alaska.

§ 18.122 Specified geographic region where this subpart applies.

This subpart applies to the specified geographic region that encompasses all Beaufort Sea waters east of a north-south line through Point Barrow, Alaska (71°23′29″

N, -156 °28′30″ W, BGN 1944), and approximately 322 kilometers (km) (~200 miles (mi)) north of Point Barrow, including all Alaska State waters and Outer Continental Shelf (OCS) waters, and east of that line to the Canadian border.

(a) The offshore boundary of the Beaufort Sea incidental take regulations (ITR) region will match the boundary of the Bureau of Ocean Energy Management (BOEM) Beaufort Sea Planning area, approximately 322 km (~200 mi) offshore. The onshore region is the same north/south line at Barrow, 40.2 km (25 mi) inland and east to the Canning River.

(b) The Arctic National Wildlife Refuge is not included in the Beaufort Sea ITR region. Figure 1 shows the area where this subpart applies.

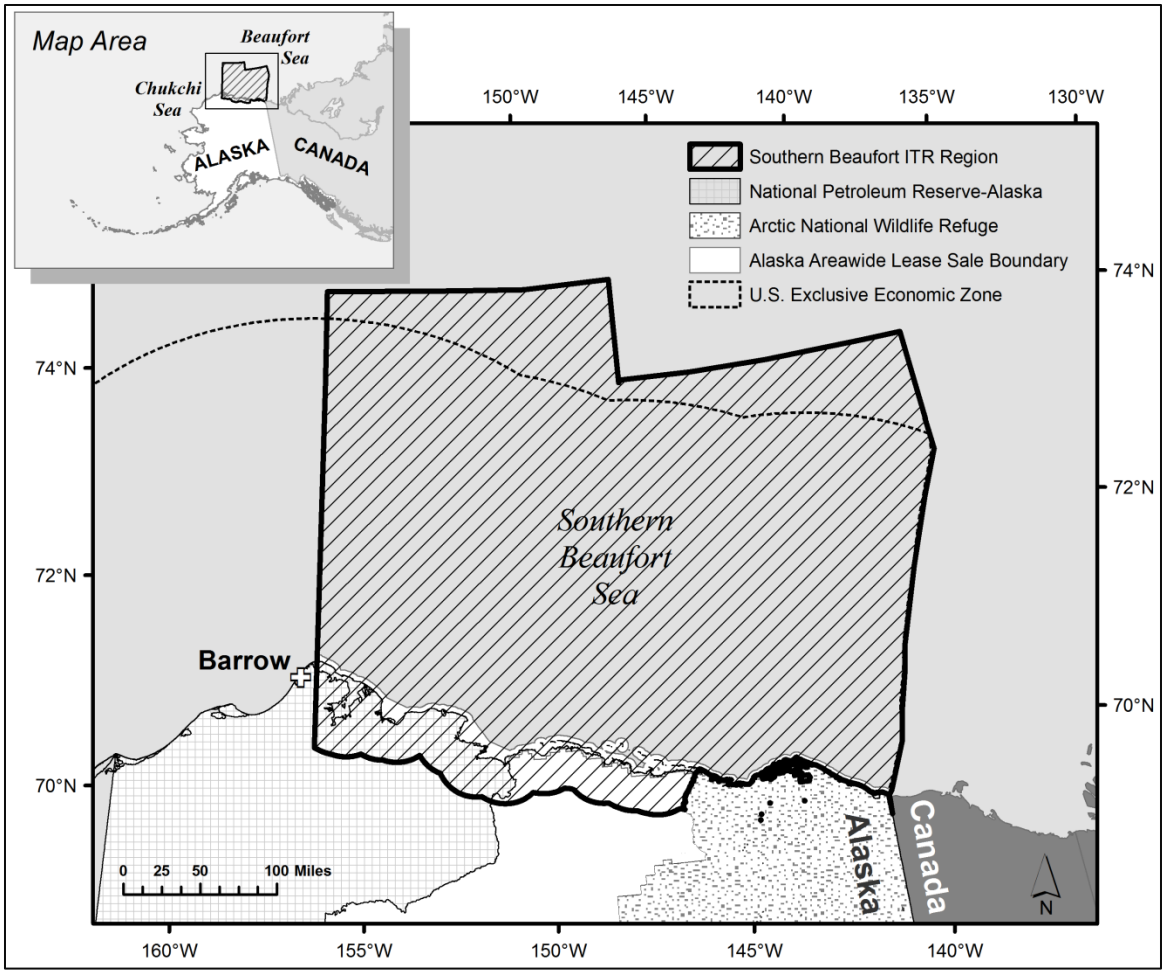

Figure 1. Map of the Beaufort Sea ITR region.

§ 18.123 Dates this subpart is in effect.

Regulations in this subpart are effective from August 3, 2016, through August 3, 2021, for year-round oil and gas exploration, development, production and other substantially similar activities.

§ 18.124 Procedure to obtain a Letter of Authorization (LOA).

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

(b) If an applicant proposes to conduct oil and gas industry exploration, development, production, and/or other substantially similar activity in the Beaufort Sea ITR region described in § 18.122 that may cause the taking of Pacific walruses and/or polar bears and wants nonlethal incidental take authorization under the regulations in this subpart J, the applicant must apply for an LOA. The applicant must submit the request for authorization to the Service's Alaska Region Marine Mammals Management Office (see § 2.2 for address) at least 90 days prior to the start of the proposed activity.

(c) The request for an LOA must include the following information and must comply with the requirements set forth in § 18.128:

(1) A plan of operations that describes in detail the proposed activity (e.g., type of project, methods, and types and numbers of equipment and personnel, etc.), the dates and duration of the activity, and the specific locations of and areas affected by the activity.

(2) A site-specific marine mammal monitoring and mitigation plan to monitor and mitigate the effects of the activity on Pacific walruses and polar bears.

