DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 18

[Docket No. FWS–R7–FHC–2010–0098; 71490–1351–0000–L5–FY11]

RIN 1018–AX32

Marine Mammals; Incidental Take During Specified Activities

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The Fish and Wildlife Service (Service) proposes regulations that would authorize the nonlethal, incidental, unintentional take of small numbers of polar bears and Pacific walruses during year-round oil and gas industry (Industry) exploration, development, and production operations in the Beaufort Sea and adjacent northern coast of Alaska. Industry operations for the covered period are similar to, and include all activities covered by the previous 5-year Beaufort Sea incidental take regulations that were effective from August 2, 2006, through August 2, 2011. We propose a finding that the total expected takings of polar bears and Pacific walruses during oil and gas industry exploration, development, and production activities 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 this finding on the results of 17 years of data on the encounters and interactions between polar bears, Pacific walruses, and Industry; recent studies of potential effects of Industry on these species; oil spill risk assessments; potential and documented Industry impacts on these species; and current information regarding the natural history and status of polar bears and Pacific walruses. We are proposing that this rule be effective for 5 years from date of issuance.

DATES: Comments on this proposed rule must be received by April 11, 2011.

ADDRESSES: You may submit comments on the proposed rule by any of the following methods:

- U.S. mail or hand-delivery: Public Comments Processing, Attn: Docket No. FWS–R7–FHC–2010–0098; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, Suite 222; Arlington, VA 22203; Attention: Beaufort Sea Incidental Take Regulations; or
- Federal eRulemaking Portal: *http://www.regulations.gov.* Follow the instructions for submitting comments to Docket No. FWS–R7–FHC–2010–0098.

We will post all comments on *http://www.regulations.gov.* This generally means that we will post any personal information you provide us (*see* the Public Comments Solicited section below for more information).

FOR FURTHER INFORMATION CONTACT: Craig Perham, Office of Marine Mammals Management, U.S. Fish and Wildlife Service, 1011 East Tudor Road, Anchorage, AK 99503, Telephone 907–786–3810 or 1–800–362–5148, or Internet: *craig_perham@fws.gov.*

SUPPLEMENTARY INFORMATION:

Background

Section 101(a)(5)(A) of the Marine Mammal Protection Act (MMPA) (16 U.S.C. 1371(a)(5)(A)) gives the Secretary of the Interior (Secretary) through the Director of the Service (we) the authority to allow the incidental, but not intentional, taking of small numbers of marine mammals, in response to requests by U.S. citizens [as defined in 50 CFR 18.27(c)] engaged in a specified activity (other than commercial fishing) in a specified geographic region. According to the MMPA, we shall allow this incidental taking if (1) we make a finding that the total of such taking for the 5-year regulatory period will have no more than a negligible impact on these species and will not have an unmitigable adverse impact on the availability of these species for taking for subsistence use by Alaska Natives, and (2) we issue regulations that set forth (a) permissible methods of taking, (b) means of effecting the least practicable adverse impact on the species and their habitat and on the availability of the species for subsistence uses, and (c) requirements for monitoring and reporting. If regulations allowing such incidental taking are issued, we issue Letters of Authorization (LOA) to conduct activities under the provisions of these regulations when requested by citizens of the United States.

The term "take," as defined by the MMPA, means to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal. Harassment, as defined by the MMPA, 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 "small numbers," "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. "Small numbers" is defined as "a portion of a marine mammal species or stock whose taking would have a negligible impact on that species or stock." It is necessary to note that the Service's analysis of "small numbers" complies with the agency's regulatory definition and is an appropriate reflection of Congress' intent. As was noted during the development of this definition (48 FR 31220; July 7, 1983), Congress itself recognized the "imprecision of the term small numbers," but was unable to offer a more precise formulation because the concept is not capable of being expressed in absolute numerical limits." See H.R. Report No. 97–228 at 19. Thus, Congress itself focused on the anticipated effects of the activity on the species and stated that authorization should be available to persons "whose taking of marine mammals is infrequent, unavoidable, or accidental."

"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."

Industry conducts activities such as oil and gas exploration, development, and production in marine mammal habitat that may result in the taking of marine mammals. Although Industry is under no legal requirement to obtain incidental take authorization, since 1993, Industry has requested, and we have issued, a series of regulations for incidental take authorization for conducting activities in areas of polar bear and walrus habitat. Since the inception of these incidental take regulations (ITRs), polar bear/walrus monitoring observations associated with

the regulations have recorded over 2,000 polar bear observations associated with Industry activities. The large majority of reported encounters have been passive observations of bears moving through the oil fields. Monitoring of Industry activities indicates that encounters with walruses are insignificant with only 18 walruses recorded during the same period.

A detailed history of our past regulations can be found in our most recent regulation, published on August 2, 2006 (71 FR 43926). In summary, these past regulations were published on: November 16, 1993 (58 FR 60402); August 17, 1995 (60 FR 42805); January 28, 1999 (64 FR 4328); February 3, 2000 (65 FR 5275); March 30, 2000 (65 FR 16828); November 28, 2003 (68 FR 66744); and August 2, 2006 (71 FR 43926).

Summary of Current Request

In 2009, the Service received a petition to promulgate a renewal of regulations for nonlethal incidental take of small numbers of walruses and polar bears in the Beaufort Sea for a period of 5 years (2011–2016). The request was submitted on April 22, 2009, by the Alaska Oil and Gas Association (AOGA) on behalf of its members and other participating parties. The petition is available at: (*http://alaska.fws.gov/fisheries/mmm/itr.htm*).

AOGA's application indicates that they request regulations that will be applicable to any company conducting oil and gas exploration, development, and production activities as described within the request. This includes members of AOGA and other parties planning to conduct oil and gas operations in the geographic region. Members of AOGA represented in the petition include:

- Alyeska Pipeline Service Company;
- Anadarko Petroleum Corporation;
- BP Exploration (Alaska) Inc.;
- Chevron USA, Inc.;
- Eni Petroleum;
- ExxonMobil Production Company;
- Flint Hills Resources, Inc.;
- Marathon Oil Company;
- Pacific Energy Resources Ltd.;
- Petro-Canada (Alaska) Inc.;
- Petro Star Inc.;
- Pioneer Natural Resources Alaska, Inc.;
- Shell Exploration & Production Company;
- Statoil Hydro;
- Tesoro Alaska Company; and
- XTO Energy, Inc.

Other participating parties include ConocoPhillips Alaska, Inc. (CPAI), CGG Veritas, 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 ensuing sections titled "Description of Geographic Region" and "Description of Activities."

Prior to issuing regulations at 50 CFR part 18, subpart J in response to this request, we must evaluate the level of industrial activities, their associated potential impacts to polar bears and Pacific walruses, 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 time frame will encompass onshore and offshore exploration, development, and production activities. The petitioners have also specifically requested that these regulations be issued for nonlethal take. Industry has indicated that, through implementation of the mitigation measures, it is confident a lethal take will not occur. The Service is tasked with analyzing the impact that lawful oil and gas industry activities will have on polar bears and walruses during normal operating procedures. In addition, the potential for impact by the oil and gas industry outside normal operating conditions warrant an analysis of the risk of an oil spill and its potential impact on polar bears and walruses.

Description of Proposed Regulations

The regulations that we propose to issue include: Permissible methods of nonlethal taking; measures to ensure the least practicable adverse impact on the species and the availability of these species for subsistence uses; and requirements for monitoring and reporting. If promulgated, these regulations will not authorize, or "permit," the actual activities associated with oil and gas exploration, development, and production. Rather, they will authorize the nonlethal incidental, unintentional take of small numbers of polar bears and Pacific walruses associated with those activities based on standards set forth in the MMPA. The Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE), the U.S. Army Corps of Engineers, and the Bureau of Land Management (BLM) are responsible for permitting activities associated with oil and gas activities in Federal waters and on Federal lands. The State of Alaska is responsible for permitting activities on State lands and in State waters.

If we finalize these nonlethal incidental take regulations, persons seeking taking authorization for particular projects will apply for an LOA to cover nonlethal take associated with exploration, development, or production activities pursuant to the regulations. Each group or individual conducting an oil and gas industry-related activity within the area covered by these regulations may request an LOA. A separate LOA is mandatory for each activity. We must receive applications for LOAs at least 90 days before the activity is to begin.

Applicants must submit a plan to monitor the effects of authorized activities on polar bears and walruses. Applicants must include in their LOA request the time frame of proposed activities, the operating terms and conditions, a polar bear encounter and interaction plan, and a marine mammal monitoring plan.

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

If regulations are implemented, we will evaluate each request for an LOA based on the specific activity and specific location, and may condition the LOA depending on specific circumstances for that activity and location. For example, an LOA issued in response to a request to conduct activities in areas with known, active bear dens or a history of polar bear denning, may be conditioned to require one or more of the following: Forward Looking Infrared (FLIR) imagery flights to determine the location of active polar bear dens; avoiding all denning activity by 1 mile; intensified monitoring in a 1-mile buffer around the den; or avoiding the area during the denning period. More information on applying for and receiving an LOA can be found at 50 CFR 18.27(f).

Description of Geographic Region

The geographic area covered by the requested incidental take regulations

(hereafter referred to as the Beaufort Sea Region) encompasses all Beaufort Sea waters east of a north-south line through Point Barrow (71°23′29″ N, −156 °28′30″ W, BGN 1944), and up to 200 miles north of Point Barrow, including all Alaska State waters and Outer Continental Shelf waters, and east of that line to the Canadian border. The onshore region is the same north/south line at Barrow, 25 miles inland and east to the Canning River. The Arctic National Wildlife Refuge is not included in these regulations. The geographical extent of these regulations is similar as in previous regulations (71 FR 43926), where the offshore boundary is the Beaufort Sea Planning area, approximately 200 miles offshore.

Description of Activities

Activities covered in these regulations include Industry exploration, development, and production operations of oil and gas reserves, as well as environmental monitoring associated with these activities, on the northern coast of Alaska. Throughout the five years that the future regulations will be in place, the petitioners expect similar types of oil and gas activities will occur at similar times of the year as under the prior regulations. Examples of future Industry activities include the completion of the Alpine Satellite Development, development of Point Thomson, Oooguruk, Nikaitchuq, and areas in the National Petroleum Reserve—Alaska (NPR–A). According to the petitioners, the locations of these operations are anticipated to be approximately equally divided among the onshore and offshore tracts presently under lease and to be leased during the period under consideration.

Additionally, for the purpose of assessing possible impacts we anticipate, based on information provided by the petitioners, that these activities will occur equally spaced over time and area for the upcoming ice-covered and open-water seasons. Due to the large number of variables affecting Industry activities, prediction of exact dates and locations of operation for the open-water and ice-covered seasons is not possible at this time. However, operators must provide specific dates and locations of proposed activities prior to receiving an LOA.

Industry-Proposed Activities Considered Under Incidental Take Regulations

Alaska's North Slope encompasses an area of 88,280 square miles and currently contains 11 oil and gas field units associated with Industry. These include the Greater Prudhoe Bay, Duck Island, Badami, Northstar, Kuparuk River, Colville River, Oooguruk, Tuvaq, Nikaitchuq, Milne Point, and Point Thomson. These units encompass exploration, development, and production activities. In addition, some of these fields include associated satellite oilfields: Sag Delta North, Eider, North Prudhoe Bay, Lisburne, Niakuk, Niakuk-Ivashak, Aurora, Midnight Sun, Borealis, West Beach, Polaris, Orion, Tarn, Tabasco, Palm, West Sak, Meltwater, Cascade, Schrader Bluff, Sag River, and Alpine.

Exploration Activities

As with previous regulations, exploration activities may occur onshore or offshore and include: Geological surveys; geotechnical site investigations; reflective seismic exploration; vibrator seismic data collection; airgun and water gun seismic data collection; explosive seismic data collection; vertical seismic profiles; sub-sea sediment sampling; construction and use of drilling structures such as caisson-retained islands, ice islands, bottom-founded structures [steel drilling caisson (SDC)], ice pads and ice roads; oil spill prevention, response, and cleanup; and site restoration and remediation. Exploration activities could also include the development of staging facilities. The level of exploration activities is expected to be similar to the level during the past regulatory periods, although exploration projects may shift to different locations, particularly the NPR–A.

The location of new exploration activities within the geographic region of the rule will, in part, be determined by the following State and Federal oil and gas lease sales:

State of Alaska Lease Sales

In 1996, the State of Alaska Department of Natural Resources (ADNR), Oil and Gas Division, adopted an "area wide" approach to leasing. Under area-wide leasing, the State offers all available state acreage not currently under lease within each area annually. The area of activity in this Petition includes the North Slope and Beaufort Sea planning areas. Lease sale data are available on the ADNR Web site at: *http://www.dog.dnr.state.ak.us/oil/index.htm*. Industry activities may occur on state lease sales during the time period of the requested action. North Slope Area-wide lease sales are held annually in October. As of August 2008, there are 774 active leases on the North Slope, encompassing 971,245 hectares (2.4 million acres), and 224 active leases in the state waters of the Beaufort Sea, encompassing 249,000 hectares (615,296 acres). The sale on October 22, 2008 resulted in the sale of 60 tracts for a total of 86,765 hectares (214,400 acres). Eight lease sales have been held to date. As of July 2008, there are 38 active leases in the Beaufort Sea area, encompassing 38,333 hectares (94,724 acres). The sale on October 22, 2008 resulted in the sale of 32 tracts for a total of 40,145 hectares (99,200 acres).

Northwest and Northeast Planning Areas of NPR–A

The BLM manages over 9 million hectares (23 million acres) in the NPR–A, including the Northwest (3.5 million hectares, 8.8 million acres), Northeast (1.8 hectares, 4.6 million acres), and South (3.6 million hectares, 9 million acres) Planning Areas. The area of activity in this Petition includes the Northwest and Northeast areas.

Oil and gas lease sales were held in 2004, 2006, 2008, and 2010. The 2004 lease sale sold 123 tracts totaling 566,560 hectares (1.4 million acres); the 2006 sale sold 81 tracts covering 380,350 hectares (939,867 acres); the 2008 sale sold 23 tracts covering 106,013 hectares (261,964 acres). From 2000 to 2008, 25 exploratory wells were drilled in the Northeast and Northwest planning areas of the NPR–A. Current operator/ownership information is available on the BLM NPR–A Web site at *http://www.blm.gov/ak/st/en/prog/energy/oil_gas/npra.html*. Exploration activities were conducted on the FEX LP company leases in the Northwest Planning Area between 2006–2008. Exploration may continue where new areas have been selected. New project elements included exploration drilling at nine new ice drill pad locations (in the Uugaq, Aklaq, Aklaqyaaq, and Amaguq prospects), 99 km (62 mi) of new access corridor, and 34 new water sources.

In the Northeast Planning Area, CPAI applied for permits to begin a five-year (2006–2011) winter drilling program at 11 sites (Noatak, Nugget, Cassin and Spark DD prospects), including 177 km (110 mi) of new right-of-way corridors and 10 new water supply lakes. CPAI is planning to continue developing its program in the Northeast Planning Area throughout the duration of the requested regulations.

Outer Continental Shelf Lease Sales

The BOEMRE manages the Alaska Outer Continental Shelf (OCS) region encompassing 242 million hectares (600 million acres). In February, 2003, Minerals Management Service (MMS) (now known as the Bureau of Ocean Energy Management, Regulation and Enforcement or BOEMRE) issued the

Final Environmental Impact Statement (EIS) for three lease sales planned for the Beaufort Sea Planning Area: Sale 186, 195, and 202. Sale 186 was held in 2003, resulting in the leasing of 34 tracts encompassing 73,576 hectares (181,810 acres). Sale 195 was held in 2005, resulting in the leasing of 117 tracts encompassing 245,760 hectares (607,285 acres). Sale 202 was held in 2007, resulting in the leasing of 90 tracts covering 198,580 hectares (490,700 acres). Leasing information from BOEMRE is located at *http://www.boemre.gov/alaska/lease/lease.htm*. The next lease sale, Lease Sale 217, is planned for 2011. BOEMRE has begun preparing the multiple-sale EIS for these areas. The Draft EIS was released in November 2008 and is located at *http://www.BOEMRE.gov/alaska/ref/EIS%20EA/ArcticMultiSale_209/_DEIS.htm*. While the disposition of the leases is highly speculative at this time, it is probable that at least some seismic exploration and possibly some exploratory drilling will take place during the 5-year period of the regulations.

Exploratory drilling for oil occurs onshore, in inland areas, or in the offshore environment. Exploratory drilling and associated support activities and features may include: Transportation to site; setup and relocation of up to 100-person camps and support camps (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; ice islands; ice roads; gravel hauling; gravel mine sites; road building; pipelines; electrical lines; water lines; road maintenance; buildings and facilities; operating heavy equipment; digging trenches; burying and covering pipelines; sea lift; water flood; security operations; dredging; moving floating drill units; helicopter support; and drill ships such as the Steel Drilling Caisson (SDC), CANMAR Explorer III, and the Kulluk.

During the regulatory period, exploration activities are anticipated to occur in the offshore environment and continue in the current oil field units, including those projects identified by Industry below.

Point Thomson

The Point Thomson reservoir is approximately 32 km (20 mi) east of the Badami field. In January 2009, ADNR issued a conditional interim decision that allows for the drilling of two wells by 2010 and commencing production by 2014. Following startup of production from Point Thomson in 2014, field development is expected to include additional liquids production and sale of gas. Field development will require additional wells, field facilities, and pipelines. The timing and nature of additional facilities and expansions will depend upon initial field performance and timing of an Alaska gas pipeline to export gas off the North Slope.

Ataruq (Two Bits)

The Ataruq project is permitted for construction but, not completely permitted for operation. This Kerr-McGee Oil and Gas Corporation project is located about 7.2 km (4.5 mi) northwest of the Kuparuk River Unit (KRU) Drill Site 2M. The area consists of two onshore prospects and covers about 2,071 hectares (5,120 acres). It includes a 6.4-km (4-mi) gravel road and a single gravel pad with production facilities and up to 20 wells in secondary containment modules. The processed fluids will be transported to DS 2M via a pipe-in-a-pipe buried line within the access road. After drilling, the facility will be normally unmanned.

Shell Offshore Exploration Activities

Shell anticipates conducting an exploration drilling program, called the Suvulliq Project, on BOEMRE Alaska OCS leases located in the Beaufort Sea during the arctic drilling seasons of 2011–2016. Presently, the arctic drilling seasons are generally considered to be from July through October in the Beaufort Sea. Shell will use a floating drilling vessel complimented by ice management and oil spill response (OSR) barges and/or vessels to accomplish exploration and/or delineation drilling during each arctic drilling season. An open water program in support of the development of Shell's Beaufort Sea leases will involve a site clearance and shallow hazards study as well. A detailed description of an offshore drilling activity of this nature can be found at: *http://alaska.fws.gov/fisheries/mmm/itr.htm*, under "LOA Applications for Public Viewing."

ION Seismic Activity

ION is planning an open water seismic program in the late open-water and into the ice-covered season, which will consist of an estimated 3,000 miles of 2D seismic line acquisition and site clearance surveys in the eastern Beaufort Sea. The open water seismic program will consist of two vessels, one active in seismic acquisition and the second providing logistical support and ice breaking capabilities. An offshore open water seismic program is proposed to occur between September through October 2011.

Development Activities

Development activities associated with oil and gas Industry operations include: Road construction; pipeline construction; waterline construction; gravel pad construction; camp construction (personnel, dining, lodging, maintenance, water production, wastewater treatment); transportation (automobile, airplane, and helicopter); runway construction; installation of electronic equipment; well drilling; drill rig transport; personnel support; and demobilization, restoration, and remediation.

