OCS EIS/EA

BOEM 2015-043

Final Rule for Oil and Gas and Sulfur Operations in the Arctic Outer Continental Shelf for 30 CFR Parts 250, 254, and 550

Final Environmental Assessment

U.S. Department of the Interior
Bureau of Ocean Energy Management
Bureau of Safety and Environmental Enforcement
Sterling, VA

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Acronyms and Abbreviations

AAQS	Ambient Air Quality Standards
APD	Application for Permit to Drill
APM	Application for Permit to Modify
bbl	barrel
BOEM	Bureau of Ocean Energy Management
BOP	blowout preventer
BSEE	Bureau of Safety and Environmental Enforcement
CFR	Code of Federal Regulations
EA	Environmental Assessment
EFH	Essential Fish Habitat
EP	Exploration Plan
ESA	Endangered Species Act of 1973
IOP	Integrated Operations Plan
km	kilometer
mi	mile
NAA	No Action Alternative
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NMFS	National Marine Fisheries Service
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
MODU	Mobile Offshore Drilling Unit
OCS	Outer Continental Shelf
PAA	Proposed Action Alternative
PEIS	Programmatic Environmental Impact Statement
SCCE	Source Control and Containment Equipment
Secretary	Secretary of the United States Department of the Interior
SEMS	Safety and Environmental Management System
USDOI	United States Department of the Interior
USCG	United States Coast Guard
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

Chapter 1 Introduction

Pursuant to the National Environmental Policy Act of 1969 (NEPA), this environmental assessment (EA) was prepared to determine if the promulgation of a final rule for oil and gas exploration drilling on the U.S. Arctic Outer Continental Shelf (OCS) would have a significant effect on the human environment.

1.1 Background and Overview

The Outer Continental Shelf Lands Act (OCSLA) directs the Secretary of the U.S. Department of the Interior (USDOI) to manage the orderly leasing, exploration, development, and production of energy and mineral resources on the OCS. The Secretary has delegated to the Bureau of Ocean Energy Management (BOEM) the responsibility for overseeing certain aspects of the OCS oil and gas program, including, among other things, management of the leasing program, administration of exploration and development plans, environmental studies and analyses under NEPA, resource evaluation, and economic analyses. The Secretary has delegated to the Bureau of Safety and Environmental Enforcement (BSEE) the responsibility for the development, oversight, and enforcement of safety and environmental standards for OCS energy and mineral operations. BSEE's activities include issuance and monitoring of permits related to drilling; well workover activities; production, development and measurement operations; pipelines; the inspection of offshore structures and facilities; monitoring of environmental hazards; and the mitigation of safety and environmental risks. BOEM and BSEE fulfill their responsibilities within the context of several relevant statutory and regulatory regimes, as well as executive orders and other policy guidance. BOEM and BSEE have promulgated extensive regulations governing oil and gas exploration drilling on the OCS at Title 30 Code of Federal Regulations (CFR) Parts 250, 254, and 550, which are being amended by the present rule making.

The final rule is informed by the measures required by BOEM and BSEE during exploration drilling of the Burger and Sivulliq/Torpedo prospects in the Chukchi and Beaufort Seas in 2012 and 2015; USDOI's review of 2012 operations (USDOI, BOEM, and BSEE, 2013); engagement with Arctic partners and stakeholders, such as the Arctic Council; consideration of the development of potential domestic energy resources from the Arctic OCS; and comments received during the comment period on the proposed rulemaking.

The final rule is designed to enhance BSEE's and BOEM's abilities to fulfill their regulatory responsibilities on the Arctic OCS, consistent with the added challenges associated with exploratory drilling activities in that environment. The final rule would amend and add new provisions for exploratory drilling on the Arctic OCS designed to (a) prevent pollution; (b) reduce the chance of oil spills occurring; (c) reduce the size and duration of any spills that do occur; (d) enhance the effectiveness of spill response; (e) improve operational planning; and (f) enhance overall operational safety. In addition, this final rule would also help protect the Arctic ecosystems as well as the subsistence needs, culture, and traditions of Alaska Native communities, while achieving the National Strategy for the Arctic Region (President of the United States, 2013) goal of reducing reliance on imported oil and strengthening national energy

security.