(3) A site-specific Pacific walrus and polar bear safety, awareness, and interaction plan. The plan for each activity and location will detail the policies and procedures that will provide for the safety and awareness of personnel, avoid interactions with Pacific walruses and polar bears, and minimize impacts to these animals.

(4) A Plan of Cooperation (POC) to mitigate potential conflicts between the proposed activity and subsistence hunting, where relevant. Applicants must provide documentation of communication with potentially affected subsistence communities along the Beaufort Sea coast (i.e., Kaktovik, Nuiqsut, and Barrow) and appropriate subsistence user organizations (i.e., the Eskimo Walrus Commission and the Alaska

Nanuuq Commission) to discuss the location, timing, and methods of proposed activities and identify and mitigate any potential conflicts with subsistence walrus and polar bear hunting activities. Applicants must specifically inquire of relevant communities and organizations if the proposed activity will interfere with the availability of Pacific walruses and/or polar bears for the subsistence use of those groups. Applications for Letters of Authorization must include documentation of all consultations with potentially affected user groups. Documentation must include a summary of any concerns identified by community members and hunter organizations, and the applicant's responses to identified concerns.

§ 18.125 How the Service will evaluate a request for a Letter of Authorization (LOA).

(a) We will evaluate each request for an LOA 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 an 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 the applicant has 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 an LOA, 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 should we determine that an emergency exists that poses a significant risk to the well-being of the species or stocks of polar bears or Pacific walruses.

§ 18.126 Authorized take allowed under a Letter of Authorization (LOA).

(a) An LOA allows for the nonlethal, noninjurious, incidental, but not intentional take by Level B harassment, as defined in § 18.3 and under § 3 of the Marine Mammal Protection Act (16 U.S.C. 1371 et seq.), of Pacific walruses and/or polar bears while conducting oil and gas industry exploration, development, production, and/or other substantially similar activities within the Beaufort Sea ITR region described in § 18.122.