Alpine Satellites Development

CPAI has proposed to develop oil and gas from five satellites. Two proposed satellites known as CD–3 (CD North during exploration) and CD–4 (CD South) are in the Colville Delta. The CD–3 drill site is located north of CD–1 (Alpine facility) and is a roadless development accessed by a gravel airstrip or ice road in winter. The CD–4 drill site is connected to the main production pad via a gravel road. Production start-up of CD–3 and CD–4 drill sites occurred in late summer 2006. Three other proposed satellites known as CD–5, CD–6, and CD–7 (Alpine West, Lookout, and Spark, respectively, during exploration) are in the NPR–A. These remaining three drill sites are proposed to be connected to CD–2 via road and bridge over the Niglilq Channel from CD–5. The other two drill sites are planned to be connected to CD–5 via road; however, the permitting for these scenarios has not been completed. Development of five drill sites is planned by CPAI in the immediate future in the Alpine development area and could occur within the regulatory period. Production of CD–5, CD–6, and CD–7 could also occur during the regulatory period.

Liberty

BPXA is currently in the process of developing the Liberty field, where the use of ultra extended-reach drilling (uERD) technology will access an offshore reservoir from existing onshore facilities. The Liberty reservoir is located in federal waters in Foggy Island Bay about 13 km (8 mi) east of the Endicott Satellite Drilling Island (SDI). Liberty prospect is located approximately 5.5 miles offshore in 20 ft of water. The development of Liberty was first proposed in 1998 when BPXA submitted a plan to BOEMRE (then

MMS) for a production facility on an artificial island in Foggy Island Bay. In 2002, BPXA put the project on hold to review project design and economics after the completion of BPXA's Northstar project. In August 2005, BPXA moved the project onshore to take advantage of advances in extended reach drilling. Liberty wells will extend as much as 8 miles offshore. Drilling of the initial Liberty development well and first oil production is planned to occur during the 5-year period of the proposed action.

North Shore Development

Brooks Range Petroleum Company (BRPC) is proposing the North Shore Development Project to produce oil from several relatively small, isolated hydrocarbon accumulations on the North Slope. The fields are close to existing Prudhoe Bay infrastructure, where production will concentrate on the Ivishak and Sag River sands prospects. Horizontal drilling technology and long-reach wells will be used to maximize production while minimizing surface impacts. BRPC expects to recover between five and ten million barrels of oil, and future exploration success could increase the reserves.

Potential Gas Pipeline

Two companies are currently proposing to construct a natural gas pipeline that would transport natural gas from the North Slope to North American markets. The two proposed projects are discussed below, although it is expected that only one pipeline would be constructed. Only a small portion (40 km [25 mi] inland) of a pipeline would occur within the specified area of activity covered under this Petition. Initial stages of the gas pipeline development, such as environmental studies and route selection, could occur during the 5-year period of the requested action.

One project is proposed by the Alaska Gas Pipeline LLC (Denali), a company jointly owned by BP Alaska Gas Pipelines LLC and the ConocoPhillips Denali Company. The Denali natural gas pipeline project is expected to include a gas treatment plant on the North Slope and approximately 3,220 km (2,000 mi) of large-diameter natural gas transmission pipeline beginning on the North Slope and terminating in the vicinity of the British Columbia-Alberta, Canada border. The Alaska portion of the project would generally follow the Dalton Highway south from the North Slope.

The second project is proposed by the TransCanada Corporation. The Alaska Gasline Inducement Act (AGIA) was passed into law by the State of Alaska in May 2007. TransCanada Corporation was selected by the State of Alaska in August 2008 as the exclusive recipient of the AGIA license. TransCanada Corporation is currently in the planning stages of developing the Alaska Pipeline Project, which will move natural gas from Alaska to North American markets. The project is planned to stretch approximately 2,760 km (1,715 mi) from Prudhoe Bay to the British Columbia/Alberta border near Boundary Lake.

Nikaitchuq Unit

The Nikaitchuq Unit is located near Spy Island, north of Oliktok Point and the Kuparuk River Unit, and northwest of the Milne Point Unit. Former operator Kerr-McGee Oil and Gas Corporation drilled three exploratory wells on and immediately adjacent to Spy Island, 4 miles north of Oliktok Point in the ice-covered season of 2004–2005. The current operator, Eni, is moving to develop this site as a future production area. Future drilling will be from a small gravel island shoreward of the barrier islands. Additional operations will include approximately 13 miles of underground pipeline connecting the offshore sites to a mainland landfall and onshore facilities pad near Oliktok Point.

Production Activities

Existing North Slope production operations extend from the oilfield units of Alpine in the west to Point Thomson and Badami in the east. Badami and Alpine are developments without permanent access roads; access is available to these fields by airstrips, barges, and seasonal ice roads. Oil pipelines extend from these fields and connect to the Trans-Alaska Pipeline System (TAPS). North Slope oilfield developments include a series of major fields and their associated satellite fields. In some cases a new oilfield discovery has been developed completely using existing infrastructure. Thus, the Prudhoe Bay oilfield unit encompasses the Prudhoe Bay, Lisburne, Niakuk, West Beach, North Prudhoe Bay, Point McIntyre, Borealis, Midnight Sun, Polaris, Aurora, and Orion reservoirs, while the Kuparuk oilfield development incorporates the Kuparuk, West Sak, Tarn, Palm, Tabasco, and Meltwater oilfields.

Production activities include: Personnel transportation (automobiles, airplanes, helicopters, boats, rolligons, cat trains, and snowmobiles); and unit operations (building operations, oil production, oil transport, restoration, remediation, and improvement of oil field operations). Production activities are permanent, year-round activities, whereas exploration and development activities are usually temporary and seasonal.

Only production units and facilities operated by BP Exploration Alaska, Inc. and ConocoPhillips Alaska, Inc. have been covered under previous incidental take regulations (Greater Prudhoe Bay, Endicott, Milne Point, Badami, Northstar, Kuparuk River, and Alpine, respectively). Now the Oooguruk field, operated by Pioneer, is currently producing as well.

Prudhoe Bay Unit

The Prudhoe Bay oilfield is the largest oilfield by production in North America and ranks among the 20 largest oilfields ever discovered worldwide. Over 11 billion barrels have been produced from a field originally estimated to have 25 billion barrels of oil in place. The Prudhoe Bay field also contains an estimated 26 trillion cubic ft of recoverable natural gas. More than 1,100 wells are currently in operation in the greater Prudhoe Bay oilfields, just over 900 of which are producing oil (others are for gas or water injection).

The total development area in the Prudhoe Bay Unit is approximately 2,785 hectares (6,883 acres). The Base Operations Center on the western side of the Prudhoe Bay oilfield can accommodate 476 people, the nearby Main Construction Camp can accommodate up to 680 people, and the Prudhoe Bay Operations Center on the eastern side of the field houses up to 488 people. Additional contract or construction personnel can be housed at facilities in nearby Deadhorse or in temporary camps placed on existing gravel pads.

Kuparuk River Unit

The Kuparuk oilfield is the second-largest producing oilfield in North America. More than 2.6 billion barrels of oil are expected to be produced from this oilfield. The Greater Kuparuk Area includes the satellite oilfields of Tarn, Palm, Tabasco, West Sak, and Meltwater. These satellite fields have been developed using existing facilities. To date, nearly 900 wells have been drilled in the Greater Kuparuk Area. The total development area in the Greater Kuparuk Area is approximately 603 hectares (1,508 acres), 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 Kuparuk Construction Camp are able to accommodate up to 1,200 people. The Kuparuk Industrial Center is primarily

used for personnel overflow during the winter in years with a large amount of construction.

Greater Point McIntyre

The Greater Point McIntyre Area encompasses the Point McIntyre field and nearby satellite fields of West Beach, North Prudhoe Bay, Niakuk, and Western Niakuk. The Point McIntyre area is located 11.3 km (7 mi) north of Prudhoe Bay. It was discovered in 1988 and came online in 1993. BPXA produces the Point McIntyre area from two drill site gravel pads. The field's production peaked in 1996 at 170,000 barrels per day, whereas in 2006 production averaged 21,000 barrels per day with just over 100 wells in operation. Cumulative oil production as of December 31, 2006, was 738 million barrels of oil equivalent.

Milne Point

Located approximately 56 km (35 mi) northwest of Prudhoe Bay, the Milne Point oilfield was discovered in 1969 and began production in 1985. The field consists of more than 220 wells drilled from 12 gravel pads. Milne Point produces from three main fields: Kuparuk, Schrader Bluff, and Sag River. Cumulative oil production as of December 31, 2006, was 248 million barrels of oil equivalent. The total area of Milne Point and its satellites is 94.4 hectares (236 acres) of tundra, including 31 km (19 mi) of gravel roads, 64 km (40 mi) of pipelines, and one gravel mine site. The Milne Point Operations Center has accommodations for up to 300 people. It is estimated that the Ugnu reservoir contains roughly 20 billion barrels of heavy oil in place. BPXA's reservoir scientists and engineers conservatively estimate that roughly 10 percent of that resource, or 2 billion barrels, could be recoverable. Currently, cold heavy oil production with sand (CHOPS) technology is being tested at Milne South Pad. CHOPS is part of a multiyear technology testing and research program initiated at Milne Point in 2007.

Endicott

The Endicott oilfield is located approximately 16 km (10 mi) northeast of Prudhoe Bay. It is 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 18-hectare (45-acre) Main Production Island. Approximately 80 wells have been drilled to develop the field. Two satellite fields drilled from Endicott's Main Production Island access oil from the Ivishak formation: Eider produces about 110 barrels per day, and Sag Delta North produces about 117 barrels per day. The total area of Endicott development is 156.8 hectares (392 acres) of land with 25 km (15 mi) of roads, 47 km (29 mi) of pipelines, and one gravel mine site. Approximately 100 people are housed at the Endicott Operations Center.

Badami

Production began from the Badami oilfield in 1998, but has not been continuous. The Badami field is located approximately 56 km (35 mi) east of Prudhoe Bay and is currently the most easterly oilfield development on the North Slope. The Badami development area is approximately 34 hectares (85 acres) of tundra including 7 km (4.5 mi) of gravel roads, 56 km (35 mi) of pipeline, one gravel mine site, and two gravel pads with a total of eight wells. There is no permanent road connection from Badami to Prudhoe Bay. The pipeline connecting the Badami oilfield to the common carrier pipeline system at Endicott was built from an ice road. The cumulative production is five million barrels of oil equivalent. This field is currently in "warm storage" status, *i.e.,* site personnel are minimized and the facility is maintained at a minimal level. Additionally, it currently is not producing oil reserves at this time. BPXA recently entered into an agreement with Savant LLC; under this agreement Savant will drill an exploration well in the winter of 2009 and potentially add an additional well in 2010. Depending on the outcome of these drilling programs, Badami could resume production.

Alpine

Discovered in 1996, the Alpine oilfield began production in November 2000. Alpine is the westernmost 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. Although the Alpine reservoir covers 50,264 hectares (124,204 acres), it has been developed from 65.9 hectares (162.92 acres) of pads and associated roads. Alpine features a combined production pad/drill site and three additional drill sites with an estimated 172 wells. There is no permanent road connecting Alpine with the Kuparuk oilfield; small aircraft are used to provide supplies and crew changeovers. Major resupply activities occur in the winter, using the ice road that is constructed annually between the two fields. The Alpine base camp can house approximately 540 employees.

Northstar

The Northstar oilfield was discovered in 1983 and developed by BPXA in 1995. The offshore oilfield is located 6 km (4 mi) northwest of the Point McIntyre field and 10 km (6 mi) from Prudhoe Bay in about 39 feet of water. The 15,360-hectare (38,400-acre) reservoir has now been developed from a 2-hectare (5-acre) artificial island. Production from the Northstar reservoir began in late 2001. The 2-hectare (5-acre) island will eventually contain 19 producing wells, six gas injector wells, and one solids injection well. A subsea pipeline connects facilities to the Prudhoe Bay oilfield. Access to Northstar is via helicopter, hovercraft, and boat.

Oooguruk Unit

The Oooguruk Unit is located adjacent to and immediately northwest of the Kuparuk River Unit in shallow waters of the Beaufort Sea, near Thetis Island. Unit production began in 2008. Facilities include an offshore drill site and onshore production facilities pad. In addition, a subsea 5.7-mile flowline transports produced fluids from the offshore drill site to shore, where it transitions to an aboveground flowline supported on vertical support members for 3.9 km (2.4 mi) to the onshore facilities for approximately 3.3 hectares (8.2 acres). The offshore drill site (2.4 hectares, 6 acres) is planned to support 48 wells drilled from the Nuiqsut and Kuparuk reservoirs. The wells are contained in well bay modules, with capacity for an additional 12 wells, if needed. Pioneer is additionally proposing production facilities west of KRU drill site 3S on State oil and gas leases. The contemplated facilities consist of two drill sites near the Colville River delta mouth, a tie-in pad adjacent to DS–3S, gravel roads, flow lines, and power lines. Drilling of the initial appraisal well is planned to start in 2013, with first oil production as early as 2015.

During the time period of the previous ITRs (2006–2011), three development projects were described as possibly moving into the production phase. Currently, only Oooguruk is producing. The two other developments, Nikaitchuq and the Alpine West Development, have not begun to produce oil to their fullest capacity. Concurrently, there are two additional developments that could be producing oil during the regulatory period. They are the Liberty and North Shore developments.

Proposed production activities will increase the total area of the Industrial

footprint by the addition of new facilities, such as drill pads, pipelines, and support facilities, in the geographic region; however, oil production volume is expected to continue to decrease during this 5-year regulatory period, despite new fields initiating production. This is due to current producing fields reducing output and new fields not maintaining the loss of that output. Current monitoring and mitigation measures, described later, will be kept in place.

Evaluation of the Nature and Level of Proposed Activities

During the period covered by the proposed regulations, we anticipate 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 different 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 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

The Pacific walrus (*Odobenus rosmarus divergens*), is represented by a single population of animals inhabiting the shallow continental shelf waters of the Bering and Chukchi seas. The distribution of Pacific walruses varies markedly with seasons. During the late winter breeding season, walruses are found in areas of the Bering Sea where open leads, polynyas, or areas of broken pack ice occur. Significant winter concentrations are normally found in the Gulf of Anadyr, the St. Lawrence Island Polynya, and in an area south of Nunivak Island. In the spring and early summer, most of the population follows the retreating pack ice northward into the Chukchi Sea; however, several thousand animals, primarily adult males, remain in the Bering Sea, utilizing coastal haulouts during the ice-free season. During the summer months, walruses are widely distributed across the shallow continental shelf waters of the Chukchi Sea. Significant summer concentrations are normally found in the unconsolidated pack ice west of Point Barrow, and along the northern coastline of Chukotka in the vicinity of Wrangell Island. Small herds of walruses occasionally range east of point Barrow into the Beaufort Sea in late summer. As the ice edge advances southward in the fall, walruses reverse their migration and re-group on the Bering Sea pack ice.

Population Status

The size of the Pacific walrus population has never been known with certainty. Based on large sustained harvests in the 18th and 19th centuries, Fay (1957) speculated that the pre-exploitation population was represented by a minimum of 200,000 animals. Since that time, population size is believed to have fluctuated 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 appears to have increased rapidly in size during the 1960s and 1970s in response to harvest regulations and reductions in hunting pressure (Fay *et al.* 1989). Between 1975 and 1990, visual aerial surveys were carried out by the United States and Russia at 5-year intervals, producing population estimates ranging from 201,039 to 290,000 walruses. In 2006, U.S. and Russian researchers surveyed walrus groups in the pack ice of the Bering Sea using thermal imaging systems to detect walruses hauled out on sea ice and satellite transmitters to account for walruses in the water. 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. Previous aerial survey results are highly variable and not directly comparable among years because of differences in survey methods, timing of surveys, segments of the population surveyed, and incomplete coverage of areas where walrus may have been present. Because of such issues, existing abundance estimates do not provide a basis for determining trends in population size.

Changes in walrus population status have also been investigated by examining changes in biological parameters over time. Based on evidence of changes in abundance, distributions, condition indices, and life-history parameters, Fay *et al.* (1989) and Fay *et al.* (1997) concluded that the Pacific walrus population increased greatly in size during the 1960s and 1970s, and postulated that the population was approaching, or had exceeded, the carrying capacity of its environment by the early 1980s. Harvest increased in the 1980s. Changes in the size, composition, and productivity of the sampled walrus harvest in the Bering Strait Region of Alaska over this timeframe are consistent with this hypothesis (Garlich-Miller *et al.* 2006). Harvest levels declined sharply in the early 1990s, and increased reproductive rates and earlier maturation in females occurred, suggesting that density-dependent feedback mechanisms had been relaxed and the population had likely dropped below carrying capacity (Garlich-Miller *et al.* 2006). However, it is unknown whether density-dependent changes in life-history parameters were mediated by changes in population abundance or changes in the carrying capacity of the environment (Garlich-Miller *et al.* 2006).

Habitat

Walruses rely on floating pack ice as a substrate for resting and giving birth. Walruses generally require ice thicknesses of 50 cm (20 in) or more to support their weight. Although walruses can break through ice up to 20 cm (8 in) thick, they usually occupy areas with natural openings and are not found in areas of extensive, unbroken ice (Fay 1982). Thus, their concentrations in winter tend to be in areas of divergent ice flow or along the margins of persistent polynyas. Concentrations in summer tend to be in areas of unconsolidated pack ice, usually within 100 km (30 mi) of the leading edge of the ice pack (Gilbert 1999). When suitable pack ice is not available, walruses haul out to rest on land. Isolated sites, such as barrier islands, points, and headlands, are most frequently occupied. Social factors, learned behavior, and proximity to their prey base are also thought to influence the location of haulout sites. Traditional walrus haulout sites in the eastern Chukchi Sea include Cape Thompson, Cape Lisburne, and Icy Cape. In recent years, the Cape Lisburne haulout site has seen regular use in late summer. Numerous haulouts also exist along the northern coastline of Chukotka, and on Wrangell and Herald islands, which are considered important haul-out areas in September, especially in years when the pack ice retreats far to the north.

Although capable of diving to deeper depths, walruses are generally found in shallow waters of 100 m (300 ft) or less, possibly because of higher productivity of their benthic foods in shallower water. They feed almost exclusively on benthic invertebrates although Native hunters have also reported incidences of walruses preying on seals. Prey densities are thought to vary across the continental shelf according to sediment

type and structure. Preferred feeding areas are typically composed of sediments of soft, fine sands. The juxtaposition of ice over appropriate depths for feeding is especially important for females and their dependent young that are not capable of deep diving or long exposure in the water. The mobility of the pack ice is thought to help prevent walruses from overexploiting their prey resource (Ray *et al.* 2006). Foraging trips may last for several days, during which time they dive to the bottom nearly continuously. Most foraging dives to the bottom last between 5 and 10 minutes, with a relatively short (1–2 minute) surface interval. The intensive tilling of the sea floor by foraging walruses is thought to have significant influence on the ecology of the Bering and Chukchi seas. Foraging activity recycles large quantities of nutrients from the sea floor back into the water column, provides food for scavenger organisms, and contributes greatly to the diversity of the benthic community.

Life History

Walruses are long-lived animals with low rates of reproduction. Females reach sexual maturity at 4–9 years of age. Males become fertile at 5–7 years of age; however, they are usually unable to compete for mates until they reach full physical maturity at 15–16 years of age. Breeding occurs between January and March in the pack ice of the Bering Sea. Calves are usually born in late April or May the following year during the northward migration from the Bering Sea to the Chukchi Sea. Calving areas in the Chukchi Sea extend from the Bering Strait to latitude 70°N. (Fay *et al.* 1984). Calves are capable of entering the water shortly after birth, but tend to haulout frequently, until their swimming ability and blubber layer are well developed. Newborn calves are tended closely. They accompany their mother from birth and are usually not weaned for 2 years or more. Cows brood newborns to aid in their thermoregulation (Fay and Ray 1968), and carry them on their back or under their flipper while in the water (Gehnrich 1984). Females with newborns often join together to form large "nursery herds" (Burns 1970). Summer distribution of females and young walruses is closely tied to the movements of the pack ice relative to feeding areas. Females give birth to one calf every two or more years. This reproductive rate is much lower than other pinniped species; however, some walruses live to age 35–40 and remain reproductively active until relatively late in life.

Walruses are extremely social and gregarious animals. They tend to travel in groups and haulout onto ice or land in groups. Walruses spend approximately one-third of their time hauled out onto land or ice. Hauled-out walruses tend to lie in close physical contact with each other. Youngsters often lie on top of the adults. The size of the hauled out groups can range from a few animals up to several thousand individuals.