1.2 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of promulgating these final regulations is to improve safety, operator performance, environmental safeguards, and protection of Alaska Native subsistence activities, cultural traditions, and the Arctic ecosystem during exploratory drilling operations on the Arctic OCS. The U.S. Arctic region, as recognized and defined in the U.S. Arctic Research and Policy Act of 1984, encompasses an extensive marine and terrestrial area; however, this final rule focuses solely on the OCS within the Beaufort Sea and Chukchi Sea Planning Areas.

The proposed action is needed to address the operational challenges, safety concerns, and environmental and sociocultural risks unique to exploration drilling, the ecosystem, and subsistence uses on the Arctic OCS. See Section 5.1 for further information about exploratory activities. The Arctic OCS is known for its challenging environmental conditions, geographic remoteness, and relative lack of existing infrastructure. BOEM and BSEE have undertaken an extensive environmental and safety review of potential oil and gas operations in the Arctic region (USDOI, BOEM, and BSEE, 2013). Arctic OCS operations can be complex, posing substantial challenges and operational risks throughout every phase of an exploratory drilling program. Accordingly, BOEM and BSEE have concluded that new and enhanced regulations, providing greater clarity and specificity, are necessary and appropriate for Arctic OCS operators who propose to conduct exploratory drilling activities in this unique environment.

Chapter 2 Proposed Action and Alternatives

This section presents and compares alternatives analyzed, and also provides the rationale for why another alternative was considered, but not analyzed, by BOEM and BSEE (see Section 2.4).

2.1 Alternative A – Proposed Action Alternative (PAA)

The Proposed Action Alternative (PAA), which is the preferred alternative, is to promulgate final regulations applicable to exploration drilling activities on the Arctic OCS. BOEM and BSEE are proposing a final rule that revises and creates additional regulatory provisions, specifically tailored to exploratory drilling under Arctic OCS conditions. The final rule would apply only to exploratory drilling activities on the Arctic OCS. These new regulations are intended to enhance safety and to reduce the environmental and sociocultural impacts of these activities. Under this alternative, the provisions outlined in Appendix A would be promulgated in a final rule. The final rule would modify the regulations under 30 CFR Parts 250, 254, and 550, to include new and revised sections that clarify existing requirements and incorporate new and improved planning, drilling, and safety requirements. Section 5.1 and Appendix A provide more detailed descriptions of the final rule. Alternative A no longer includes the requirement for blowout preventer (BOP) testing every seven days; the testing requirement was initially considered in the proposed rulemaking and in Alternative A in the Draft EA.

2.2 Alternative B – Include the Requirement for More Frequent Blowout Preventer Testing

Alternative B is the same as the PAA, except that it would require a BOP pressure test for exploratory drilling operations every seven days rather than every 14 days, as is currently required by existing regulations (30 CFR 250.447). All other provisions of the PAA would be promulgated under Alternative B. Alternative B was revised in the Final EA to include more frequent BOP testing since Alternative A was revised to exclude the same requirement.

2.3 Alternative C – No Action Alternative (NAA)

Under the No Action Alternative (NAA), the final rule would not be promulgated. The existing rules at 30 CFR Parts 250, 254, and 550 would remain in place, unaltered.

2.4 Alternative Considered But Not Analyzed

BOEM and BSEE also considered another alternative that would eliminate the following provisions of the final rulemaking:

§ 250.300	Pollution prevention.
§ 250.471	What are the requirements for Arctic OCS source control and containment?
§ 250.472	What are the relief rig requirements for the Arctic OCS?

Exclusion of these provisions would avoid modest environmental impacts associated with the use of additional vessels and equipment that would be required for compliance with these provisions. However, such an alternative would fall far short of meeting the purpose of, and need for, the final rule. Absent the precautionary provisions to reduce pollution potential, reacquire control of and contain a loss of well control, and reduce the time necessary to mobilize and drill a relief well, the final rule would not yield the targeted degree of enhancements compared to the NAA. Therefore, BOEM and BSEE did not undertake a more detailed analysis of this alternative.

Chapter 3 Geographic Areas

The final rule applies to exploration drilling activities in the Chukchi Sea and Beaufort Sea Planning Areas of the Arctic OCS (see Figure 1). Before an OCS operator may propose exploratory drilling, an operator first needs a valid lease or leases. Thereafter, exploration drilling may occur only under an approved Exploration Plan (EP) and Application for Permit to Drill (APD). As of June 27, 2016, there were 63 active leases in the Chukchi Sea and Beaufort Sea Planning Areas (62 in the Beaufort Sea and 1 in the Chukchi Sea).