(b) Each LOA will identify terms and conditions for each proposed activity and location.

§ 18.127 Prohibited take under a Letter of Authorization (LOA).

Except as otherwise provided in this subpart, prohibited taking is described in § 18.11 as well as:

(a) Intentional take, Level A harassment, as defined in § 3 of the Marine Mammal Protection Act (16 U.S.C. 1371 et seq.), and lethal incidental take of polar bears or Pacific walruses; and

(b) Any take that fails to comply with this subpart or with the terms and conditions of an LOA.

§ 18.128 Mitigation, monitoring, and reporting requirements.

(a) *Mitigation measures for all Letters of Authorization (LOAs).* Holders of an LOA must implement policies and procedures to conduct activities in a manner that

minimizes to the greatest extent practicable adverse impacts on Pacific walruses and/or polar bears, their habitat, and the availability of these marine mammals for subsistence uses. Adaptive management practices, such as temporal or spatial activity restrictions in response to the presence of marine mammals in a particular place or time or the occurrence of Pacific walruses and/or polar bears engaged in a biologically significant activity (e.g., resting, feeding, denning, or nursing, among others) must be used to avoid interactions with and minimize impacts to these animals and their availability for subsistence uses.

(1) All holders of an LOA must:

(i) Cooperate with the Service's Marine Mammals Management Office and other designated Federal, State, and local agencies to monitor and mitigate the impacts of oil and gas industry activities on Pacific walruses and polar bears.

(ii) Designate trained and qualified personnel to monitor for the presence of Pacific walruses and polar bears, initiate mitigation measures, and monitor, record, and report the effects of oil and gas industry activities on Pacific walruses and/or polar bears.

(iii) Have an approved Pacific walrus and polar bear safety, awareness, and interaction plan on file with the Service's Marine Mammals Management Office and onsite, and provide polar bear awareness training to certain personnel. Interaction plans must include:

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

(B) A food, waste, and other "bear attractants" management plan;

(C) Personnel training policies, procedures, and materials;

(D) Site-specific walrus and polar bear interaction risk evaluation and mitigation measures;

(E) Walrus and polar bear avoidance and encounter procedures; and

(F) Walrus and polar bear observation and reporting procedures.

(2) All applicants for an LOA must contact affected subsistence communities and hunter organizations to discuss potential conflicts caused by the proposed activities and provide the Service documentation of communications as described in § 18.124.

(b) *Mitigation measures for onshore activities.* Holders of an LOA must undertake the following activities to limit disturbance around known polar bear dens:

(1) *Attempt to locate polar bear dens.* Holders of an LOA seeking to carry out onshore activities in known or suspected polar bear denning habitat during the denning season (November–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 activities.

(2) *Observe the exclusion zone around known polar bear dens.* Operators must observe a 1.6-km (1-mi) operational exclusion zone around all known polar bear dens during the denning season (November–April, or until the female and cubs leave the areas). Should previously unknown occupied dens be discovered within 1 mi of activities, work 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.

(3) *Use the den habitat map developed by the USGS.* A map of potential coastal polar bear denning habitat can be found at: *http://alaska.usgs.gov/science/biology/polar_bears/denning.html*. This measure ensures that the location of potential polar bear dens is considered when conducting activities in the coastal areas of the Beaufort Sea.

(4) *Restrict the timing of the activity to limit disturbance around dens.*

(c) *Mitigation measures for operational and support vessels.*

(1) 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.

(2) 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 land or ice.

(3) 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 feeding walrus groups. 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.

(4) 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.

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

(6) In association with marine activities, we may require trained marine mammal monitors on the site of the activity or on board drill ships, drill rigs, aircraft, icebreakers, or other support vessels or vehicles to monitor the impacts of Industry's activity on polar bear and Pacific walruses.

(d) *Mitigation measures for aircraft.*

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

(2) 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 walruses or 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 this altitude. However, when weather conditions necessitate operation of aircraft at altitudes below 457 m (1,500 ft), 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.