Mortality

Polar bears are known to prey on walrus calves, and killer whales (*Orcinus orca*) have been known to take all age classes of walruses (Frost *et al.* 1992, Melnikov and Zagrebin 2005). Predation levels are thought to be highest near terrestrial haulout sites where large aggregations of walruses can be found; however, few observations exist for off-shore environs.

Pacific walruses have been hunted by coastal Natives in Alaska and Chukotka for thousands of years. Exploitation of the Pacific walrus population by Europeans has also occurred in varying degrees since first contact. Presently, walrus hunting in Alaska and Chukotka is restricted to meet the subsistence needs of aboriginal peoples. The Service, in partnership with the Eskimo Walrus Commission (EWC) and the Association of Traditional Marine Mammal Hunters of Chukotka, administered subsistence harvest monitoring programs in Alaska and Chukotka in 2000–2005. Harvest mortality over this timeframe averaged 5,458 walruses per year. This mortality estimate includes corrections for under-reported harvest and struck and lost animals.

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

Distributions and Abundance of Pacific Walruses in the Beaufort Sea

The distribution of Pacific walruses is thought to be influenced primarily by the extent of the seasonal pack ice. In May and June, most of the Pacific walrus population migrates through the Bering Strait into the Chukchi Sea. Walruses tend to migrate into the Chukchi Sea along lead systems that develop along the northwest coast of Alaska. Walruses are expected to be closely associated with the southern edge of the seasonal pack ice during the open water season. By July, large groups of walruses, up to several thousand animals, can be found along the edge of the pack ice between Icy Cape and Point Barrow. During August, the edge of the pack ice generally retreats northward to about 71°N, but in light ice years, the ice edge can retreat beyond 76°N. The sea ice normally reaches its minimum (northern) extent in September. In years when the sea ice retreats beyond the relatively shallow continental shelf waters of the Chukchi Sea, some animals migrate west towards Chukotka, while others have been observed hauling out along the shoreline between Point Barrow and Cape Lisburne. In recent years, coastal haulouts in Chukotka Russia have seen regular and persistent use in the fall. Russian biologists attribute the increased use of these coastal haulouts to diminishing sea ice habitat. A similar event was recorded along the Alaskan coastline in August–September 2007, 2009, and 2010 when several thousand animals were reported along the Chukchi Sea coast between Barrow and Cape Lisburne. The pack ice usually advances rapidly southward in October, and most walruses are thought to have moved into the Bering Sea by mid to late November.

Although most walruses remain in the Chukchi Sea throughout the summer months, small numbers of animals occasionally range into the Beaufort Sea in late summer. A total of 18 walrus sightings have been reported as a result of Industry monitoring efforts over the past 20 years (Kalxdorff and Bridges 2003, USFWS unpubl. data). Two sightings occurred in 1996; one involved a single animal observed from a seismic vessel near Point Barrow, and a second animal was sighted during an aerial survey approximately 5 miles northwest of Howe Island. In 1997, another single animal was sighted during an aerial survey approximately 20 miles north of Pingok Island. In 1998, a dead walrus was observed on Pingok Island being scavenged by polar bears. One walrus was observed hauled out near the SDC at McCovey in 2002. In 2004, one walrus was observed 50 m from the Saltwater Treatment Plant, on West Dock. In addition, walrus have been observed on the armor of Northstar Island three times since 2001; in 2004, three walrus were observed on the armor in two separate instances. Between 2005 and 2009 additional walruses were recorded.

Climate Change

Analyses of long-term environmental data sets indicate that substantial

reductions in both the extent and thickness of the arctic sea-ice cover have occurred over the past 40 years. Record minimum sea ice extent was recorded in 2002, 2005, and again in 2007; sea ice cover in 2003 and 2004 was also substantially below the 20-year mean. Walruses rely on suitable sea ice as a substrate for resting between foraging bouts, calving, molting, isolation from predators, and protection from storm events. The juxtaposition of sea ice over shallow-shelf habitat suitable for benthic feeding is important to walruses. Recent trends in the Chukchi Sea have resulted in seasonal sea-ice retreat off the continental shelf and over deep Arctic Ocean waters, presenting significant adaptive challenges to walruses in the region. Reasonably foreseeable impacts to walruses as a result of diminishing sea ice cover include: Shifts in range and abundance, such as hauling out on land and potential movements into the Beaufort Sea; increased vulnerability to predation and disturbance; declines in prey species; increased mortality rates resulting from storm events; and premature separation of females and dependent calves. Secondary effects on animal health and condition resulting from reductions in suitable foraging habitat may also influence survivorship and productivity. Future studies investigating walrus distributions, population status and trends, and habitat use patterns are important for responding to walrus conservation and management issues associated with environmental and habitat changes.

Polar Bear

The polar bear (*Ursus maritimus*) was listed as threatened, range-wide, under the Endangered Species Act (ESA) on May 15, 2008, due to loss of sea ice habitat caused by climate change (73 FR 28212). The Service published a final special rule under section 4(d) of the ESA for the polar bear on December 16, 2008 (73 FR 76249), which provides for measures that are necessary and advisable for the conservation of polar bears. This means that this special 4(d) rule: (a) In most instances, 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 for the polar bear; (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.

Polar bears occur throughout the arctic. In Alaska, they have been observed as far south in the eastern Bering Sea as St. Matthew Island and the Pribilof Islands (Ray 1971). However, they are most commonly found within 180 miles of the Alaskan coast of the Chukchi and Beaufort Seas, from the Bering Strait to the Canadian border. Two stocks occur in Alaska: (1) The Chukchi-Bering seas stock (CS); and (2) the Southern Beaufort Sea stock (SBS). A summary of the CS and SBS polar bear stocks are described below. A detailed description of the CS and SBS polar bear stocks can be found in the "Range-Wide Status Review of the Polar Bear (*Ursus maritimus*)" (*http://alaska.fws.gov/fisheries/mmm/polarbear/issues.htm*).

Management and conservation concerns for the SBS and CS polar bear populations include: Climate change, which continues to increase both the expanse and duration of open water in summer and fall; human activities within the near-shore environment, including oil and gas activities; atmospheric and oceanic transport of contaminants into the Arctic; and over-harvest, should polar bear stocks become nutritionally stressed or decline due to some combination of the aforementioned threats.

Southern Beaufort Sea (SBS)

The SBS polar bear population is shared between Canada and Alaska. Radio-telemetry data, combined with earlier tag returns from harvested bears, suggest that the SBS region comprised a single population with a western boundary near Icy Cape, Alaska, and an eastern boundary near Pearce Point, Northwest Territories, Canada. 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 is now approximately 1,500 polar bears (95 percent confidence intervals approximately 1,000–2,000). Although the confidence intervals of the current population estimate overlap 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.

Recent analyses of radio-telemetry data of spatio-temporal use patterns of bears of the SBS stock using new spatial modelling techniques suggest realignment of the boundaries of the SBS area. We now know that nearly all bears in the central coastal region of the Beaufort Sea are from the SBS population, and that proportional representation of SBS bears decreases to both the west and east. For example, only 50 percent of the bears occurring in Barrow, Alaska, and Tuktoyaktuk, Northwest Territories, are SBS bears, with the remainder being from the CS and Northern Beaufort Sea populations, respectively. The recent radio-telemetry data indicate that bears from the SBS population seldom reach Pearce Point, which is currently on the eastern management boundary for the SBS population. Conversely, SBS bears can also be found in the western regions of their range in the Chukchi Sea (*i.e.,* Wainwright and Point Lay) in lower proportions than the central portion of their range.

Additional threats evaluated during the listing included impacts from activities such as industrial operations, subsistence harvest, shipping, and tourism. No other impacts were considered significant in causing the decline, but minimizing effects from these activities could become increasingly important for conservation as polar bear numbers continue to diminish. More information can be found at: *http://www.fws.gov/* and *http://alaska.fws.gov/fisheries/mmm/polarbear/issues.htm.*

Chukchi/Bering Seas (CS)

The CS is defined as those polar bears inhabiting the area as far west as the eastern portion of the Eastern Siberian Sea, as far east as Point Barrow, and extending into the Bering Sea, with its southern boundary determined by the extent of annual ice. Based upon telemetry studies, the western boundary of the population has been set near Chaunskaya Bay in northeastern Russia. The eastern boundary is at Icy Cape, Alaska, which also is the previous western boundary of the SBS. This eastern boundary constitutes a large overlap zone with bears in the SBS population. The status of the CS population, which was believed to have increased after the level of harvest was reduced in 1972, is now thought to be uncertain or declining. The most recent population estimate for the CS population is 2,000 animals. This was based on extrapolation of aerial den surveys from the early 1990s; however,

this crude estimate is currently considered to be of little value for management. Reliable estimates of population size based upon mark and recapture are not available for this region and measuring the population size remains a research challenge (Evans *et al.* 2003).

With the action of the Bilateral Commission under the *Bilateral Agreement on the Conservation and Management of the Alaska-Chukotka Polar Bear Population,* legal subsistence harvest for polar bears from the CS stock occurs in both Russia and in western Alaska, as long as this harvest does not affect the sustainability of the polar bear population. In Alaska, average annual harvest levels declined by approximately 50 percent between the 1980s and the 1990s and have remained at low levels in recent years. There are several factors potentially affecting the harvest level in western Alaska. The factor of greatest direct relevance is the substantial illegal harvest in Chukotka. In recent years a reportedly sizable illegal harvest has occurred in Russia, despite a ban on hunting that has been in place since 1956. In addition, other factors such as climatic change and its effects on pack ice distribution, as well as changing demographics and hunting effort in native communities, could influence the declining take. The unknown rate of illegal take makes the stable designation uncertain and tentative.

Habitat

Polar bears evolved for life in the Arctic and are distributed throughout most ice-covered seas of the Northern Hemisphere. They are generally limited to areas where the sea is ice-covered for much of the year; however, polar bears are not evenly distributed throughout their range. They are most abundant near the shore in shallow-water areas, and in other areas where currents and ocean upwelling increase marine productivity and maintain some open water during the ice-covered season. Over most of their range, polar bears remain on the sea ice year-round or spend only short periods on land.

The Service designated critical habitat for polar bear populations in the United States effective January 6, 2011 (75 FR 76086; December 7, 2010). Critical habitat identifies geographic areas that contain features that are essential for the conservation of a threatened or endangered species and that may require special management or protection. The designation of critical habitat under the ESA does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. It does not allow government or public access to private lands. A critical habitat designation does not affect private lands unless Federal funds, permits, or activities are involved. Federal agencies that undertake, fund, or permit activities that may affect critical habitat are required to consult with the Service to ensure that such actions do not adversely modify or destroy critical habitat.

The Service's designation of critical habitat is divided into three areas or units: barrier island habitat, sea ice habitat (both described in geographic terms), and terrestrial denning habitat (a functional description). Barrier island habitat includes coastal barrier islands and spits along Alaska's coast and is used for denning, refuge from human disturbances, 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 feet) and less in depth. Terrestrial denning habitat includes lands within 32 km (20 miles) of the northern coast of Alaska between the Canadian border and the Kavik River and within 8 km (5 miles) of the coastline between the Kavik River and Barrow. The total area designated would cover approximately 484,734 square kilometers (187,157 square miles) and is entirely within the lands and waters of the United States. A detailed description of the critical habitat can be found online at: *http://alaska.fws.gov/fisheries/mmm/polarbear/pdf/federal_register_notice.pdf.*

Denning and Reproduction

Female bears can be quite sensitive to disturbances during denning. 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. An average of two cubs is born. 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 about 8 to 10 cubs in her lifetime; in healthy populations, 50 to 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 multi-year pack ice and on land. Recent studies of the SBS indicate that the proportion of dens on pack ice have declined from approximately 60 percent in 1985–1994 to 40 percent in 1998–2004.

In northern Alaska, maternal polar bear dens appear to be less concentrated than in Canada to the east and in Russia to the west. 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.

A recent study showed that the proportion of polar bears denning in the SBS on pack ice, which requires a high level of sea-ice stability for successful denning, declined from 62 percent in 1985–1994 to 37 percent in 1998–2004 (Fischbach *et al.* 2007). The authors concluded that the denning distribution changed in response to reductions in stable old ice, increases in unconsolidated ice, and lengthening of the melt season. 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).

Prey

Ringed seals (*Pusa hispida*) are the primary prey of polar bears in most areas. Bearded seals (*Erignathus barbatus*) and walrus calves are hunted occasionally. Polar bears also opportunistically scavenge marine mammal carcasses, notably bowhead whale (*Balaena mysticetus*) carcasses at Point Barrow, and Cross and Barter islands, associated with the annual subsistence hunt in these communities. There are also anecdotal reports of polar bears killing beluga whales (*Delphinapterus leucas*) trapped in the ice, although the importance of beluga as a food source is not known. Polar bears have also been observed consuming non-food items including Styrofoam, plastic, antifreeze, and hydraulic and lubricating fluids.

Polar bears use the sea ice as a platform to hunt seals. Polar bears often

hunt seals along leads—cracks in the ice, and other areas of open water. Polar bears also hunt seals at breathing holes, or by breaking through the roof of seal lairs. Lairs are excavated by seals in snow drifts on top of the ice. Bears also stalk seals in the spring when they haul out on the ice in warm weather. The relationship between ice type and polar bear distribution is as yet unknown, but it is suspected to be related to seal availability. Due to changing sea ice conditions, the area of open water and proportion of marginal ice has increased and extends later in the fall. This may limit seal availability to polar bears as the most productive areas for seals appear to be over the shallower waters of the continental shelf.

Mortality

Polar bears are long-lived (up to 30 years), have no natural predators, and do not appear prone to death by diseases or parasites. Cannibalism by adult males on cubs and occasionally on adult bears is known to occur. The most significant source of premature adult polar bear mortality is man. Before the MMPA was passed in 1972, polar bears were taken by sport hunters and residents. Between 1925 and 1972, the mean reported kill was 186 bears per year. Seventy-five percent of these were males, as cubs and females with cubs were protected. Since 1972, only Alaska Natives from coastal Alaskan villages have been allowed to hunt polar bears for their subsistence uses, for the manufacture of handicraft and clothing items. From 1980 to 2005, the total annual harvest for Alaska averaged 101 bears: 64 percent from the Chukchi Sea and 36 percent from the Beaufort Sea. Other sources of mortality related to human activities include bears killed during research activities, euthanasia of sick or injured bears, and defense-of-life kills by non-Natives (Brower *et al.* 2002).

Distributions and Abundance of Polar Bears in the Beaufort Sea

Polar bears are dependent upon the sea ice as a platform for foraging. The most productive areas seem to be near the ice edge, leads, or polynyas over the continental shelf (Durner *et al.* 2004). Polar bears can also be observed throughout the year in the onshore and nearshore environments, where they will opportunistically scavenge on marine mammal carcasses washed up along the shoreline (Kalxdorff and Fischbach 1998). Their distribution in the coastal habitat can be influenced by the movement of the seasonal pack ice.

More specifically, during the ice-covered season, pregnant females can use terrestrial denning habitat between late-October and mid-April. The percentage of pregnant females using terrestrial habitat for denning is unknown but, as stated earlier, the proportion of dens on terrestrial habitat has increased in recent years. In addition, a small proportion of bears of different cohorts may be found along the coastline as well during this time period. During the open water season (July through September), a small proportion of bears will utilize the coastal environments while the majority of the population will be on the ice edge of the pack ice.

During the late summer/fall period (August through October), polar bears are most likely to be encountered along the mainland coastline and barrier islands, using these features as travel corridors and hunting areas. Based on Industry observations, encounter rates are higher during the fall period (August to October) than any other time period. The duration the bears spend in these coastal habitats depends on storm events, ice conditions, and the formation of the annual ice. 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 the bears in these areas and appear to play a role in these numbers (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 during the fall period between Barrow and the Alaska-Canada border.

Climate Change

For polar bears, habitat loss due to changes in Arctic sea ice has been identified as the primary cause of decline in polar bear populations, where the decline of sea ice is expected to continue throughout the polar bear's range for the foreseeable future (73 FR 28212). In support of the listing, Amstrup *et al.* (2007) projected that if current sea ice declines continue, the sea-ice retreat may eventually exclude bears from onshore denning habitat in the Polar Basin Divergent Region, where they have projected a 42 percent loss of optimal summer polar bear habitat by 2050. SBS and CS polar bear populations inhabit this ecoregion, and Amstrup *et al.* (2007) have projected that these populations will 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 world-wide population of polar bears and their prey (ACIA 2004, Derocher *et al.* 2004, NRC 2003). Climate change is expected to impact polar bears in a variety of ways. 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 increase the polar bears' energetic costs of traveling, as moving through fragmented sea ice and open water requires more energy than walking across consolidated sea ice.

Decreased sea ice extent may impact the reproductive success of denning polar bears. Polar bears require a stable substrate for denning. As ice conditions moderate, ice platforms become less stable, and coastal dens become vulnerable to erosion from storm surges. 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). Recently, the proportion of dens on pack ice declined from 62 percent in 1985–1994 to 37 percent in 1998–2004 (Fischbach *et al.* 2007). Terrestrial denning is expected to increase in the future, despite the threats of coastal erosion.

Due to the changing ice conditions, the Service anticipates that polar bear use of the Beaufort Sea coast will increase during the open-water season (June through October). Indeed, polar bear use of coastal areas during the fall open-water period has increased in recent years in the Beaufort Sea. This change in distribution has been correlated with the distance of the pack ice from the coast at that time of year (the farther from shore the leading edge of the pack ice is, the more bears are observed onshore) (Schliebe *et al.* 2006). Reductions in sea ice will result in increased distances between the ice edge and land which, in turn, will lead to increasing numbers of bears coming ashore during the open-water period, or possibly drowning in an attempt to reach land. An increased number of bears on land may increase human–bear interactions or conflicts during this time period.

Potential Effects of Oil and Gas Industry Activities on Subsistence Uses of Marine Mammals

Pacific walruses and polar bears have been traditionally harvested by Alaska Natives for subsistence purposes. The harvest of these species plays an important role in the culture and economy of many villages throughout coastal Alaska. Walrus meat is often consumed, and the ivory is used to

manufacture traditional arts and crafts. Polar bears are primarily hunted for their fur, which is used to make cold weather gear; however, their meat is also consumed. Although walruses and polar bears are a part of the annual subsistence harvest of most rural communities on the North Slope of Alaska, these species are not as significant a food resource as bowhead whales, seals, caribou (*Rangifer tarandus*), and fish.

An exemption under section 101(b) of the MMPA allows Alaska Natives who reside in Alaska and dwell on the coast of the North Pacific Ocean or the Arctic Ocean to take polar bears and walruses if such taking is for subsistence purposes or for purposes of creating and selling authentic native articles of handicrafts and clothing, as long as the take is not done in a wasteful manner. Sport hunting of both species has been prohibited in the United States since enactment of the MMPA in 1972.

Pacific Walrus—Harvest Information

Few walruses are harvested in the Beaufort Sea along the northern coast of Alaska as the primary range of Pacific walruses is west and south of the Beaufort Sea. Walruses constitute a small portion of the total marine mammal harvest for the village of Barrow. Hunters from Barrow have reported 477 walruses harvested in the past 20 years with 65 of those since 2005. Reports indicate that up to six animals, approximately 10 percent of the recorded harvest, were taken east of Point Barrow in the last 5 years within the geographical limits of the incidental take regulations. Hunters from Nuiqsut and Kaktovik do not normally hunt walruses unless the opportunity arises. They have reported taking only three walruses since the inception of the regulations. Two walruses were harvested on Cross Island in 2004, but no walruses have been harvested since 2005. To date, two percent of the total walrus harvest for Barrow, Nuiqsut, and Kaktovik from 1994 to 2009 has occurred within the geographic range of the incidental take regulations.