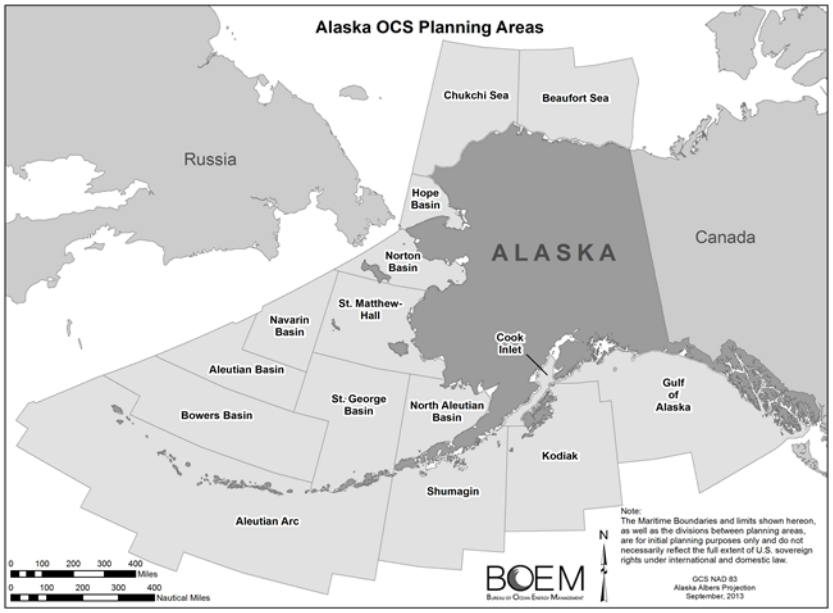

Figure 1. Alaska OCS Planning Areas

Every five years, BOEM announces a schedule of oil and gas lease sales indicating the size, timing, and location of proposed leasing activity that the Secretary determines will best meet national energy needs for the five-year period following its approval. In the Alaska OCS Region, only the Chukchi Sea, Beaufort Sea, and Cook Inlet Planning Areas are included in the 2012-2017 Outer Continental Shelf Oil & Gas Leasing Program (Five Year Program), or proposed in the 2017-2022 OCS Oil and Gas Leasing Program (under development). In 2015, the Department of Interior cancelled lease sales in the Chukchi and Beaufort seas, previously scheduled for 2016 and 2017, respectively. Currently, there are no active Alaska OCS leases outside of the Beaufort Sea and Chukchi Sea Planning Areas.

The final rule does not apply to activities in the Cook Inlet Planning Area, because the Cook Inlet OCS typically does not have the same degree of harsh, cold, frozen, and ice conditions as the Arctic OCS. These conditions in the Arctic make exploration operations more difficult and prone to certain types of accidents, which the final rule is specifically designed to prevent or minimize. Furthermore, the Arctic OCS is more remote from infrastructure, ports, and facilities needed in case of emergencies, and these factors necessitate the stringent requirements in the final rule.

Chapter 4 Affected Environment

The environmental and sociocultural resources present in the Beaufort Sea and Chukchi Sea Planning Areas are briefly summarized below. This EA incorporates by reference and summarizes relevant information from the *Outer Continental Shelf Oil & Gas Leasing Program: 2012-2017, Final Programmatic Environmental Impact Statement* (herein referred to as the Five Year PEIS) (USDOI, BOEM, 2012). We use this reference document to describe the affected environment since it spans both Chukchi Sea and Beaufort Sea Planning Areas and provides a level of detail proportional to the analysis herein. Page numbers from this principal reference are provided in parentheses. Additional information about Arctic resources can also be found in the Chukchi Sea Planning Area, Sale 193 Final Second Supplemental Environmental Impact Statement (USDOI, BOEM, 2015a).

4.1 AIR QUALITY

There are few industrial emissions sources in Alaska, and (outside of Anchorage and Fairbanks) no sizable population centers. Barrow — with a year 2014 population of about 4,500 — is the largest community in North Slope Borough, which borders the Beaufort Sea and Chukchi Sea Planning Areas. The existing air quality in Alaska is considered to be relatively pristine, with pollutant concentrations in most areas well within the National Ambient Air Quality Standards (NAAQS). The primary industrial emissions in Alaska are associated with oil and gas production, power generation, small refineries, pulp mills, and mining.