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

(e) *Mitigation measures for sound-producing offshore activities.* Any offshore activity expected to produce pulsed underwater sounds with received sound levels ≥160 dB re 1 μPa will be required to establish and monitor acoustically verified mitigation zones surrounding the sound source and implement adaptive mitigation measures as follows:

(1) *Mitigation zones.*

(i) A walrus monitoring zone is required where the received pulsed sound level would be ≥ 160 dB re 1 μPa. Walruses in this zone are assumed to experience Level B take.

(ii) A walrus mitigation zone is required where the received pulsed sound level would be ≥ 180 dB re 1 μPa.

(iii) A walrus or polar bear mitigation zone is required where the received pulsed sound level would be ≥ 190 dB re 1 μPa.

(2) *Adaptive mitigation measures.*

(i) *Ramp-up procedures.* For all sound sources, including sound source testing, the following sound ramp-up procedures must be used to allow walruses and polar bears to depart the mitigation zones:

(A) Visually monitor the ≥ 180 dB re 1 μPa and ≥ 190 dB re 1 μPa mitigation zones and adjacent waters for walruses and polar bears for at least 30 minutes before initiating ramp-up procedures. If no walruses or polar bears are detected, ramp-up

procedures may begin. Do not initiate ramp-up procedures when mitigation zones are not observable (e.g., at night, in fog, during storms or high sea states, etc.).

(B) Initiate ramp-up procedures by activating a single, or least powerful, sound source, in terms of energy output and/or volume capacity.

(C) Continue ramp-up by gradually increasing sound output over a period of at least 20 minutes, but no longer than 40 minutes, until the desired operating level of the sound source is obtained.

(ii) *Power down.* Immediately power down a sound source when:

(A) One or more walruses is observed or detected within the area delineated by the pulsed sound ≥ 180 dB re 1 μPa walrus mitigation zone; and

(B) One or more walruses or polar bears are observed or detected within the area delineated by the pulsed sound ≥ 190 dB re 1 μPa walrus or polar bear mitigation zone.

(iii) *Shut down.*

(A) If the power down operation cannot reduce the received pulsed sound level to < 180 dB re 1 μPa (walrus) or < 190 dB re 1 μPa (walrus or polar bear), the operator must immediately shut down the sound source.

(B) If observations are made or credible reports are received that one or more walruses or polar bears within the area of the sound source activity are believed to be in an injured or mortal state, or are indicating acute distress due to received sound, the sound source must be immediately shut down and the Service contacted. The sound source will not be restarted until review and approval has been given by the Service. The ramp-up procedures must be followed when restarting.

(f) *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.

(1) *Community consultation.* Prior to receipt of an LOA, applicants must consult with potentially affected communities and appropriate subsistence user organizations to discuss potential conflicts with subsistence walrus and polar bear hunting caused by the location, timing, and methods of proposed operations and support activities (see §18.124 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 POC as described in paragraph (f)(2) of this section.

(2) *Plan of Cooperation (POC).* When appropriate, a holder of an LOA will be required to develop and implement a Service-approved POC. The POC must include:

(i) A description of the procedures by which the holder of the LOA will work and consult with potentially affected subsistence hunters; and

(ii) 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.

(iii) 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.

(g) *Monitoring requirements.* Holders of an LOA will be required to:

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

(2) Provide trained, qualified, and Service-approved onsite observers to carry out monitoring and mitigation activities identified in the marine mammal monitoring and mitigation plan.

(3) For offshore activities, provide trained, qualified, and Service-approved observers on board all operational and support vessels to carry out monitoring and mitigation activities identified in the marine mammal monitoring and mitigation plan. Offshore observers may be required to complete a marine mammal observer training course approved by the Service.