Polar Bear—Harvest Information

Alaska Natives from coastal villages are permitted to harvest polar bears. Current harvest levels are believed to be sustainable for the SBS population at present (USFWS unpubl. data). Although there are no restrictions under the MMPA, a more restrictive Native-to-Native agreement between the Inupiat from Alaska and the Inuvialuit in Canada was 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, and it was later increased to 80. The quota was based on estimates of the population size and age-specific estimates of survival and recruitment. One estimate suggests that harvest up to 1.5 percent of the adult females was sustainable. Combining this estimate and a 2:1 sex ratio (male:female) of the harvest ratio, 4.5 percent of the total population could be harvested each year. In July 2010, at the most recent Inuvialuit-Inupiat Polar Bear Management Meeting, the quota was reduced from 80 to 70 bears per year.

The Service has monitored the Alaska polar bear harvest since 1980. The Native subsistence harvest from the SBS has remained relatively consistent since 1980 and averages 36 bears removed per year. The combined harvest from Alaska and Canada from the SBS appears sustainable and equitable. During the period 2005–2009, 84 bears were harvested by residents of Barrow, 11 for Kaktovik, 6 for Nuiqsut, 13 for Wainwright, and 3 for Atqasuk for a total of 117 bears harvested. This was a decline of 40 harvested bears from the previous timeframe analyzed (2000–2004: 157 bears harvested). The Native subsistence harvest is the largest source of mortality related to human activities, although several bears have been killed during research activities, through euthanasia of sick or injured bears, and accidental drowning, or in defense of human life by non-Natives.

Plan of Cooperation

As a condition of incidental take authorization, and to ensure that Industry activities do not impact subsistence opportunities for communities using the geographic region, any applicant requesting an LOA is required to present a record of communication that reflects discussions with the Native communities most likely affected by the activity. The North Slope native communities that could potentially be affected by Industry activities include Barrow, Nuiqsut, and Kaktovik. Polar bear and Pacific walruses inhabiting the Beaufort Sea represent a small portion, in terms of the number of animals, of the total subsistence harvest of fish and wildlife for the villages of Barrow, Nuiqsut, and Kaktovik. Despite this, harvest of these species is important to Alaska Natives. Therefore, an important aspect of the LOA process is that, prior to issuance of an LOA, Industry must provide evidence to the Service that an adequate Plan of Cooperation (POC) has been coordinated with any affected subsistence community (or, as appropriate, with the EWC, the Alaska Nanuuq Commission (ANC), and the North Slope Borough (NSB)) if, after community consultations, Industry and the community concludes that increased mitigation and monitoring is necessary to minimize impacts to subsistence resources. Where relevant, a POC will describe measures to be taken to mitigate potential conflicts between the proposed activity and subsistence hunting. If requested by Industry or the affected subsistence community, the Service will review these plans and provide guidance. The Service will reject POCs if they do not provide adequate safeguards to ensure that any taking by Industry will not have an unmitigable adverse impact on the availability of polar bears and walruses for taking for subsistence uses.

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

Evaluation of Anticipated Effects of Proposed Activities on Subsistence Uses

No unmitigable concerns from the potentially affected communities regarding the availability of polar bears or walruses for subsistence uses have been identified through Industry consultations in the potentially affected communities of Barrow, Nuiqsut, and Kaktovik in the geographic region.

Based on the proximity of the proposed activities and the location of its hunting areas for polar bears and walruses, Nuiqsut continues to be the community most likely affected by Industry activities due to its close proximity to Industry activities. Nuiqsut is located within 5 miles of

ConocoPhillips' Alpine production field to the north and ConocoPhillips' Alpine Satellite development field to the west. For this rule, we determined that the total taking of polar bears and walruses will not have an unmitigable adverse impact on the availability of these species for subsistence uses to Nuiqsut residents during the duration of the regulation. We base this conclusion on: The results of coastal aerial surveys conducted between 2000 and 2009 within the area; direct observations of polar bears occurring on Cross Island during Nuiqsut's annual fall bowhead whaling efforts; and anecdotal reports and recent sightings of polar bears by Nuiqsut residents. In addition, we have received no evidence or reports that bears are being deflected (*i.e.,* altering habitat use patterns by avoiding certain areas) or being impacted 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, and we do not expect any change in the impact of future activities during the regulatory period.

Barrow and Kaktovik are expected to be affected differently and to a lesser degree by oil and gas activities than Nuiqsut, due to their distance from known Industry activities during the 5-year period of the regulations. As similar to past ITRs, through aerial surveys, direct observations, community consultations, and personal communication with hunters, it appears that subsistence opportunities for bears and walruses have not been impacted by past Industry operations and we do not anticipate any new impacts to result from the proposed activities.

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. Hence, we find that any take will not have an unmitigable adverse impact on the availability of polar bears or walruses for subsistence uses by residents of the affected communities.

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.

Pacific Walrus

The Beaufort Sea is beyond the normal range of the Pacific walrus and the likelihood of encountering walruses during Industry operations is low. During the time period of the proposed regulations, Industry operations may occasionally encounter small groups of walruses swimming in open water or hauled out onto ice floes or along the coast. Although interactions are expected to be infrequent, proposed activities could potentially result in some level of disturbances. 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 other parts of their range, 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 the perimeter of the haulouts appear particularly vulnerable to trampling injuries.

1. Noise Disturbance

Noise generated by Industry activities, whether stationary or mobile, has the potential to disturb small numbers of walruses. Potential impacts of Industry-generated noise include displacement from preferred foraging areas, increased stress and energy expenditure, interference with feeding, and masking of communications. Any impact of Industry noise on walruses is likely to be limited to a few individuals rather than the population due to their geographic range and seasonal distribution within the geographic region. For example, Pacific walruses generally inhabit the pack ice of the Bering Sea and do not normally range into the Beaufort Sea, although individuals and small groups are occasionally observed.

Reactions of marine mammals to noise sources, particularly mobile sources such as marine vessels, vary. Reactions depend on the individuals' prior exposure to the disturbance source; their need or desire to be in the particular habitat or area where they are exposed to the noise; and visual presence of the disturbance sources. 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.

Noise generated by Industry activities, whether stationary or mobile, has the potential to disturb small numbers of walrus. The response of walrus to sound sources may be either avoidance or tolerance.

A. Stationary Sources

Endicott, BP's Saltwater Treatment Plant (located on the West Dock Causeway), Oooguruk, and Northstar are the offshore facilities that could produce noise that has the potential to disturb walruses. Liberty, as part of the Endicott complex, will also have this potential when it commences operations. A few walruses have been observed in the vicinity of these facilities. Three walruses have hauled out on Northstar Island since its construction in 2000, and a walrus was observed swimming near the Saltwater Treatment Plant in 2004. In 2007, a female and 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.

B. Mobile Sources

Seismic operations introduce substantial levels of noise into the marine environment. There are relatively little data available to evaluate the potential response of walruses to seismic operations. Although the hearing sensitivity of walruses is poorly known, source levels associated with marine 3D and 2D seismic surveys are thought to be high enough to cause temporary hearing loss in other pinniped species. Therefore, it is possible that walruses within the 180-decibel (dB re 1 μPa) safety radius for seismic activities could suffer temporary shifts in hearing thresholds.

Seismic surveys and high-resolution site clearance surveys are typically carried out in open water conditions where walrus numbers are expected to be low. This will minimize potential interactions with large concentrations of walruses which typically favor sea ice habitats. Seismic operations in the Beaufort Sea are more likely to encounter small herds of walruses swimming in open water. Potential

adverse effects of seismic noise on swimming walruses can be reduced through the implementation of sufficient, practicable monitoring coupled with adaptive management responses (where the mitigation measures required are dependent on what is discovered during monitoring).

Previous open-water seismic exploration has been conducted in nearshore ice-free areas. This is the area where any future open-water seismic exploration will occur during the duration of this rule. It is highly unlikely that walruses will be present in these areas, and, therefore, it is not expected that seismic exploration would disturb walruses. Furthermore, with the adoption of the mitigation measures described in Section VI, the Service concludes that the only anticipated effects of seismic operations in the Beaufort Sea would be short-term behavioral alterations of small numbers of walruses.

C. 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/or 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 cavitations 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 800 m (0.5 mi).

Monitoring programs associated with exploratory drilling operations in the Chukchi Sea in 1990 noted that 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 800-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.

D. Aircraft Traffic

Aircraft overflights may disturb walruses. Reactions to aircraft vary with range, aircraft type, and flight pattern, as well as walrus age, sex, and group size. Adult females, calves, and immature walruses tend to be more sensitive to aircraft disturbance. Fixed-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 above ground level). In 2002, a walrus hauled out near the SDC on the McCovey prospect was disturbed when a helicopter landed on the SDC. However, most aircraft traffic is in nearshore areas, where there are typically few to no walruses.

2. Physical Obstructions

Based on known walrus distribution and the very low numbers found in the Beaufort Sea near Prudhoe Bay, it is unlikely that walrus movements would be displaced by offshore stationary facilities, such as the Northstar Island or causeway-linked Endicott/Liberty complex, or vessel traffic. There is no indication that the few walruses that used Northstar Island as a haulout in 2001 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.

3. 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 feet from the dock at Cape Simpson in 2006. It climbed onto an extended barge ramp, which was lowered. The walrus then jumped in the water the moment the crew member started the ramp engine.

4. Effect on Prey Species

Walruses feed primarily on immobile benthic invertebrates. The effect of Industry activities on benthic invertebrates most likely would be from oil discharged into the environment. Oil has the potential to impact walrus prey species in a variety of ways including, but not limited to, mortality due to smothering or toxicity, perturbations in the composition of the benthic community, 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 analysis in the section titled Potential Impacts of Waste Product Discharge and Oil Spills on Pacific Walruses and Polar Bears, Pacific Walrus subsection) 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.

Evaluation of Anticipated Effects on Walruses

As with previous ITRs, Industry noise disturbance and associated vessel traffic may have a more pronounced impact than physical obstructions or human encounters on walruses in the Beaufort Sea. However, due to the limited number of walruses inhabiting the geographic region during the open-water season and lack of walruses in the region during the ice-covered season, the Service expects minimal impact to only small numbers of individual walruses and that any take will have a negligible impact on this stock during the 5-year regulatory period.

Polar Bear

Polar bears are present in the region of activity and, therefore, oil and gas activities could impact polar bears in various ways during both open-water and ice-covered seasons. Impacts from: (1) Noise disturbance; (2) physical obstructions; (3) human encounters; and (4) effects on prey species are described below.

1. Noise Disturbance

Noise produced by Industry activities during the open-water and ice-covered seasons could potentially result in the take of 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; flaring excess gas; 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 and associated vehicle traffic, including tracked vehicles and snowmobiles; drilling; dredging; and ice-breaking vessels.

A. Stationary Sources

All production facilities on the North Slope in the area to be covered by this rulemaking are currently located within the landfast ice zone. Typically, most polar bears occur in the active ice zone, far offshore, hunting throughout the year; although some bears also spend a limited amount of time on land, coming ashore to feed, den, or move to other areas. At times, usually during the fall season when fall storms and ocean currents may deposit ice-bound bears on land, bears may remain along the coast or on barrier islands for several weeks until the ice returns.

Noise produced by stationary Industry 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, lethal take, or intentional hazing (stipulated under separate authorization) of the bear.

Noise from Industry activities has the ability to disturb bears at den sites. However, the timing of potential Industry impacts coupled with the time period in the denning cycle when any disturbance occurs can have varying effects and impacts on the female bear and the family group. Researchers have suggested that disturbances, including noise, can negatively impact bears during the early stages of denning, where the pregnant female has limited investment at the site, by causing them to abandon the site in search of another one. Premature site abandonment may also occur after the bears have emerged, but while they are still at the den site, when cubs are acclimating to their "new environment" and the female bear is now vigilant of the environment in regards to her offspring. During this time, in-air noises may disturb the female to the point of abandoning the den site before the cubs are physiologically ready to move from the site.

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, which was occurring within 500 meters of the den site. In 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 2006, a female and two cubs emerged from a den 400 meters from an active river crossing construction site. The den site was abandoned within hours of cub emergence after only 3 days. In 2009, a female and two cubs emerged from a den site within 100 meters of an active ice road with heavy traffic and quickly abandoned the site. 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 ice-covered seasons of 2000–2001 and 2001–2002, dens known to be active were located within approximately 0.4 km and 0.8 km (0.25 mi and 0.5 mi), respectively, of remediation activities on Flaxman Island in the Beaufort Sea with no observed impact to the polar bears. This 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: proportion of time scanning their surroundings and the frequency of observable vigilant behaviors. The two bears exposed to the industrial activity within 1.6 km 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, where she is potentially more vigilant to sights and in-air sounds as she uses the den site. As noted earlier, in some cases, while the female is in the den, Industry activities have progressed near the den sites with no perceived disturbance. Indeed, in the 2006 den incident previously discussed, it was believed that Industry activity commenced in the area after the den had been established. Ancillary activities occurred within 50 meters 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 three months of activity 100 meters 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 meters away, for approximately one month. In all, there have been three recorded examples (2006, 2009, and 2010) of pregnant female bears establishing dens, prior to Industry activity occurring within 400 meters of the den site, and remaining in the den through the normal denning cycle despite the nearby activity.

More recent data suggests that, with proper mitigation measures in effect, activities can continue in the vicinity of dens until the emergence by the female bear. At that time, mitigation, such as activity shutdowns near the den and 24-hour monitoring of the den site can limit bear/human interactions, thereby allowing the female bear to abandon the den naturally and minimize impacts to the animals. For example, in the spring of 2010, an active den site was observed approximately 60 meters from a heavily used ice road. A 1-mile exclusion zone was established around the den, closing a 2-mile portion 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 efforts minimized disturbance to the bears and allowed them to abandon the den site naturally.

B. Mobile Sources

During the open-water season in the SBS, polar bears spend the majority of their lives on the pack ice, which limits the chances of impacts on polar bears from Industry activities. Although polar bears have been documented in open water, miles from the ice edge or ice floes, this has been a relatively rare occurrence. In the open-water season, Industry activities are generally limited to vessel-based exploration activities, such as ocean-bottom cable (OBC) and shallow hazards surveys. These activities avoid ice floes and the multiyear ice edge; however, they may contact bears in open water and the effects of such encounters will be short-term behavior disturbance. Polar bears are more likely to be affected by on-ice seismic surveys rather than open-water surveys. Although no on-ice seismic surveys have reported polar bear observations during the period of the last ITRs, disturbance from on-ice operations would most likely occur by vehicle and nonpermanent camp activity associated with the seismic project. These effects would be minimal due to the mobility of such projects and limited to small-scale alterations to bear movements.

C. 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. If there is any encounter between a vessel and a bear, it would most likely result in short-term behavioral disturbance only. Indeed, observations from monitoring programs report that in the rare occurrence when bears are encountered in open water swimming, they retreat from the vessel as it passes the bear.

D. Aircraft Traffic

Routine aircraft traffic should have little to no effect on polar bears; however, extensive or repeated overflights of fixed-wing aircraft or helicopters could disturb polar bears. Behavioral reactions of non-denning polar bears should be limited to short-term changes in behavior, such as evading the plane by retreating from the stimulus. They would have no long-term impact on individuals and no discernible impacts on the polar bear population. In contrast, denning bears may abandon or depart their dens early in response to repeated noise produced by extensive aircraft overflights. Mitigation measures, such as minimum flight elevations over polar bears or areas of concern and flight restrictions around known polar bear dens, will be required, as appropriate, to reduce the likelihood that bears are disturbed by aircraft.

E. Offshore Seismic Exploration and Exploratory Drilling

Although polar bears are typically associated with the pack ice during summer and fall, open-water seismic exploration activities can encounter polar bears in the central Beaufort Sea in late summer or fall. It is unlikely that seismic exploration activities or other geophysical surveys during the open-water season would result in more than temporary behavioral disturbance to polar bears. Any disturbance would be visual and auditory in nature, where bears could be deflected from their route. Polar bears could be encountered on ice where they would be unaffected by underwater sound from the airguns. Bears could also be encountered in the water. Sound levels received by polar bears in the water would be attenuated because polar bears generally do not dive much below the surface and they normally swim with their heads above the surface, where noises produced underwater are weak. This occurs because received levels of airgun sounds are reduced near the surface because of the pressure release effect at the water's surface (Greene and Richardson 1988, Richardson *et al.* 1995).

Noise and vibrations produced by oil and gas activities during the ice-covered season could potentially result in impacts on polar bears. During this time of year, denning female bears as well as mobile, non-denning bears could be exposed to and affected differently by potential impacts from seismic activities. As stated earlier, disturbances to denning females, either on land or on ice are of particular concern.

As part of the LOA application for seismic surveys during denning season, Industry provides us with the proposed seismic survey routes. To minimize the likelihood of disturbance to denning females, the Service evaluates these routes along with information about known polar bear dens, historic denning sites, and delineated denning habitat prior to authorizing seismic activities.

Previous regulations have analyzed open water exploration activity, such as seismic and drilling, even though this type of open water activity has not occurred on an annual basis in the Beaufort Sea. In the previous ITRs, open-water seismic programs and exploratory drilling programs were analyzed for impacts to polar bears and walruses. Due to the limited scope of the planned offshore activities, the Service concluded that this level of activity would affect only small numbers of polar bears and walrus and

would have no more than negligible effects on the populations. The actual number of offshore seismic projects during the previous regulatory period was smaller than the amount analyzed. We issued LOAs for five offshore seismic projects, and no offshore drilling projects occurred, even though drilling projects were requested twice during the previous ITRs (2006–2011).

2. Physical Obstructions

There is some chance that Industry facilities would act as physical barriers to movements of polar bears. Most facilities are located onshore and inland where polar bears are only occasionally found. The offshore and coastal facilities are most likely to be approached by polar bears. The majority of Industry bear observations occur within 1 mile of the coastline as bears use this area as travel corridors. Bears traversing along the coastline can encounter Industry facilities located on the coast, such as CPAI and Eni facilities at Oliktok Point and the Point Thomson development. As bears contact these facilities, the chances for bear/human 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 appear to have little or no fear of man-made structures and can easily climb and cross gravel roads and causeways, and polar bears have frequently been observed crossing existing roads and causeways in the Prudhoe Bay oilfields. Offshore production facilities, such as Northstar, may be approached by polar bears, but due to their layout (*i.e.,* continuous sheet pile walls around the perimeter) and monitoring plans the bears may not gain access to the facility itself. This situation may present a small-scale, local obstruction to the bears' movement, but also minimizes the likelihood of bear/human encounters.

3. Human Encounters

Whenever humans work in polar bear habitat, there is a chance of an encounter, even though, historically, such encounters have been uncommon in association with Industry. Encounters can be dangerous for both polar bears and humans.

Although bears may be found along the coast during open-water periods, most of the SBS bear stock inhabits the multiyear pack ice during this time of year. Encounters are more likely to occur during fall and winter periods when greater numbers of the bears are found in the coastal environment searching for food and possibly den sites later in the season. Potentially dangerous encounters are most likely to occur at gravel islands or on-ice exploratory sites. These sites are at ice level and are easily accessible by polar bears. Industry has developed and uses devices to aid in detecting polar bears, including bear monitors and motion detection systems. In addition, some companies take steps to actively prevent bears from accessing facilities using safety gates and fences.

Offshore production islands, such as the Northstar production facility, may attract polar bears. In 2004, Northstar accounted for 41 percent of all polar bear observations Industry-wide. They reported 37 sightings in which 54 polar bears were observed. The offshore sites continue to account for the majority of the polar bear observations. The offshore facilities of Endicott, Liberty, Northstar, and Oooguruk accounted for 47 percent of the bear observations between 2005 and 2008 (182 of 390 sightings). It should be noted that, although most bears were observed passing through the area, the sites may also serve as an attractant, which could result in increased incidence of harassment of bears. Employee training and company policies currently reduce and mitigate such encounters.

Depending upon the circumstances, bears can be either repelled from or attracted to sounds, smells, or sights associated with Industry activities. In the past, such interactions have been mitigated through conditions on the LOA, which require the applicant to develop a polar bear interaction plan for each operation. These plans outline the steps the applicant will take, such as garbage disposal procedures, to minimize impacts to polar bears by reducing the attraction of Industry activities to polar bears. Interaction plans also outline the chain of command for responding to a polar bear sighting. In addition to interaction plans, Industry personnel participate in polar bear interaction training while on site.