However, the Arctic region does experience air pollution problems due to long-range transport of air pollutants from industrial northern Eurasia and North America, including Arctic haze followed by acidic depositions, tropospheric ozone, and buildup of toxic substances such as mercury or persistent organic compounds. Local shipping emissions and summertime boreal forest fires also could be important pollution sources in the Arctic. In addition, large haze events in the Arctic can be caused by Asian dust originating from the Gobi and Taklamakan Deserts in Mongolia and northern China in springtime (pp. 3-66, 3-67, and 3-388).

Over most of the onshore areas bordering the Chukchi Sea and Beaufort Sea Planning Areas, there are only a few small, widely scattered emissions sources. The only major local sources of industrial emissions are in the Prudhoe Bay-Kuparuk-Endicott-Alpine oil production complex. With few industrial emissions sources, the region is well within the NAAQS and State of Alaska Ambient Air Quality Standards (AAQS).

4.2 WATER QUALITY

In Alaska, there are several seasonal or occasional natural events that affect to water quality and to which natural systems are adapted. Examples of these events include release of hydrocarbons from natural oil seeps, sediment suspension and deposition from natural coastal erosion, sediment suspension and deposition derived from glacial-fed rivers and other rivers, and nutrient and metals loading from river flooding, volcanic eruptions, and rock erosion (p. 3-42).

Water quality on the Alaska OCS has received relatively little contribution from the more

common land-based and marine anthropogenic pollution found in the lower 48 States. The rivers that originate in Alaska and flow into coastal marine waters remain fairly unpolluted by human activities. Industrial and shipping impacts on water quality have been, and remain, relatively low at this time, with some notable exceptions such as the *Exxon Valdez* oil spill in 1989. There are, however, several sources of anthropogenic contaminants in the Alaska marine environment. These sources enter the Arctic marine ecosystem through atmospheric deposition, discharges to the sea, drifting sea ice, or directly from accidental or intentional dumping of pollutants (p. 3-42).

In both the Chukchi and Beaufort Seas, water quality is relatively pristine. One of the contributing factors is the limited municipal and industrial activity proximate to these seas. Degradation of water quality, where it occurs in the Arctic, is related largely to aerosol deposition and localized anthropogenic pollution from, for example, mining facilities and former military facilities (p. 3-45).

Background hydrocarbon concentrations in Beaufort Sea waters appear to be biogenic and on the order of less than 1 part per billion. Recent studies of sediments in Beaufort Lagoon, located in the eastern portion of the Arctic coast, have indicated that no anthropogenic hydrocarbon or metals contamination exists. These sediment data serve as a baseline against which to evaluate impacts to nearshore sediments from anthropogenic activities. Hydrocarbon concentrations in sediments of the Beaufort Sea are relatively high compared with other nonpolluted marine areas; however, examination of sediment cores gives little indication that oil and gas activities in the area have measurably contaminated the sediments (pp. 3-47 and 3-48).

Considering the limited sources of anthropogenic input to the area, concentrations of hydrocarbons in the Chukchi Sea are expected to be at background levels. As with the Beaufort Sea, no seafloor oil seeps have been identified in the Chukchi Sea (pp. 3-47 and 3-48).

4.3 MARINE BENTHIC AND PELAGIC HABITATS

Most of the seafloor of the Beaufort Sea and the Chukchi Sea shelves consists of a soft-bottom plain composed of silt, clay, and sand. Deposits of flocculated particles from plankton blooms, epontic organisms, and ice algae from ice retreat all contribute to the bottom sediments in these regions. Disturbance from sea-ice scour is a dominant process affecting the seafloor of the Beaufort Sea and the Chukchi Sea shelves. Deep keels of icebergs moving across the shelf scour sediments, causing chronic disturbance to benthic communities. Strudel (drainage of large volumes of freshwater through the ice at holes and cracks) scours the seafloor and occurs near the mouths of rivers during spring flood periods. Few species inhabit the seafloor in waters shallower than 2 meters (6.6 feet) deep because of the bottom-fast ice, which prohibits overwintering of most organisms.