(4) Cooperate with the Service and other designated Federal, State, and local agencies to monitor the impacts of oil and gas activities on walruses and polar bears. Where information is insufficient to evaluate the potential effects of proposed activities on walruses, polar bears, and the subsistence use of these species, holders of an LOA may be required to participate in joint monitoring and/or research efforts to address these information needs and ensure the least practicable impact to these resources.

(h) *Reporting requirements.* Holders of an LOA must report the results of monitoring and mitigation activities to the Service's Marine Mammals Management Office via email at: *fw7_mmm_reports@fws.gov*.

(1) *In-season monitoring reports.*

(i) *Activity progress reports.* Holders of an LOA must:

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

(B) Provide the Service weekly progress reports of any significant changes in activities and/or locations; and

(C) Notify the Service within 48 hours after ending of activities.

(ii) *Walrus observation reports.* Holders of an LOA must report, on a weekly basis, all observations of walruses during any Industry activity. Upon request, monitoring report data must be provided in a common electronic format (to be specified by the Service). Information in the observation report must include, but is not limited to:

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

(B) Number of walruses;

(C) Sex and age (if known);

(D) Observer name and contact information;

(E) Weather, visibility, sea state, and sea-ice conditions at the time of observation;

(F) Estimated range at closest approach;

(G) Industry activity at time of sighting;

(H) Behavior of animals sighted;

(I) Description of the encounter;

(J) Duration of the encounter; and

(K) Mitigation actions taken.

(iii) *Polar bear observation reports.* Holders of an LOA must report, within 48 hours, all observations of polar bears and potential polar bear dens, during any Industry activity. Upon request, monitoring report data must be provided in a common electronic

format (to be specified by the Service). Information in the observation report must include, but is not limited to:

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

(B) Number of bears;

(C) Sex and age (if known);

(D) Observer name and contact information;

(E) Weather, visibility, sea state, and sea-ice conditions at the time of observation;

(F) Estimated closest distance of bears from personnel and facilities;

(G) Industry activity at time of sighting;

(H) Possible attractants present;

(I) Bear behavior;

(J) Description of the encounter;

(K) Duration of the encounter; and

(L) Mitigation actions taken.

(2) *Notification of LOA incident report.* Holders of an LOA must report, as soon as possible, but within 48 hours, all LOA incidents during any Industry activity. An LOA incident is any situation when specified activities exceed the authority of an LOA, when a mitigation measure was required but not enacted, or when injury or death of a walrus or polar bear occurs. Reports must include:

(i) All information specified for an observation report;

(ii) A complete detailed description of the incident; and

(iii) Any other actions taken.

(3) *Final report.* The results of monitoring and mitigation efforts identified in the marine mammal monitoring and mitigation plan must be submitted to the Service for review within 90 days of the expiration of an LOA, or for production LOAs, an annual report by January 15th of each calendar year. Upon request, final report data must be provided in a common electronic format (to be specified by the Service). Information in the final (or annual) report must include, but is not limited to:

(i) Copies of all observation reports submitted under the LOA;

(ii) A summary of the observation reports;

(iii) A summary of monitoring and mitigation efforts including areas, total hours, total distances, and distribution;

(iv) Analysis of factors affecting the visibility and detectability of walruses and polar bears during monitoring;

(v) Analysis of the effectiveness of mitigation measures;

(vi) Analysis of the distribution, abundance, and behavior of walruses and/or polar bears observed; and

(vii) Estimates of take in relation to the specified activities.

§ 18.129 Information collection requirements.

(a) 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. OMB has approved the collection of information contained in this subpart and assigned OMB 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; and

(2) Monitor impacts of activities and effectiveness of mitigation measures conducted under the Letters of Authorization.

(b) Comments regarding the burden estimate or any other aspect of this requirement must be submitted to the Information Collection Clearance Officer, U.S. Fish and Wildlife Service, at the address listed in 50 CFR 2.2.

Dated: _May 26, 2016_____.

_____Michael J. Bean_____

Principal Deputy Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 2016-13124 Filed: 6/6/2016 8:45 am; Publication Date: 6/7/2016]