Employee training programs are designed to educate field personnel about the dangers of bear encounters and to implement safety procedures in the event of a bear sighting. The result of these polar bear interaction plans and training allows on-site personnel to detect bears and respond safely and appropriately. Often, personnel are instructed to leave an area where bears are seen. Many times polar bears are monitored until they move out of the area. Sometimes, this response involves deterring the bear from the site. If bears are reluctant to leave on their own, in most cases bears can be displaced by using pyrotechnics (*e.g.,* cracker shells) or other forms of deterrents (*e.g.,* vehicle, vehicle horn, vehicle siren, vehicle lights, spot lights). The purpose of these plans and training is to eliminate the potential for injury to personnel or lethal take of bears in defense of human life. Since the regulations went into effect in 1993, there has been no known instance of a bear being killed or Industry personnel being injured by a bear as a result of Industry activities. The mitigation measures associated with these regulations have been proven to minimize bear/human interactions and will continue to be requirements of future LOAs, as appropriate.

There is the potential for humans to come into contact with polar bear dens as well. 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. Industry routinely coordinates with the Service to determine the location of Industry's activities relative to known dens and denning habitat. General LOA provisions require Industry operations to avoid known polar bear dens by 1 mile.

There is the possibility that an unknown den may be encountered during Industry activities as well. Between 2002 and 2010, six previously unknown maternal polar bears dens were encountered by Industry during the course of project activities. Once a previously unknown den is identified by Industry, the Service requires that the den be reported, triggering mitigation measures per response plans. Communication between Industry and the Service and the implementation of mitigation measures, such as the 1-mile exclusion area around the now known den and 24-hour monitoring of the site, ensures that disturbance is minimized.

4. Effect on Prey Species

Ringed seals are the primary prey of polar bears in the Beaufort Sea and inhabit the nearshore waters where offshore Industry activities occur. Industry will mainly have an effect on seals through the potential for contamination (oil spills) or industrial noise disturbance. Effects of contamination from oil discharges for seals are described in the following section, "Potential Impacts of Waste Product Discharge and Oil Spills on

Pacific Walruses and Polar Bears," under the "Pacific Walrus" subsection.

Studies have shown that seals can be displaced from certain areas such as pupping lairs or haulouts and abandon breathing holes near Industry activity. However, these disturbances appear to have minor effects and are short term.

Evaluation of Anticipated Effects on Polar Bears

The Service anticipates that potential impacts of Industry noise, physical obstructions, and human encounters on polar bears would be limited to short-term changes in behavior and should have no long-term impact on individuals and no impacts on the polar bear population.

Potential impacts will be mitigated through various requirements stipulated within LOAs. Mitigation measures required for all projects will include a polar bear and/or walrus interaction plan, and a record of communication with affected villages that may serve as the precursor to a POC with the village to mitigate effects of the project on subsistence activities. 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 U.S. Geological Survey (USGS), the use of FLIR or polar bear scent-trained dogs to determine the presence or absence of dens, timing of the activity to limit disturbance around dens, the 1-mile 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 miles inland from the coast, than for an annual nearshore development project in shallow waters. For example, based on past monitoring information, bears are more prevalent in the coastal areas than 20 miles inland and, therefore, there may be differences in monitoring and mitigation measures required by the Service to limit the disturbance to bears and to limit human/bear interactions.

The Service manages Industry activities occurring in polar bear denning habitat by applying proactive and reactive mitigation measures to limit Industry impact to denning bears. Proactive mitigation measures are actions taken to limit den site exposure to Industry activities in denning habitat before den locations are known. They include the requirement of a polar bear interaction plan, possible den detection surveys, and polar bear awareness and safety training. Reactive mitigation measures are actions taken to minimize Industry impact to polar bear dens once the locations have been identified. They can include applying the 1-mile buffer around the den site and 24-hour monitoring of the den site.

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 LOAs requires Industry projects to have developed a polar bear interaction plan and to maintain a 1-mile 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.

In addition, Industry has sponsored cooperative research evaluating polar bear hearing, the development of polar bear audiograms, the transmission of noise and vibration through the ground, snow, ice, and air; and the received levels of noise and vibration in polar bear dens. 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.

Monitoring data suggests that the number of polar bear encounters in the oil fields fluctuates from year to year. Polar bear observations by Industry increased between 2004 and 2009 (89 bear observations in 2004 and 420 bear observations in 2009). These observations range from bears observed from a distance and passively moving through the area to bears that pose a threat to personnel and are hazed for their safety and the safety of Industry personnel. This increase in observations is believed to be due to an increased numbers of bears using terrestrial habitat, an effort by Industry and the Service to increase polar bear awareness and safety to Industry personnel, and an increase in the number of people monitoring bear activities around the facilities. Although bear observations appear to have increased, bear/human encounters remain uncommon events. We anticipate that bear/human encounters during the 5-year period of these regulations will remain uncommon.

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

Individual walruses and polar bears can potentially be affected by Industry activities through waste product discharge and oil spills. These potential impacts are described below.

Polar bear and walrus ranges overlap with many active and planned oil and gas operations. Polar bears may be susceptible to oil spills from platforms/production facilities and pipelines in both offshore and onshore habitat, while walruses will be susceptible from offshore facilities. To date, no major offshore oil spills have occurred in the Alaska Beaufort Sea. Some on-shore spills have occurred on the North Slope at production facilities or pipelines connecting wells to the Trans-Alaska Pipeline System with no known impacts 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 oil fields. Although most spills have been small (less than 50 barrels) by Industry standards, larger spills (more than 500 barrels) accounted for much of the annual volume. Seven large spills have occurred between 1985 and 2009 on the North Slope. The largest spill occurred in the spring of 2006 when approximately 260,000 gallons leaked

from flow lines near a gathering center. In November 2009, a 46,000 gallon spill occurred as well. These spills originated in the terrestrial environment in heavily industrialized areas not used by polar bears or walrus and posed minimal harm to walruses and polar bears. To date, no major offshore spills have occurred on the North Slope.

Spills of crude oil and petroleum products associated with onshore production facilities during ice-covered and open-water seasons have been minor spills. Larger spills are generally production-related and could occur at any production facility or pipeline connecting wells to the Trans-Alaska Pipeline System. In addition to onshore sites, this could include offshore facilities, such as causeway-linked Endicott or the sub-sea pipeline-linked Northstar Island. The trajectories of large offshore spills from Northstar and the proposed Liberty facilities have been modeled and analyzed in past ITRs to examine potential impacts to polar bears.

Oil spills in the marine environment that can accumulate at the ice edge, in ice leads, and similar areas of importance to polar bears and walruses are of particular concern. As additional offshore oil exploration and production projects come on line the potential for large spills in the marine environment increases.

During the open water season, polar bears could encounter oil if it is released during exploratory operations, from existing offshore platforms, or from a marine vessel spill. Furthermore, the shipping of crude oil or oil products could also increase the likelihood of an oil spill due to predicted reductions in Arctic sea ice extent and improved access to shipping lanes, where a projected extended shipping season is expected to occur around the margins of the Arctic Basin.

Spilled oil present in fall or spring during formation or breakup of ice presents a greater risk because of both the difficulties associated with cleaning oil in mixed, broken ice, and the presence of bears and other wildlife in prime feeding areas over the Continental Shelf during this period. Oil spills occurring in areas where polar bears are concentrated, such as along off-shore leads or polynyas, and along terrestrial habitat where marine mammal carcasses occur, such as at Cross and Barter islands during fall whaling, would affect more bears than spills in other areas.

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; and (3) 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 offshore areas may encounter oil (Stirling *in* Geraci and St. Aubin 1990).

In the event of an oil spill, Service–approved response strategies are in place to reduce the impact of a spill on wildlife populations. Response efforts will be conducted under a three-tier approach characterized as: (1) Primary response—involving containment, dispersion, burning, or clean-up 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 since little evidence exists that tertiary methods will be effective for cleaning oiled polar bears.

OCS operators are advised to review the Service's *Oil Spill Response Plan for Polar Bears in Alaska* at (*http://www.fws.gov/Contaminants/FWS_OSCP_05/FWSContingencyTOC.htm*) when developing spill-response tactics. 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 polar bears that are (or are likely to be) affected, degree of contact, importance of affected habitat, cleanup proposal, and likelihood of bear/human interactions.

The BOEMRE 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." The BOEMRE 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, oil spill cleanup in the broken ice and open water conditions that characterize Arctic waters is problematic.

Evaluation of Effects of Oil Spills

Pacific Walrus

As stated earlier, the Beaufort Sea is not within the primary range for the Pacific walrus; 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; no studies have been conducted. Hypothetically, walruses may react to oil much like other pinnipeds. 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.

Walruses have thick skin and blubber layers for insulation and very little hair. Thus, they exhibit no grooming behavior, which lessens their chance of ingesting oil. Heat loss is regulated by control of peripheral blood flow through the animal's skin and blubber. 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. 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 small number of walruses in the Beaufort Sea and the low potential for a large oil spill, which is discussed in the following Risk Assessment Analysis, limit potential impacts to walruses to only certain events (a large oil spill) and then only to a limited number of individuals. In the unlikely event there is an oil spill and walruses in the same area, mitigation measures, especially those to deflect and deter animals from spilled areas, would minimize any effect. 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 the following Web site: (*http://www.fws.gov/Contaminants/FWS_OSCP_05/fwscontingencyappendices/L-WildlifePlans/WalrusWRP.doc*).

Polar Bear

The possibility of oil and waste product spills from Industry activities and the subsequent impacts on polar bears are a major concern. Polar bears could encounter oil spills during the open-water and ice-covered seasons in offshore or onshore habitats. Although the majority of the SBS polar bear population spends much of their time offshore on the pack ice, some bears are likely to encounter oil regardless of the season or location in which a spill occurs.

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

During the ice-covered season, mobile, non-denning bears would have a higher probability of encountering oil or other production wastes than nonmobile, 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 a polar bear, depending on whether the animal is able to excrete or detoxify the hydrocarbons. Petroleum hydrocarbons irritate or destroy epithelial cells lining the stomach and intestine, thereby affecting motility, digestion, and absorption.

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

Oil may also affect food sources of polar bears. Seals that die as a result of an oil spill could be scavenged by polar bears. This would increase exposure of the bears to hydrocarbons and could result in lethal impact or reduced survival to individual bears. A local reduction in ringed seal numbers 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 also 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 that 300 m 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 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. This change in distribution has been correlated with the distance to the pack ice at that time of year (*i.e.,* the farther from shore the leading edge of the pack ice is, the more bears are observed onshore). An analysis of data collected 2001–2005 during the fall open-water period concluded: (1) On average approximately 4 percent of the estimated 1,526 polar bears in the Southern Beaufort population were observed onshore in the fall; (2) 80 percent of bears onshore occurred within 15 km 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). Although it may be true that small numbers of bears may be affected by an oil spill initially, the long-term impact could be much greater. Long-term oil effects could be substantial through interactions between natural environmental stressors and compromised health of exposed animals, and through chronic, toxic exposure as a result of bioaccumulation. Polar bears are biological sinks for pollutants because they are the apical 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 polar bears and seal-eating walruses near Svalbard (Norstrom *et al.* 1988, Andersen *et al.* 2001, Muir *et al.* 1999). As such, polar bears would be susceptible to the effects of bioaccumulation of contaminants associated with spilled oil, which could affect the bears' reproduction, survival, and immune systems. Sublethal, chronic effects of any oil spill may further suppress the recovery of polar bear populations due to reduced fitness of surviving animals.

In addition, subadult polar bears are more vulnerable than adults 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).

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 (*e.g.,* 5,900 barrels (equal to a rupture in the Northstar pipeline and a complete drain of the subsea portion of the pipeline), 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.

The major concern regarding large oil spills is the impact a spill would have on the survival and recruitment of the SBS polar bear population. Currently, this bear population is approximately 1,500 bears. In addition, the maximum sustainable subsistence harvest is now 70 bears for this population (divided between Canada and Alaska). The population may be able to sustain the additional mortality caused by a large oil spill if a small number of bears are killed; however, the additive effect of numerous bear deaths due to the direct or indirect effects from a large oil spill are more likely to reduce population recruitment and survival. Indirect effects may occur through a local reduction in seal productivity or scavenging of oiled seal carcasses and other potential impacts, both natural and human-induced. The removal of a large number of bears from the population would exceed sustainable levels, potentially causing a decline in the bear population and affecting bear productivity and subsistence use.

Evaluation of the potential impacts of Industry waste products and oil spills suggest that individual bears could be impacted by the disturbances (Oritsland *et al.* 1981). Depending on the amount of oil or wastes involved and the timing and location of a spill, impacts could be short-term, chronic, or lethal. In order for bear population reproduction or survival to be impacted, a large-volume oil spill would have to take place. The following section analyzes the likelihood and potential effects of such a large-volume oil spill.

Oil Spill Risk Assessment of Potential Impacts to Polar Bears From a Large Oil Spill in the Beaufort Sea

Potential adverse impacts to polar bears and Pacific walruses from oil and waste-product spills as a result of industrial activities in the Beaufort Sea are a major concern. As part of the incidental take regulatory process, the Service evaluates potential impacts of oil spills within the proposed regulation area, even though the action of an oil spill and the possible lethal outcome to an animal are not authorized. Through experience and current data, the Service

has determined that the offshore environment is the area where its trust species will be most vulnerable to oil spill impacts. In this section, we assess the risk that polar bears may be oiled using various sources of information. This information includes: the description of offshore facilities; BOEMRE oil spill risk assessment for the Beaufort Sea; the overview of the Risk Assessment from the previous ITRs; and information from Service-supported polar bear aerial coastal surveys.

There is increasing interest in developing offshore oil reserves in the Beaufort and Chukchi seas, where the estimate of recoverable oil is up to approximately 19 billion barrels (BOEMRE 2010a). Development of offshore production facilities and pipelines increases the potential for large offshore spills. Oil spilled from an offshore facility or subsea pipeline is a scenario that has been considered in previous regulations (71 FR 43926). With the limited background information available regarding the effects of large oil spills in the offshore 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 industrial activities to date.

As previously noted, walruses are rare in the Beaufort Sea. Therefore, they are unlikely to encounter oil spills there, and were not considered in this analysis. Several factors must be considered when developing an oil spill risk assessment for polar bears. They include:

1. The location of spill;
2. Magnitude of spill;
3. Oil viscosity and thickness;
4. Accessibility to spill site;
5. Spill trajectory;
6. Time of year;
7. Weather conditions (*i.e.,* wind, temperature, precipitation);
8. Environmental conditions (*i.e.,* presence and thickness of ice);
9. Number, age, and sex of polar bears that are (or are likely to be) affected;
10. Degree of contact;
11. Importance of affected habitat; and
12. Mitigation to limit bears from spilled oil.

Description of Offshore Facilities

Currently, there are three offshore Industry facilities producing oil in the Beaufort Sea: Endicott, Northstar, and Oooguruk. Two more, Liberty and Nikaitchuq, are expected to commence production during the 5-year period analyzed for these regulations. The Endicott oilfield is located approximately 16 km (10 mi) northeast of Prudhoe Bay. Endicott, which is connected by a causeway to the mainland, began production in 1986. The Liberty field is currently under development; the current project concept is to use ultra-extended-reach drilling technology to access the Liberty reservoir from existing facilities at the Endicott Satellite Drilling Island. The Northstar oilfield, which is located 10 km (6 mi) from Prudhoe Bay, began producing oil in 2001. Northstar oil is transported from a gravel island in the Beaufort Sea to shore via a 10-km (6-mi) subsea pipeline buried in a trench in the sea floor. Endicott and Liberty oils are medium-weight viscous crudes with American Petroleum Institute (API) gravities of 24 and 27 degrees, respectively. Northstar crude is a very light, low-viscosity oil with an API gravity of 42.

The Oooguruk Unit is located adjacent to the Kuparuk River Unit in shallow waters of Harrison Bay. Pioneer and its partner, Eni, constructed an offshore drill site there in 2006 on State of Alaska leases. A subsea flow line was also constructed to transfer produced fluids 9.2 km (5.7 mi) from the offshore drill site to shore. Oooguruk began production in 2008. The Oooguruk development has targeted two separate reservoirs from a single offshore drill site. The principal reservoir is the Nuiqsut, an Upper Jurassic, inner shelf sandstone that contains heavy to medium oil with 19–25° American Petroleum Institute (API) gravity. The secondary reservoir is the Kuparuk C sandstone, which consists of medium viscosity oil ranging from 24–26° API gravity. Peak oil production is anticipated to be approximately 18,000 to 20,000 barrels of oil per day. As described earlier, both Nikaitchuq and Oooguruk are located in shallow water (less than 10 feet). The offshore portion of Nikaitchuq is located south of the barrier islands, while Oooguruk is located southeast of Thetis Island in the Colville River outflow. Facilities for the Nikaitchuq Unit are located at Oliktok Point and at an offshore pad near Spy Island, 6.4 km (4 mi) north of Oliktok Point. The offshore pad is located in shallow water 3 meters (10 feet). Oil from the Nikaitchuq prospect is a heavy crude from the Schrader Bluff formation, sometimes with sand in it, found in a shallow reservoir (less than 4,000 feet). It requires an electrical submersible pump to produce oil. According to the operators, the flow can be stopped by turning off the pump. Oil production at Nikaitchuq is anticipated to begin in 2011.

Oil Spill Analysis

The oil-spill scenario for this analysis considers the potential impacts from large oil spills resulting from oil production at the four developments described above (Endicott and Liberty are considered to be a complex for analysis purposes). Estimating large oil-spill occurrence and behavior is a probability exercise. Uncertainty exists regarding the location and size of a large oil spill and the wind, ice, and current conditions at the time of a spill. Although some of the uncertainty reflects incomplete or imperfect data, a considerable amount of uncertainty exists simply because it is difficult to predict events over the next 5 years.

In order to address oil spill impacts to polar bears from the offshore sites, we analyzed quantitative and anecdotal information. The quantitative assessment of oil spill risk for the current request for incidental take regulations considered conditional oil spill probabilities from four offshore sites: Northstar, Oooguruk, Nikaitchuq, and the Endicott/Liberty prospect; oil spill trajectory models; and a polar bear distribution model. The analysis included information from the Bureau of Ocean and Enforcement (BOEMRE) Oil spill Risk analysis in regard to polar bears, reviewed previous risk assessment information of polar bears in prior ITRs, and analyzed polar bear distribution using the Service's coastal survey data for 2000 to present.

BOEMRE Oil Spill Risk Assessment

Because it provides the most current and rigorous treatment of potential oil spills in the Beaufort Sea, our analysis of potential oil spill impacts draws upon the BOEMRE's most recent Oil Spill Risk Analysis (OSRA) (MMS 2008a) to help elucidate potential impacts of an oil spill 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 potential oil spills may follow, the OSRA model uses information about the physical environment, including data on wind, sea ice, and currents. Although the OSRA estimates that the statistical mean number of large spills is less than one over the life of most developments in the Beaufort Sea, for purposes of this analysis we assume one large spill occurs and then analyze its effects.

Large Spill Size and Source Assumptions

As stated in Appendix A of the Arctic Multi-sale DEIS (MMS 2008b), large spills are those spills of 1,000 barrels

(bbl) or more and would persist on the water long enough to follow in a trajectory analysis. Spills smaller than 1,000 bbl would not be expected to persist on the water long enough to warrant a trajectory analysis. Because no large spills have occurred on the Alaska OCS to date from oil and gas activities, the large spill-size assumptions used by BOEMRE are based on the reported spills from oil production in the Gulf of Mexico and Pacific OCS regions. BOEMRE uses the median spill size in the Gulf of Mexico and Pacific OCS from 1985 through 1999 as the likely large spill size for analysis purposes. The median size of a crude oil spill greater than or equal to 1,000 bbl from a pipeline from 1985 through 1999 on the U.S. OCS was 4,600 bbl, and the average was 6,700 bbl (Anderson and LaBelle 2000). The median spill size for a platform on the OCS over the entire record 1964–1999, based on analysis, is 1,500 bbl, and the average is 3,300 bbl (Anderson and LaBelle 2000). For purposes of analysis, we use the median spill size estimates from BOEMRE as the likely large spill size from platforms and pipelines.

Our analysis is predicated on the BOEMRE assumption that large spills would occur only during development and production in the Arctic (MMS 2008a). BOEMRE still considers assumptions from the DEIS of the Beaufort Sea and Chukchi Sea Planning Areas to be valid despite the Deepwater Horizon oil spill event in the summer of 2010. Currently, BOEMRE is working on a new large spill projection for the Arctic OCS in regard to new information gleaned from the Deepwater Horizon event. However, considering the low number of exploratory wells that have occurred in the Beaufort Sea OCS (31 wells since 1982 [BOEMRE 2010b]) and the low rate of exploratory drilling blowouts per well drilled, it is reasonable to conclude that the risk of a large spill occurring during exploration of the Arctic OCS is very 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.

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

Within the duration of the previous ITRs, two large onshore terrestrial oil spills occurred as a result of failures in the oil production transport system. In the spring of 2006, an oil spill of approximately 260,000 gallons occurred near an oil gathering center facility from a corroded pipeline operated by BP Exploration (Alaska). The spill impacted approximately 2 acres (8 square meters). In November 2009, a 48,000-gallon spill from a "common line" carrying oil, water, and natural gas operated by BP occurred as well, impacting approximately 8,400 square feet (780 square meters). Neither spill appeared to impact polar bears, in part due to the locations: Both sites were within or near industrial facilities not frequented by bears; and timing: Polar bears are not typically observed in the affected areas during the time of the spills and subsequent cleanup.

Trajectory Estimates of a Large Offshore Oil Spill

Although it is reasonable to assume 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 BOEMRE OSRA model analyzes the likely paths of over two million simulated oil spills in relation to biological, physical, and sociocultural resource areas specific to the Beaufort Sea, which are generically called environmental resource areas (ERAs). 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.* We used the BOEMRE 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 oil spill analysis, BOEMRE conservatively assumes 1,500- and 4,600-bbl spills could last up to 30 days on the water as a coherent slick. To be even more conservative, we considered BOEMRE conditional probabilities out to 60 days for an open water (July–September) spill. We assume that a spill could last longer as a coherent slick if it became entrained in the ice and melts out in the spring. Therefore, we assume that winter spills (October–June) could last up to 180 days as a coherent slick.

We used the BOEMRE maps of launch areas (LAs) and pipeline segments (PLs) from Appendix A of the Arctic Multi-sale DEIS (Map A.1–4) to represent the location of oil spills originating from the four OCS developments described previously. Specifically, we assigned LA 08 and PL 10 to Oooguruk, LA 10 and PL 10 to Nikaitchuq, LA 12 and PL 11 to Northstar, and LA 12 and PL 12 to Endicott/Liberty. Conditional probabilities for contact from spills from LAs and PLs should be considered slightly higher for Oooguruk and Nikaitchuq because the hypothetical pipelines used by BOEMRE in their OSRA model are much longer than actual existing offshore pipelines in the Beaufort Sea (*i.e.,* the model pipelines extend beyond the barrier islands).

Oil-Spill-Trajectory Model Assumptions

For purposes of this oil spill trajectory simulation, BOEMRE made the following assumptions:

- All spills occur instantaneously;
- Large oil spills occur in the hypothetical launch areas or along the hypothetical pipeline segments noted above;
- Large spills do not weather for purposes of OSRA analysis;
- 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 Oil-Spill-Trajectory Model

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) is termed a *conditional probability.* From the DEIS, Appendix A, we chose ERAs and Land Segments (LSs) to represent areas of concern pertinent to polar bears (MMS 2008a). Those ERAs and LSs, and the conditional probabilities that an oil spill originating from one of the four existing OCS developments would contact them, are presented in Table 1. From Table 1 we were able to estimate the highest probability and the range of probabilities that could occur should a

spill contact the selected land segments from launch areas or pipeline segments.

Environmental Resource Area and Land Segments

Conditional Probabilities of an ERA or LS of concern 2011–2016

Development (Launch Areas, Pipeline Segments)	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
Oooguruk 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)
Nikaitchuq 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)
Northstar 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)
Endicott/Liberty 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
ERA 92: Thetis, Jones, Cottle and Return Islands, West Dock
ERA 93: Cross and No Name Island
ERA 94: Maguire Islands, Flaxman Island, Barrier Islands
ERA 95: Arey and Barter Islands and Bernard Spit
ERA 96: Midway, Cross and Bartlett Islands
ERA 100: Jago and Tapkaurak Spits
LS 85: Barrow, Browerville, Elson Lagoon
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
LS 138: Arctic National Wildlife Refuge
LS 144: United States Beaufort Coast
LS 145: Canada Beaufort Coast

Table 1. Conditional oil spill probabilities in regard to Environmental Resource Areas and Land Segments for four OCS oil and gas industry sites. Values in parentheses are for pipeline segments. * = Less than one percent.

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Polar bears are most vulnerable to an oil spill during the open water period when bears aggregate on shore. 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 on polar bears to occur, an oil spill would have to contact an aggregation of polar bears. We believe the probability of this occurring is low. For example, in the unlikely event of an oil spill, the probability of it contacting a polar bear aggregation in resource areas or land segments (ERA 55, 93, 95, 96, 100; LS 85, 107) is 13 percent or less (Table 1). The greatest probability would be oil spilled from Northstar or Endicott/Liberty Launch Areas contacting ERA 96 (Midway, Cross, and Bartlett islands). Some polar bears will aggregate at these sites during a 3-month portion of the year (August–October). If an oil spill occurred and contacted those aggregation sites outside of that timeframe of use by polar bears, potential impacts to polar bears would be minimized.

Coastal areas provide important denning habitat for polar bears, such as the Arctic National Wildlife Refuge (ANWR) and nearshore barrier islands exhibiting relief (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 from 1981 through 2005 were on coastal or island bluffs (Durner *et al.* 2006), oiling of such habitats could have a negative impact on polar bears, although specific nature and ramifications of such effects are unknown.

If an oil spill does occur, tundra relief barrier islands (ERA 92, 93, and 94, LS 97 and 102) would have up to a 12 percent conditional probability of spill contact (range: Less than 1 percent to 12 percent) from either Northstar or the Endicott/Liberty complex (Table 1). The highest conditional probability of a spill contacting the coastline of the ANWR (LS 138) would be 11 percent. The Kaktovik area (ERA 95 and 100, LS 107) has up to a 5 percent chance of spill contact, 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, larger barrier islands that contain tundra relief are also important denning habitat. Tundra-bearing barrier islands within the geographic region and near oil field development are the Jones Island group of Pingok, Bertoncini, Bodfish, Cottle, Howe, Foggy, Tigvariak, and Flaxman islands. In addition, Cross Island has gravel relief and polar bears have previously denned on it. The Jones Island group is located in ERA 92 and LS 97. If a spill were to originate from Oooguruk during the summer months, the probability that this spill would contact these land segments could be as great as 8 percent from a pipeline segment. The probability that a spill from Nikaitchuq would contact the Jones Island group would range from 1 percent to as high as 11 percent. Likewise, for Northstar and the Endicott/Liberty complex, the range would be from 4 percent to as high as 12 percent and from 3 percent to as high as 12 percent, respectively.

Risk Assessment From Prior Incidental Take Regulations (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. To support the analysis for this proposed action, we reviewed the previous analysis and used the data to compare the potential effects of an oil spill in a nearshore production facility (less than 5 miles), such as Liberty, and a facility located further offshore, such as Northstar (greater than 5 miles). Although Liberty was originally designed as an offshore production island, it is currently being developed as an onshore production facility (connected to the mainland by a causeway) using ultra-extended reach technology to drill directionally into the oil prospect. 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 in 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 presented in the original Northstar and Liberty EIS. We assumed that one 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 spill. If a bear contacted oil, it was assumed to be a lethal contact. This 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, as well as BOEMRE estimates of where oil spills from other production facilities were likely to go. The trajectories for Northstar and Liberty were provided by the BOEMRE and reported in Amstrup *et al.* (2006). BOEMRE estimated probable sizes of oil spills from the transportation pipeline and production platforms. These spill sizes ranged from a minimum of 125 to a catastrophic release event of 5,912 barrels. Hence, researchers set the size of the modeled spill at the worst-case scenario of 5,912 barrels, simulating rupture and drainage of a pipeline.

The second component incorporated polar bear densities overlapped with the oil spill trajectories. To accomplish this, in 2004, USGS completed analysis investigating the potential effects of hypothetical oil spills on polar bears. Movement and distribution information was derived from radio and satellite relocations 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 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, and summing these probabilities.

In summary, the maximum numbers of bears potentially oiled by a 5,912-barrel spill during September open water seasons from Northstar was 27, and the maximum from Liberty was 23. Potentially oiled bears ranged up to 74 polar bears and up to 55 polar bears in

October mixed-ice conditions for Northstar and Liberty, respectively. Median number of bears oiled by the 5,912-barrel spill in September and October were 3 and 11 bears from Northstar simulation site, respectively. Median numbers of bears oiled for September and October for the Liberty simulation site 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-barrel spilled oil 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 spill would oil 5 or more bears during the annual fall period, we found that oil spills and trajectories were more likely to affect small numbers of bears (less than 5 bears) than larger numbers of bears. Thus, for Northstar, the probability of spilled oil that affected (resulting in mortality) 5 or more bears is 1.0–3.4 percent; for 10 or more bears is 0.7–2.3 percent; and for 20 or more bears is 0.2–0.8 percent. For Liberty, the probability of a spill that will cause a mortality of 5 or more bears was 0.3–7.4 percent; for 10 or more bears, 0.1–0.4 percent; and for 20 or more bears, 0.1–0.2 percent.

Discussion of Prior Risk Assessment

Location of Industry sites within the marine environment is important when analyzing the potential for polar bears to contact an 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 flaw zone and in deeper water than Endicott/Liberty, Oooguruk, and Nikaitchuq. Furthermore, it is not sheltered from deep water by barrier islands. These characteristics associated with Industry developments located further offshore would potentially attract more polar bears into close proximity with the island and would also allow oil to spread more effectively and more consistently into surrounding areas. By comparison through the model, the land-fast ice inside the shelter of the 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. From the standpoint of polar bears and based on the simulations, a nearshore island production site (less than 5 miles) would potentially involve less risk to being oiled than a facility located further offshore, such as Northstar Island. Shell may develop an offshore site (Suvulliq) in the active flaw zone during the period of the proposed action. If developed, future scenarios for this prospect will be similar to Northstar and would influence polar bears in a similar manner.

Discussion of Polar Bear Aerial Coastal Surveys for Current Analysis

The Service has an ongoing project to monitor polar bear distribution and numbers along the Beaufort Sea coastline during the fall season. These aerial surveys were conducted between 2000 to 2009. From 2000 to 2005, the Service investigated the relationship between sea ice conditions, food availability, and the fall distribution of polar bears in terrestrial habitats of the SBS via weekly aerial surveys. Aerial surveys were conducted weekly during September and October along the SBS coastline and barrier islands between Barrow and the Canadian border to determine polar bear density during the peak use of terrestrial habitat by bears. The Service observed that the number of bears on land increased when sea-ice retreated farthest from the shore. The distribution of bears also appeared to be related to the availability of subsistence-harvested bowhead whale carcasses and the density of ringed seals in offshore waters.

Between 2000 and 2005, the maximum density estimate of bears observed during any single survey was 8.6 bears/100 km or 122 bears total. Across all years (2000 to 2005) and survey dates between mid-September and the end of October, an average of 4 bears/100 km (57 bears total) were observed. The Service estimated that a maximum of 8.0 percent and an average of 3.7 percent of the estimated 1,526 bears in the SBS population were observed on land during the late open-water and broken-ice period. This period coincides with increased aggregations of bears in the nearshore at feeding sites and the peak observation period (August through October) of bears observed from Industry as reported through their bear monitoring programs. This would be the period posing the greatest risk to the largest number of bears from an oil spill.

The number of bears observed per kilometer of survey flown was higher between Cape Halkett and Jago Spit (4 bears/100 km) than the area surveyed between Barrow and the Canadian border (3 bears/100 km) during the 2003–2005 surveys. The Service reported that this difference was largely driven by a major concentration of bears (69 percent of total bears onshore) at Barter Island (17.0 polar bears/100 km). In addition, annual surveys were also conducted in 2007, 2008, and 2009. The number of bears observed during weekly surveys ranged between 2 to 51, 2 to 78, and 7 to 75, respectively. The highest concentrations continued to be in the area of Barter Island and the community of Kaktovik. Using the above information, if a spill occurred during the fall open-water or broken-ice period, up to 8 percent of the SBS population could potentially contact oil.

Conclusion of Risk Assessment

In summary, documented oil spill-related impacts in the marine environment to polar bears to date in the Beaufort Sea by the oil and gas Industry are minimal. To date, no large spills 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.

With the limited background information available regarding oil spills in the Arctic environment, it is unknown what the outcome of such a spill 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 the majority of the SBS polar bear population spends a large amount of their time offshore on the pack ice, it is likely that some bears would encounter oil from a spill regardless of the season and location.

Although the extent of oil spill impacts 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 could have significant impacts on polar bears if an oil spill contacted an aggregation of polar bears, which generally occur in discrete areas in the terrestrial environment. A spill occurring during the broken-ice period could significantly impact the SBS polar bear population, in part because effective techniques for containing, recovering, and cleaning up oil spills in Arctic marine environments, particularly during poor weather and broken-ice conditions has not been proven; however, deterrence of polar bears away from areas affected by an oil spill could help minimize the impact of a spill to the SBS population. In the event that an offshore oil spill contacted numerous

bears, a potentially significant impact to the SBS population could result, initially to the percentage of the population directly contacted by oil. This effect would be magnified in and around areas of polar bear aggregations. Bears would 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 extremely low.

While there is uncertainty in the analysis, certain vectors have to align for polar bears to be impacted by an oil spill in the marine environment. First, a spill has to occur. Second, the spill has to contact areas where bears may be located. BOEMRE's most recent Oil Spill Risk Analysis suggests that if a large oil spill does occur, there is as much as a 13 percent conditional probability that oil from the five analyzed sites would contact Cross Island (ERA 96) (from simulated spills originating either at Northstar or the Endicott/Liberty complex), and as much as an 11 percent conditional probability that it would contact Barter Island and/or the coast of the ANWR (ERA 95 and 100, LS 107 and 138) (from simulated spills originating at the Endicott/Liberty complex). Similarly, there is as much as a 5 percent chance that an oil spill would contact the coast near Barrow (ERA 55, LS 85) (from simulated spills originating at Oooguruk). Third, polar bears will have to be seasonally distributed within the affected region to be impacted by oil. Data from the polar bear coastal surveys suggested that, while polar bears are not uniformly distributed, an average of 3.7 percent with maximum of 8 percent (sample size of 122 bears) of the estimated 1,526 bears in the SBS population were distributed along the Beaufort Sea coastline between the Alaska/Canada border and Barrow.

As a result of the information considered here, the Service concludes that the probability of an offshore spill from Oooguruk, Nikaitchuq, Northstar, or Endicott/Liberty is low. Moreover, in the unlikely event of a spill, the probability that spills would contact areas, or habitat important to bears appears low. Third, while individual bears could be affected by a spill, the potential for a population-level effect would be minimal unless the spill contacted an aggregation of bears. Known aggregations tend to be seasonal during the late open-water and broken-ice season, further minimizing the potential of a spill to impact bears. Therefore, we conclude that only small numbers of polar bears are likely to be affected by a large oil spill in the Arctic waters with only a negligible impact to the SBS population.

Documented Impacts of the Oil and Gas Industry on Pacific Walruses and Polar Bears

In order to document potential impacts to polar bears and walruses, we analyzed potential effects that could have more than a negligible impact to both species. The effects analyzed included the loss or preclusion of habitat, lethal take, harassment, and oil spills.

Pacific Walrus

During the history of the incidental take regulations, the actual impacts from Industry activities on Pacific walruses, documented through monitoring, were minimal. From 1994 to 2004, Industry recorded nine sightings, involving a total of ten Pacific walruses, during the open-water season. From 2005 to 2009, an additional eight individual walruses were observed during Industry operations in the Beaufort Sea. In most cases, walruses appeared undisturbed by human interactions; however, three sightings during the early 2000s involved potential disturbance to the walruses. Two of three sightings involved walruses hauling out on the armor of Northstar Island and one sighting occurred at the SDC on the McCovey prospect, where the walruses reacted to helicopter noise. With the additional sightings in the Beaufort Sea, walruses were observed during exploration (eight sightings; five during recent aerial surveys; 2009), development (three sightings), and production (six sightings) activities. There is no evidence that there were any physical effects or impacts to these individual walruses based on the interaction with Industry. We know of no other interactions that occurred between walrus and Industry during the duration of the incidental take program. Furthermore, there have been no other documented impacts to walruses from Industry.

Cumulative Impacts

Pacific walruses do not normally range into the Beaufort Sea, and documented interactions between oil and gas activities and walruses have been minimal. The proposed Industry activities identified by the petitioners are likely to result in some incremental cumulative effects to the small number of 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 small numbers of walruses are likely to be encountered during the open-water season when proposed marine activities are expected to occur. Required monitoring and mitigation measures designed to minimize interactions between authorized projects and concentrations of resting or feeding walruses are also expected to limit the severity of any behavioral responses. As a population, hunting pressure, climate change, and the expansion of commercial activities into walrus habitat all have potential to impact walruses. Combined, these factors are expected to present significant challenges to future walrus conservation and management efforts. Therefore, we conclude that the proposed exploration activities, especially as mitigated through the regulatory process, are not at this time expected to add significantly to the cumulative impacts on the Pacific walrus population from past, present, and future activities that are reasonably likely to occur within the 5-year period covered by the regulations, if adopted.

Polar Bear

Documented impacts on polar bears by the oil and gas Industry during the past 40 years appear to be minimal. Historically, polar bears spend a limited amount of time on land, coming ashore to feed, den, or move to other areas. With the changing of their distribution based on the changing ice environment, the Service anticipates that bears will remain on land longer. At times, fall storms deposit bears along the coastline where the bears remain until the ice returns. For this reason, polar bears have mainly been encountered at or near most coastal and offshore production facilities, or along the roads and causeways that link these facilities to the mainland. During those periods, the likelihood of interactions between polar bears and Industry activities increases. We have found that the polar bear interaction planning and training requirements set forth in these regulations and required through the LOA process have increased polar bear awareness and minimized the number of these encounters. LOA requirements have also increased our knowledge of polar bear activity in the developed areas.

No known lethal take associated with Industry has occurred during the period covered by incidental take regulations. Prior to issuance of regulations, lethal takes by Industry were rare. Since 1968, there have been two documented cases of lethal take of polar bears associated

with oil and gas activities. In both instances, the lethal take was reported to be in defense of human life. In winter 1968–1969, an Industry employee shot and killed a polar bear. In 1990, a female polar bear was killed at a drill site on the west side of Camden Bay. In contrast, 33 polar bears were killed in the Canadian Northwest Territories from 1976 to 1986 due to encounters with Industry. Since the beginning of the incidental take program, which includes measures that minimize impacts to the species, no polar bears have been killed due to encounters associated with current Industry activities on the North Slope. For this reason, Industry has requested that these regulations cover only nonlethal, incidental take.

To date, most impacts to polar bears from industry operations have been the result of direct bear-human encounters, some of which have led to deterrence events. Monitoring efforts by Industry required under previous regulations for the incidental take of polar bears documented various types of interactions between polar bears and Industry. Between 2006 to 2009, a total of 73 LOAs have been issued to Industry, with an average of 18 LOAs annually. Not all Industry activities observe or interact with polar bears. Polar bear observations were recorded for 56 percent of the LOAs (41 of 73 LOAs).

From 2006 through 2009, an average of 306 polar bears was observed and reported per year. (range: 170 to 420 bears annually). During 2007, 7 companies observed 321 polar bears from 177 sightings. In 2008, 10 companies observed 313 polar bears from 186 sightings. In 2009, 420 polar bears were observed during 245 sightings. In all 3 years, the highest number of bears observed was recorded in the fall season in August and September. In 2007, the highest number of bears was recorded in August, where 90 sightings totaling 148 bears were observed; in 2008, 87 sightings totaling 162 bears were recorded in August; while in 2009, 77 bear sightings were reported. Sightings of polar bears have increased from previous regulatory time periods due to a combination of variables. The high number of bear sightings for these years was most likely the result of an increased number of bears using the terrestrial habitat as a result of changes in sea ice habitat, multiple marine-based projects occurring near barrier islands (where multiple sightings were reported), as well as increased compliance and monitoring of Industry projects, especially during August and September, where some repeat sightings of individual bears and family groups occurred. This trend in observations is consistent with the hypothesis of increasing use of coastal habitats by polar bears during the summer months.

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. According to AOGA figures, the offshore facilities of Endicott, Liberty, Northstar, and Oooguruk accounted for 47 percent of all bear observations between 2005 and 2008 (182 of 390 sightings).

Intentional take of polar bears (through separate Service authorizations under sections 101(a)(4)(A), 109(h), and 112(c) of the MMPA) occurs on the North Slope as well. It is used as a mitigation measure to allow citizens conducting activities in polar bear habitat to take polar bears by harassment (nonlethal deterrence activities) for the protection of both human life and polar bears. The Service provides guidance and training as to the appropriate harassment response necessary for polar bears. The largest operator on the North Slope, BPXA, has documented an increase in the total number of bear observations for their oil units since 2006 (39, 62, 96, and 205 bears for the years 2006, 2007, 2008, and 2009, respectively). However, the percentage of Level B deterrence events reported by BPXA has decreased from 64 percent in 2006 to 21 percent in 2009 of total observations. BPXA attributes this decrease to an increase in polar bear awareness and deterrence training of personnel. A similar trend appears in the slope-wide data presented by AOGA, which encapsulates multiple operators. The percentage of Level B deterrence events appeared to have decreased from 39 percent of all reported polar bear sightings in 2005 to 23 percent in 2008. We currently have no indication that these encounters, which alter the behavior and movement of individual bears, have an effect on survival and recruitment in the SBS polar bear population.

Cumulative Impacts

Cumulative impacts of oil and gas activities are assessed, in part, through the information we gain in monitoring reports, which are required for each operator under the authorizations. Incidental take regulations have been in place in the Arctic oil and gas fields for the past 17 years.

Information from these reports provides a history of past effects on polar bears from interactions with oil and gas activities, including intentional take. Information on previous levels of impact are used to evaluate future impacts from existing and proposed Industry activities and facilities. In addition, information used in our cumulative effects assessment includes: polar bear research leading to publications and data, such as polar bear population assessments by USGS; information from legislative actions, including the listing of the polar bear as a threatened species under the ESA in 2008; traditional knowledge of polar bear habitat use; anecdotal observations; and professional judgment.

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

The Polar Bear Status Review describes cumulative effects of oil and gas development on polar bears in Alaska (see pages 175 to 181 of the status review). This document can be found at *http://www.regulations.gov;* search for Docket No. FWS–R7–FHC–2010–0098. In addition, in 2003 the National Research Council published a description of the cumulative effects that oil and gas development would have on polar bears and seals in Alaska. They concluded the following:

(1) "Industrial activity in the marine waters of the Beaufort Sea has been limited and sporadic and likely has not caused serious cumulative effects to ringed seals or polar bears."

(2) "Careful mitigation can help to reduce the effects of oil and gas development and their accumulation, especially if there is no major oil spill. However, the effects of full-scale industrial development off the North Slope would accumulate through the displacement of polar bears and ringed seals from their habitats, increased mortality, and decreased reproductive success."

(3) "A major Beaufort Sea oil spill would have major effects on polar bears and ringed seals."

(4) "Climatic warming at predicted rates in the Beaufort and Chukchi sea regions is likely to have serious consequences for ringed seals and polar bears, and those effects will accumulate with the effects of oil and gas activities in the region."

(5) "Unless studies to address the potential accumulation of effects on North Slope polar bears or ringed seals

are designed, funded, and conducted over long periods of time, it will be impossible to verify whether such effects occur, to measure them, or to explain their causes."

A detailed description of climate change and its potential effects on polar bears, prepared by the Service, can be found in the "Polar Bear Status Review" (pages 72 to 108) at: *http://www.regulations.gov;* search for Docket No. FWS–R7–FHC–2010–0098. Additional detailed information by the USGS regarding the status of the SBS stock in relation to climate change, projections of habitat and populations, and forecasts of rangewide status can be found at: *http://www.usgs.gov/newsroom/special/polar_bears/.* Climate change could alter polar bear habitat because seasonal changes, such as extended duration of open water, may preclude sea ice habitat and restrict some bears to coastal areas. Biological effects on the worldwide population of polar bears are expected to include increased movements, changes in bear distributions, changes to the access and allocation of denning areas, and increased energy expenditure from open water swimming, and possible decreased fitness. Demographic effects that may occur due to climate change include changes in prey availability to polar bears, a potential reduction in the access to prey, and changes in seal productivity.

The Service anticipates negligible effects on polar bears due to Industry activity, even though there may be an increased use of terrestrial habitat in the fall period by polar bears on the coast of Alaska and an increased use of terrestrial habitat by denning bears in the same area. Polar bears are not residents of the oil fields, but use the habitat in a transitory nature, which limits potential impacts from Industry. Furthermore, no known Level A harassment or lethal takes on polar bears have occurred throughout the duration of the incidental take program, which was initiated in 1994. The last known Industry-caused death of a bear by Industry occurred in 1990. This documented information suggests that Industry will have no more than a negligible effect on polar bears for the 5-year regulatory period even though there may be more bears onshore. The Service also believes that current and proposed mitigation measures will be effective in minimizing any additional effects attributed to seasonal shifts in distributions of the increased use by bears of terrestrial habitats and denning polar bears during the 5-year timeframe of the regulations as has occurred in the past. It is likely that, due to potential seasonal changes in abundance and distribution of polar bears during the fall, more frequent encounters may occur and that Industry may have to implement mitigation measures more often, for example, increasing polar bear deterrence events. 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.

The proposed activities identified 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.

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

Summary of Take Estimates for Pacific Walruses and Polar Bears

Small Numbers Determination

As discussed in the "Biological Information" section, the dynamic nature of sea ice habitat influences the seasonal and annual distribution and abundance of polar bears and walruses in the specified geographical region. The following analysis concludes that only small numbers of Pacific walruses and polar bears are likely to be taken incidental to the described Industry activities relative to the number of walruses and polar bears that are expected to be unaffected by those activities. This conclusion is based upon known distribution patterns and habitat use of Pacific walruses and polar bears.

1. *The number of polar bears and walruses utilizing the described geographic region during Industry operations is expected to be small relative to the number of animals in the respective populations utilizing pack ice habitats in the Beaufort and Chukchi seas for polar bears or the Chukchi and Bering seas habitats for the Pacific walrus.* As stated before, the Pacific walrus is extralimital in the Beaufort Sea, since the majority of the walrus population is found exclusively in the Chukchi and Bering seas. There is no expectation that even discrete movements, such as foraging, by some individual walruses into the Beaufort Sea as a result of climate change will increase the number of walruses observed by Industry during the regulatory period.

Polar bears are expected to remain closely associated with either the sea ice or coastal zones throughout the year on the North Slope of Alaska. As a result of coastal surveys, the Service estimates a maximum of 8.0 percent and an average of 3.7 percent of the estimated 1,526 bears in the SBS population have been observed on land during the late open-water and broken-ice period. This period coincides with the peak period (August through October) of bears observed from Industry as reported through their bear monitoring programs. If not all bears were counted, this suggests that at the peak of terrestrial habitat use in early fall prior to freeze-up, up to 10 percent of the SBS polar bear population can be found near the coastal environments, while 90 percent of the bears continue to be associated with the existing pack ice.

2. *Within the specified geographical region, the footprint of authorized projects is expected to be small relative to the range of polar bear and walrus in the region.* Again, the fact that the

Pacific walrus is extralimital to the Beaufort Sea suggests that any marine operations working in the geographic area will have minimal walrus interactions within the geographic region. Indeed, only 9 walruses have been sighted by Industry operations since 1994.

Polar bears range well beyond the boundaries of the geographic region of these proposed regulations (approximately 68.9 million acres) and are transient through the regions of Industry infrastructure. As reported by AOGA, the total infrastructure area on the North Slope as of 2007 was 18,129 acres, which is a small proportion of the requested geographic region.

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. Monitoring programs are required to inform operators of the presence of polar bears or walrus. Adaptive 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. For Industry activities in terrestrial environments, where denning polar bears may be a factor, mitigation measures will require that den detection surveys be conducted and Industry will maintain at least a 1-mile distance from any known polar bear den. A full description of the mitigation, monitoring, and reporting requirements associated with an LOA, which will be requirements for Industry, can be found in 50 CFR 18.128.

We expect that only a small proportion of the Pacific walrus population or the CS and SBS polar bear populations will likely to be impacted by any individual project because: (1) Only small numbers of walruses or polar bears will occur in the marine or terrestrial environments where Industry activities will occur; (2) only small numbers will be impacted because walrus are extralimital in the Beaufort Sea and polar bears are widely distributed throughout their expansive ranges, which encompasses area outside of the geographic region of the regulations; and (3) the monitoring requirements and mitigation measures described below that will be imposed on Industry will further reduce impacts.

Negligible Effects Determination

Based upon our review of the nature, scope, and timing of the proposed oil and gas activities and mitigation measures, and in consideration of the best available scientific information, we have determined that the proposed activities will have a negligible impact on Pacific walrus and on polar bears. Factors considered in our negligible effects determination include:

1. *The behavior and distribution of walruses and polar bears utilizing areas that overlap with Industry is expected to limit the amount of interactions between walruses, polar bears, and Industry.* The distribution and habitat use patterns of walruses and polar bears in conjunction with the likely area of Industrial activity results in relatively few animals in the area of operations and, therefore, likely to be affected. As discussed in the section "Biological Information" (*see* Pacific Walrus section), only small numbers of walruses are likely to be found in Beaufort Sea open water habitats where offshore Industry activities will occur.

Throughout the year, polar bears are closely associated with pack ice and are unlikely to interact with open-water industrial activities for the same reasons discussed in the Small Numbers Determination. Likewise, polar bears from the SBS and CS populations are widely distributed and range outside of the geographic region of these regulations. In addition, through fall coastal surveys we estimated that a small proportion of the SBS population, approximately 8–10 percent, is distributed along the coastal areas during the late-summer–early-fall season.

2. *The predicted effects of proposed activities on walruses and polar bears will be nonlethal, temporary passive takes of animals.* The documented impacts of previous Industry activities on walruses and polar bears, taking into consideration cumulative effects, provides direct information that the types of activities analyzed for this rule will have minimal effects and will be short-term, temporary behavioral changes.

3. *The footprint of authorized projects is expected to be small relative to the range of polar bear and walrus populations.* As with the small numbers determination, this factor will also help minimize negligible effects of Industry on Pacific walrus and polar bears. A limited area of activity will reduce the potential to exposure of animals to Industry activities and limit potential interactions of those animals using the area, such as walrus feeding in the area or polar bears or walruses moving through the area.

4. *Mitigation measures will limit potential effects of industry activities.* As described in the Small Numbers Determination, 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. Seasonal restrictions, monitoring programs required to inform operators of the presence of marine mammals and environmental conditions, den detection surveys for polar bears, and adaptive management responses based on real-time monitoring information (described in these regulations) will be used to avoid or minimize interactions with polar bears and walruses and, therefore, limit Industry effects on these animals.

5. *The potential impacts of climate change for the duration of the regulations (2011–2016) has the potential to displace polar bears and walruses from the geographic region and during the season of Industry activity.* Climate change is likely to result in significant impacts to polar bear and walrus populations in the future. Recent models indicate that the persistence of Alaska's polar bear stocks are in doubt and will possibly disappear within 50 to 100 years due to the changing Arctic ice conditions as a result of climate change. Recent trends in the Arctic have resulted in seasonal sea-ice retreat off the continental shelf and over deep Arctic Ocean waters, presenting significant adaptive challenges to walruses. Reasonably foreseeable impacts to the Pacific walrus population as a result of diminishing sea ice cover include: Shifts in range and abundance, possibly into the Beaufort Sea; increased reliance on coastal haulouts in the Chukchi Sea; and increased mortality associated with predation and disturbance events at coastal haulouts.

Although climate change is a pressing conservation issue for ice-dependent species, such as polar bears and walruses, we have concluded that the activities proposed by Industry and addressed in this 5-year rule will not adversely impact the survival of these species. One likely response to near-term climate-driven change (retreat of sea ice) will result in each species utilizing areas, such as coastal haulouts by walrus and the ice shelf by a continued majority of the polar bear population, outside of the geographic region and proposed areas of Industrial activity. While the Service suspects that a certain portion of the bear population using coastal habitats (currently 8–10 percent of the SBS population) will increase and associate with terrestrial habitats longer, the types of effects as a

result of Industry interaction will be short-term behavioral changes.

We, therefore, conclude that any incidental take reasonably likely to or reasonably expected to occur as a result of carrying out any of the activities authorized under these regulations will have no more than a negligible effect on polar bears and Pacific walruses using the Beaufort Sea region, and we do not expect any resulting disturbances to negatively impact the rates of recruitment or survival for the polar bears and Pacific walrus populations. These regulations do not authorize lethal take, and we do not anticipate that any lethal take will occur.

Findings

We propose the following findings regarding this action:

Small Numbers

Pacific Walrus

Pacific walruses are extralimital in the SBS and, hence, there is a very low probability that Industry activities, including offshore drilling operations, seismic, and coastal activities, will adversely affect the Pacific walrus population. Given the low numbers in the region, we anticipate no more than a small number of walruses are likely to be taken during the length of this rule. We do not anticipate the potential for any lethal take from normal Industry activities. Therefore, we do not anticipate any detrimental effects on recruitment or survival.

We estimate that the projected number of takes of Pacific walruses by Industry will be no more than 10 takes by harassment per year. Takes will be Level B harassment, manifested as short-term behavioral changes. This take estimate is based on historic Industry monitoring observations. In addition, based on the projected level of exploration activity, it is unlikely that the number of takes will increase significantly in the next 5 years.

Polar Bear

Standard operating conditions for Industry exploration, development, and production activities have the potential to incidentally take polar bears. Recent reporting data from the current ITRs indicates that an annual average of 306 polar bears have been observed during Industry activities. Some of these observations are likely sightings of the same bears due to the inability to distinguish between animals in some observations. While the majority of observations are sightings where no interaction between bears and Industry occurs (81 percent of all bear observations from 2006 to 2009: USFWS unpubl. data), takes by harassment do occur. Takes by harassment can be described as either: (1) Deterrence events (15 percent of all bear observations from 2006 to 2009: USFWS unpubl. data); and (2) those occasions when there is clear evidence that the bear's behavior has been altered through events other than deterrence (4 percent of all bear observations from 2006 to 2009: USFWS unpubl. data).

Small takes of this nature are allowed through LOAs. According to industry monitoring data, the number of Level B takes (deterrence events and behavioral change events), averaged 66 occurrences per year from 2006 to 2009 (67 takes in 2006, 64 takes in 2007, 33 takes in 2008, and 101 takes in 2009).

Using this data, we anticipate that the total number of takes of polar bears by all Level B harassment events will not exceed 150 per year. All anticipated takes will be nonlethal Level B harassment, involving only temporary changes in bear behavior. The required mitigation and monitoring measures described in the regulations are expected to prevent injurious Level A takes. The number of lethal takes is projected to be zero. We do not expect the total of these disturbances to affect rates of recruitment or survival in the SBS polar bear population.

Negligible Impact

Based on the best scientific information available, the results of monitoring data from our previous regulations (16 years of monitoring and reporting data), 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 oil and gas related exploration, development, and production activities during the period of the rule, in the Beaufort Sea and adjacent northern coast of Alaska, will have no more than a negligible impact on polar bears and Pacific walruses. In making this finding, we considered the following:

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

(2) The biological characteristics of the species (through bio-monitoring for toxic chemicals, studies of den site behavior, radio-telemetry data);

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

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

(5) The probability of oil spills occurring;

(6) The documented impacts of Industry activities on the species taking into consideration cumulative effects (through FLIR surveys, the use of trained dogs to detect occupied dens, a bear–human conflicts workshop, a study assessing sound levels and of industrial noise and potential noise and vibration exposure for dens, and data mapping den habitat);

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

(8) The existing and proposed mitigation measures designed to minimize Industry impacts through adaptive management; and

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

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

> If potential effects of a specified activity are conjectural or speculative, a finding of negligible impact may be appropriate. A finding of negligible impact may also be appropriate if the probability of occurrence is low but the potential effects may be significant. In this case, the probability of occurrence of impacts must be balanced with the potential severity of harm to the species or stock when determining negligible impact. In applying this balancing test, the Service will thoroughly evaluate the risks involved and the potential impacts on marine mammal populations. Such 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)].

Pacific walruses are only occasionally found during the open-water season in the Beaufort Sea. The Beaufort Sea polar bear population is widely distributed throughout its range. A small percentage (less than 10 percent) of the SBS polar bear population typically occurs in coastal and nearshore areas where most Industry activities happen.

We reviewed the effects of the oil and gas Industry activities on polar bears and Pacific walruses, including impacts from noise, physical obstructions, human encounters, and oil spills. Based on our review of these potential impacts, past LOA monitoring reports, and the biology and natural history of Pacific 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 polar bear and Pacific walrus populations. Furthermore, we do not expect these disturbances to affect the rates of recruitment or survival for the Pacific 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 Pacific walruses and polar bears appears extremely low. We have included potential spill information from Oooguruk, Nikaitchuq, Northstar, and Endicott/Liberty offshore projects in our oil spill analysis to analyze multiple offshore sites. We have analyzed the likelihood of an oil spill in the marine environment of the magnitude necessary to kill 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. 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 proposed 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 SBS polar bear and Pacific walrus populations inhabiting the Beaufort Sea area on the North Slope coast of Alaska.

Our finding of "negligible impact" applies to incidental take associated with proposed 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.

Conditions are attached to each LOA. These conditions minimize interference with normal breeding, feeding, and possible migration patterns to ensure that the effects to the species remain negligible. Conditions include: (1) These regulations do not authorize intentional taking of polar bear or Pacific walruses or lethal incidental take; (2) for the protection of pregnant polar bears during denning activities (den selection, birthing, and maturation of cubs) in known denning areas, Industry activities may be restricted in specific locations during specified times of the year; and (3) each activity covered by an LOA requires a site-specific plan of operation and a site-specific polar bear interaction plan. We may add additional measures depending upon site-specific and species-specific concerns. Restrictions in denning areas will be applied on a case-by-case basis after assessing each LOA request and may require pre-activity surveys (*e.g.,* aerial surveys, FLIR surveys, or polar bear scent-trained dogs) to determine the presence or absence of denning activity and, in known denning areas, may require enhanced monitoring or flight restrictions, such as minimum flight elevations, if necessary. We will analyze the required plan of operation and interaction plans to ensure that the level of activity and possible take are consistent with our finding that total incidental takes will have a negligible impact on polar bear and Pacific walruses and, where relevant, will not have an unmitigable adverse impact on the availability of these species for subsistence uses.

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

Within the described geographic region of this rule, Industry effects on Pacific 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 slight 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 that Industry may have to implement mitigation measures more often, for example, 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.

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

Although Pacific walruses are relatively rare in the Beaufort Sea, the Service and USGS are conducting multiyear studies on the 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, more walruses will migrate east into the Beaufort Sea.

Impact on Subsistence Take

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 polar bears and Pacific walruses for taking for subsistence uses during the period of the rule. In making this finding, we considered the following: (1) Records on subsistence harvest from the Service's Marking, Tagging and Reporting Program; (2) community consultations; (3) effectiveness of the POCs between Industry and affected Native communities; and (4) anticipated 5-year effects of Industry activities on subsistence hunting. In addition, our findings also incorporated the results of coastal aerial surveys conducted within the area during the past 7 years, upon direct observations of polar bears occurring near bowhead whale carcasses on Barter Island and on Cross Island during the villages of Kaktovik and Nuiqsut's annual fall bowhead whaling efforts, respectively, and upon anecdotal reports of North Slope residents.

Polar bear and Pacific walruses represent a small portion, in terms of the number of animals, of the total subsistence harvest for the villages 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 polar bear or Pacific walruses 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 polar bears or walruses for subsistence uses. However, should such a concern be voiced as Industry continues to reach out to the Native communities, development of Plans of Cooperation, which must identify measures to minimize any adverse effects, will be required. The POC will ensure that oil and gas activities will continue not to 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 polar bear and walruses, as warranted.

The Service has not received any reports and is aware of no information that indicates that bears or walruses are being or will be deflected from hunting areas or impacted in any way that diminishes their availability for subsistence use by the expected level of 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 polar bear or walruses 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 polar bears and walruses to ensure that take is consistent with that anticipated in the negligible impact and subsistence use analyses, and to detect any unanticipated effects on the species. Monitoring plans document when and how bears and walruses are encountered, the number of bears and walruses, and their behavior during the encounter. This information allows the Service to measure encounter rates and trends of bear and walrus activity in the industrial areas (such as numbers and gender, activity, seasonal use) and to estimate numbers of animals potentially affected by Industry. Monitoring plans are site-specific, dependent on the proximity of the activity to important habitat areas, such as den sites, travel corridors, and food sources; however, all activities are required to report all sightings of polar bears and walruses. To the extent possible, monitors will record group size, age, sex, reaction, duration of interaction, and closest approach to Industry. Activities within the coast of the geographic region may incorporate daily watch logs as well, which record 24-hour animal observations throughout the duration of the project. Polar bear monitors 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 are summarized and reported in a formal report each year. The applicant must submit an annual monitoring and reporting plan at least 90 days prior to the initiation of a proposed activity, and the applicant must submit a final monitoring report to us no later than 90 days after the completion of the activity. We base each year's monitoring objective on the previous year's monitoring results.

We require an approved plan for monitoring and reporting the effects of oil and gas Industry exploration, development, and production activities on polar 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.

Treaty Obligations

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

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

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

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

This rule is also consistent with the Service's treaty obligations because it incorporates mitigation measures that ensure the protection of polar bear habitat. LOAs for industrial activities are conditioned to include area or seasonal timing limitations or prohibitions, such as placing 1-mile

avoidance buffers around known or observed dens (which halts or limits activity until the bear naturally leaves the den), building roads perpendicular to the coast to allow for polar bear movements along the coast, and monitoring the effects of the activities on polar bears. Available denning habitat maps are provided by the USGS.

Public Comments Solicited

We intend that any final action resulting from this proposal will be as accurate and as effective as possible. Therefore, we solicit comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning this proposed rule.

If you wish to comment, you may submit your comments and materials concerning this proposal by any one of several methods, as listed above in **ADDRESSES**. If you submit comments by e-mail, please submit them as an ASCII file format and avoid the use of special characters and encryption. Please include "Attn: Docket No. FWS–R7–FHC–2010–0098" and your name and return address in your e-mail message. Please note that this e-mail address will be closed out at the termination of the public comment period. Before including your address, phone number, e-mail 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 view, we cannot guarantee that we will be able to do so.

Clarity of the Rule

Executive Order 12866 requires each agency to write regulations that are easy to understand. We invite your comments on how to make this rule easier to understand, including answers to questions such as the following:

(1) Are the requirements in the rule clearly stated?

(2) Does the rule contain technical language or jargon that interferes with its clarity?

(3) Does the format of the rule (grouping and order of sections, use of headings, paragraphing, etc.) aid or reduce its clarity?

(4) Would the rule be easier to understand if it were divided into more (but shorter) sections? (A "section" appears in bold type and is preceded by the symbol "Sec." and a numbered heading; for example, § 18.123. When is this subpart effective?)

(5) Is the description of the rule in the "Supplementary Information" section of the preamble helpful in understanding the proposed rule?

(6) What else could we do to make the rule easier to understand?

Before including your address, phone number, e-mail 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 view, we cannot guarantee that we will be able to do so.

Required Determinations

National Environmental Policy Act (NEPA) Considerations

We have prepared a draft Environmental Assessment (EA) in conjunction with this rulemaking. Subsequent to closure of the comment period for this proposed rule, we will decide whether this rulemaking is a major Federal action significantly affecting the quality of the human environment within the meaning of Section 102(2)(C) of the NEPA of 1969. For a copy of the draft EA, go to *http://www.regulations.gov* and search for Docket No. FWS–R7–FHC–2010–0098 or contact the individual identified above in the section **FOR FURTHER INFORMATION CONTACT.**

Endangered Species Act

On May 15, 2008, the Service listed the polar bear as a threatened species under the ESA (73 FR 28212) and on December 7, 2010 (75 FR 76086), the Service designated critical habitat for polar bear populations in the United States, effective January 6, 2011. Section 7(a)(1) and (2) of the ESA (16 U.S.C. 1536(a)(1) and (2)) direct the Service to review its programs and to utilize such programs in the furtherance of the purposes of the ESA and to ensure that a proposed action is not likely to jeopardize the continued existence of an ESA-listed species or result in the destruction or adverse modification of critical habitat. Consistent with these statutory requirements, the Service's Marine Mammal Management Office has initiated Intra-Service section 7 consultation over these regulations with the Service's Fairbanks' Ecological Services Field Office.

Regulatory Planning and Review

The Office of Management and Budget (OMB) has determined that this rule is not significant and has not reviewed this rule under Executive Order 12866 (E.O. 12866). OMB 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.

Small Business Regulatory Enforcement Fairness Act

We have determined that this rule is not a major rule under 5 U.S.C. 804(2), the Small Business Regulatory Enforcement Fairness Act. The rule is 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 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. Therefore, a Regulatory Flexibility Analysis is not required. In addition, these potential applicants have not been identified as small businesses and, therefore, a Small Entity Compliance Guide is not required. The analysis for this rule is available from the individual identified above in **FOR FURTHER INFORMATION CONTACT**.

Takings Implications

This 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 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 Tribes

In accordance with the President's memorandum of April 29, 1994, "Government-to-Government Relations with Native American Tribal Governments" (59 FR 22951), Executive Order 13175, Secretarial Order 3225, and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with federally recognized Tribes on a Government-to-Government basis. We have evaluated possible effects on federally recognized Alaska Native tribes. Through the LOA process identified in the regulations, Industry presents a POC with the Native communities most likely to be affected and engages these communities in numerous informational meetings.

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

The Service also has ongoing cooperative relationships with the North Slope Borough 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 regulations do not unduly burden the judicial system and meet the applicable standards provided in Sections 3(a) and 3(b)(2) of Executive Order 12988.

Paperwork Reduction Act

This rule contains information collection requirements. We may not conduct or sponsor and a person is not required to respond to a collection of information unless it displays a currently valid Office of Management and Budget (OMB) control number. The Information collection requirements included in this rule are approved by the OMB under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). The OMB control number assigned to these information collection requirements is 1018–0070, which expires on January 31, 2014. This control number covers the information collection, recordkeeping, and reporting requirements in 50 CFR 18, subpart 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 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 rule will have a positive effect on Industry and its activities. Although the 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 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 rule, see Docket No. FWS–R7–FHC–2010–0098, 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.

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, and Production Activities in the Beaufort Sea and Adjacent Northern Coast of Alaska

Sec.

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

§ 18.121 What specified activities does this subpart cover?

Regulations in this subpart apply to the nonlethal incidental, but not intentional, take of small numbers of

polar bear and Pacific walrus by you (U.S. citizens as defined in § 18.27(c)) while engaged in oil and gas exploration, development, and production activities in the Beaufort Sea and adjacent northern coast of Alaska.

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

This subpart applies to the specified geographic region defined by all Beaufort Sea waters east of a north-south line through Point Barrow (71°23′29″ N., −156 °28′30″ W., BGN 1944), and up to 200 miles north of Point Barrow, including all Alaska coastal areas, State waters, and Outer Continental Shelf waters east of that line to the Canadian border. The onshore region is the same north/south line at Barrow, 25 miles inland and east to the Canning River. The Arctic National Wildlife Refuge is not included in the area covered by this subpart. Figure 1 shows the area where this subpart applies.

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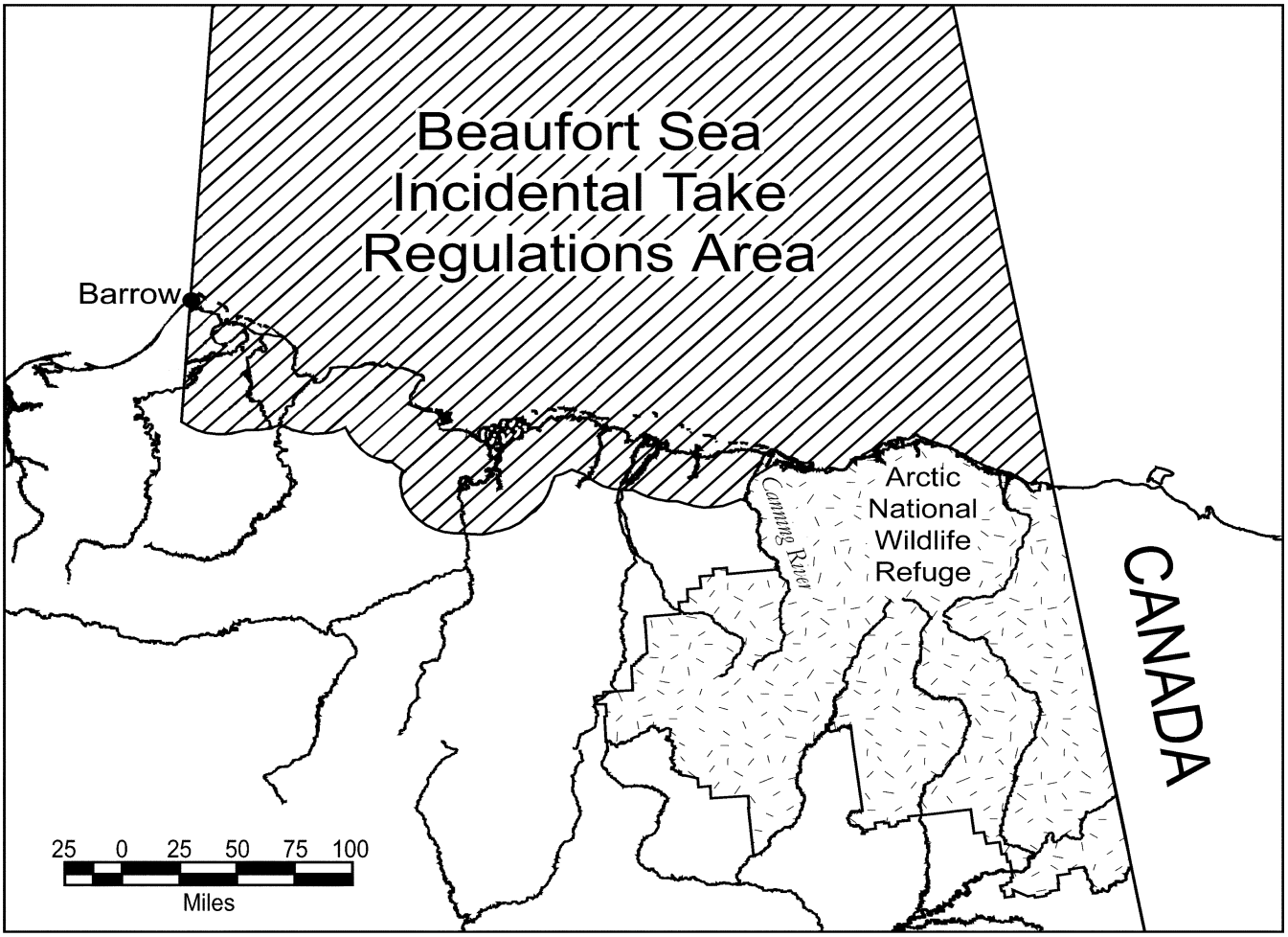

Figure 1. Specific geographic area covered by the Beaufort Sea incidental take regulations.

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§ 18.123 When is this subpart effective?

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

§ 18.124 How do I obtain a Letter of Authorization?

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

(b) If you are conducting an oil and gas exploration, development, or production activity in the specified geographic region described in § 18.122 that may cause the taking of polar bears or Pacific walruses in execution of those activities and you want nonlethal incidental take authorization under this rule, you must apply for a Letter of Authorization for each exploration activity or a Letter of Authorization for activities in each development or production area. You must submit the application for authorization to our Alaska Regional Director (see 50 CFR 2.2 for address) at least 90 days prior to the start of the proposed activity.

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

(1) A description of the activity, the dates and duration of the activity, the

specific location, and the estimated area affected by that activity, *i.e.,* a plan of operation.

(2) A site-specific plan to monitor the effects of the activity on the behavior of polar bears and Pacific walruses that may be present during the ongoing activities (*i.e.,* marine mammal monitoring and mitigation plan). Your monitoring program must document the effects to these marine mammals and estimate the actual level and type of take. The monitoring requirements provided by the Service will vary depending on the activity, the location, and the time of year.

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

(4) A Plan of Cooperation (POC) to mitigate potential conflicts between the proposed activity and subsistence hunting, where relevant. Applicants must consult with potentially affected subsistence communities along the Beaufort Sea coast (Kaktovik, Nuiqsut, and Barrow) and appropriate subsistence user organizations (the Eskimo Walrus Commission and the Alaska Nanuuq (polar bear) Commission) to discuss the location, timing, and methods of proposed operations and support activities and identify any potential conflicts with subsistence walrus and polar bear hunting activities in the communities. Applications for Letters of Authorization must include documentation of all consultations with potentially affected user groups. Documentation must include a summary of any concerns identified by community members and hunter organizations, and the applicant's responses to identified concerns. Some of these measures may include, but are not limited to, mitigation measures described in § 18.128.

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

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

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

(c) The requirement for notice and public comment in paragraph (b) of this section will not apply 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 What does a Letter of Authorization allow?

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

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

(2) Drilling exploratory wells and associated activities;

(3) Developing oil fields and associated activities;

(4) Drilling production wells and performing production support operations;

(5) Conducting environmental monitoring activities associated with exploration, development, and production activities to determine specific impacts of each activity;

(6) Conducting restoration, remediation, demobilization programs, and associated activities.

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

§ 18.127 What activities are prohibited?

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

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

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

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

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

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

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

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

(B) A food and waste management plan;

(C) Personnel training materials and procedures;

(D) Site at-risk locations and situations;

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

(F) Bear and walrus avoidance and encounter procedures.

(iv) All applicants for a Letter of Authorization must contact affected subsistence communities to discuss potential conflicts caused by location, timing, and methods of proposed operations and submit to us a record of communication that documents these discussions. If appropriate, the applicant for a Letter of Authorization must also submit to us a POC that ensures that activities will not interfere with subsistence hunting and that adverse effects on the availability of polar bear or Pacific walruses are minimized (see § 18.124(c)(4)).

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

(2) *Onshore activities. Efforts to minimize disturbance around known polar bear dens.*—Holders of a Letter of Authorization must take efforts to limit

disturbance around known polar bear dens.

(i) *Efforts to locate polar bear dens.*—Holders of a Letter of Authorization seeking to carry out onshore exploration activities in known or suspected polar bear denning habitat during the denning season (November–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.

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

(iii) The use of 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/pubs.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.

(iv) Restricting the timing of the activity to limit disturbance around dens.

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

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

(iii) Vessel operators must take every precaution to avoid harassment of concentrations of feeding walruses when a vessel is operating near these animals. Vessels should reduce speed and maintain a minimum 805-m (0.5-mi) operational exclusion zone around 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.

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

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

(vi) The use of trained marine mammal monitors associated with marine activities. We may require a monitor 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.

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

(ii) Under no circumstances, other than an emergency, should aircraft operate at an altitude lower than 305 m (1,000 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 305-m (1,000-ft) flying altitude, such as during severe storms or when cloud cover is low, aircraft may be operated below the 305-m (1,000-ft) altitude stipulated above. However, when aircraft are operated at altitudes below 305 m (1,000 ft) because of weather conditions, the operator must avoid areas of known walrus and polar bear concentrations and should take precautions to avoid flying directly over or within 805 m (0.5 mile) of these areas.

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

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

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

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

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

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

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

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

shut down the seismic airgun array and/or other acoustic sources.

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

(v) *Adaptive response for walrus aggregations.* Whenever an aggregation of 12 or more walruses are detected within an acoustically verified 160-dB re 1 μPa disturbance zone ahead of or perpendicular to the seismic vessel track, the holder of this Authorization must:

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

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

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

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

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

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

(B) 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.

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

(b) *Monitoring.* Depending on the location, timing, and nature of proposed activities, holders of Letters of Authorization will be required to:

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

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

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

(2) Develop and implement a site-specific, Service approved, marine mammal monitoring and mitigation plan to monitor and evaluate the effects of authorized activities on polar bears, walruses, and the subsistence use of these resources. The marine mammal monitoring and mitigation plan must enumerate the number of walruses and polar bears encountered during specified activities, estimate the number of incidental takes that occurred during specified exploration activities, and evaluate the effectiveness of prescribed mitigation measures.

(3) Cooperate with the Service and other designated Federal, State, and local agencies to monitor the impacts of oil and gas activities in the Beaufort Sea on walruses or polar bears. Where insufficient information exists to evaluate the potential effects of proposed activities on walruses, polar bears, and the subsistence use of these resources, holders of Letters of Authorization may be required to participate in joint monitoring and/or research efforts to address these information needs and insure the least practicable impact to these resources. Information needs in the Beaufort Sea include, but are not limited to:

(i) Distribution, abundance, and habitat use patterns of polar bears, and to a lesser extent walruses in offshore environments; and

(ii) Cumulative effects of multiple simultaneous operations on polar bears and to a lesser extent walruses.

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

(1) For exploratory and development activities, holders of a Letter of Authorization must submit a report to our Alaska Regional Director (Attn: Marine Mammals Management Office) within 90 days after completion of activities. For production activities, holders of a Letter of Authorization must submit a report to our Alaska Regional Director (Attn: Marine Mammals Management Office) by January 15 for the preceding year's activities. Reports must include, at a minimum, the following information:

(i) Dates and times of activity;

(ii) Dates and locations of polar bear or Pacific walrus activity as related to the monitoring activity; and

(iii) Results of the monitoring activities required under subsection (iv) of this section, including an estimated level of take.

(iv) Monitoring requirements include, but are not limited to:

(A) For all activities, all sightings of polar bears must be recorded. Information within the sighting report will include, but is not limited to:

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

(2) Number of bears: sex and age;

(3) Observer name and contact information;

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

(5) Estimated closest point of approach for bears from personnel and facilities;

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

(7) Bear behavior;

(8) Description of the encounter;

(9) Duration of the encounter; and

(10) Actions taken.

(v) Activities within the coast of the geographic region may incorporate daily polar bear watch logs.

(2) *In-season monitoring reports for offshore exploration activities*—(i) *Activity progress reports.* Operators must keep the Service informed on the progress of authorized activities by:

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

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

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

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

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

(B) Number of walruses: sex and age;

(C) Observer name and contact information;

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

(E) Estimated range at closest approach;

(F) Industry activity at time of sighting;

(G) Behavior of animals sighted;

(H) Description of the encounter;

(I) Duration of the encounter; and

(J) Actions taken.

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

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

(B) Number of bears: sex and age;

(C) Observer name and contact information;

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

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

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

(G) Bear behavior;

(H) Description of the encounter;

(I) Duration of the encounter; and

(J) Actions taken.

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

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

(B) Observations of walruses or polar bears within prescribed mitigation-monitoring zones to the Service within 24 hours.

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

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

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

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

(iv) Estimates of take based on density estimates derived from monitoring and survey efforts.

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

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

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

(b) You should direct comments regarding the burden estimate or any other aspect of this requirement to the Information Collection Clearance Officer, U.S. Fish and Wildlife Service, Department of the Interior, Mail Stop 222 ARLSQ, 1849 C Street, NW., Washington, DC 20240.

Date: February 2, 2011.

Thomas L. Strickland,

Assistant Secretary for Fish and Wildlife and Parks.

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