This nearshore benthic area is recolonized each summer, mainly by mobile, opportunistic, epifaunal crustaceans (e.g., crabs, shrimp, squid, corals, polychaetes, amphipods, mysids, cumaceans, and isopods), which are fed on primarily by waterfowl and fishes. In slightly deeper water, the gouging of the seafloor by ice keels creates a habitat for opportunistic infauna (e.g., small clams and other invertebrates), which are fed on by seabirds, fishes, and walrus. Surveys on the Chukchi Shelf revealed that tunicates, echinoderms, jellies, crabs, polychaetes, and sponges make up most of the benthic biomass. Common fish on soft sediments included

Arctic cod (*Boreogadus saida*), Pacific herring (*Clupea pallasii*), sculpins, and pollock (*Theragra chalcogramma*). Sections 3.8.4.3 and 3.8.5.3 of the 2012-2017 Five Year PEIS provide further descriptions of fish and invertebrate communities (p. 3-134).

Pelagic habitat in the Beaufort/Chukchi Shelf Marine Ecoregion consists of ice-free open water and high-productivity areas of open water surrounded by sea ice (i.e., polynyas). Productivity in the water column is primarily controlled by temperature, nutrients, light, and the amount of sea ice in a given year. Phytoplankton productivity is highest in the summer when temperatures are highest and when nutrient and solar irradiance are most conducive to productivity. Phytoplankton productivity gradually decreases from the southwestern Chukchi Sea to the east to the Beaufort Sea (especially east of Point Barrow) and from inshore to offshore areas, although there are isolated mid-shelf upwelling regions where productivity is higher than it is in the surrounding water (p. 3-144).

4.4 INVERTEBRATES AND LOWER TROPHIC LEVELS

At the lowest invertebrate trophic levels, microbes such as bacteria and protists are known to be important in Arctic waters for breaking down and recycling nutrients and organic matter. Cilliates and dinoflagellates dominate the microzooplankton biomass in the Chukchi Sea, but their role in the Beaufort and Chukchi Seas is not well studied. The most common water column macroinvertebrates in the Arctic are the copepods (typically *Pseudocalanus*). In the Chukchi Sea, much of the copepod biomass originates in the Bering Sea, while true Arctic species are most common in the Beaufort Sea. Riverine inputs also create an estuarine zone with a distinct zooplankton assemblage. Other common zooplankton includes larvaceans, jellies, euphausiid shrimp, amphipods, pteropod mollusks, and arrow worms. In the Beaufort and Chukchi Seas, invertebrate zooplankton productivity is highly seasonal as a result of the extremely cold winter temperatures. Many invertebrates (e.g., copepods) have adapted by storing lipids for the winter and undergoing a winter dormant period during which they rest in the sediment or lower water column (p. 3-291).

4.5 ESSENTIAL FISH HABITAT (EFH) AND FISH

The Arctic Fisheries Management Plan for Fish Resources of the Arctic Management Area (North Pacific Fishery Management Council, 2009) has designated essential fish habitat (EFH) for three species:

- Arctic cod *(Boreogadus saida)*: Insufficient information is available to determine EFH for eggs, larvae, and early juveniles. However, this species has been reported to spawn under ice during winter.
- Saffron cod *(Eleginus gracilis)*: Insufficient information is available to determine EFH for eggs, larvae, and early juveniles. For late juveniles and adults, EFH includes coastal pelagic and epipelagic Arctic waters and wherever there are sand and gravel substrates.
- Snow crab *(Chionoecetes opilio)*: Insufficient information is available to determine EFH for larvae and early juvenile life stages. EFH for eggs, late juveniles, and adult snow crabs consists of bottom habitats along the inner and middle shelves in Arctic waters south of Cape Lisburne, wherever there are substrates consisting mainly of mud.

Arctic aquatic systems undergo extended seasonal periods of frigid and harsh environmental conditions. Important environmental factors that Arctic fishes must contend with include reduced light, seasonal darkness, prolonged low temperatures and ice cover, and low seasonal productivity. The lack of sunlight and the extensive ice cover in Arctic latitudes during winter months affect primary and secondary productivity, making food resources very scarce during this time, so most of a fish's yearly food supply must be acquired during the brief Arctic summer. In addition, most fish species inhabiting the frigid polar waters are thought to grow slowly relative to individuals or species inhabiting boreal, temperate, or tropical systems. Because of the harsh conditions, many species found in the Beaufort and Chukchi Seas are at the northern limits of their range. Arctic fishes could use one or more aquatic habitats to carry out their respective life cycles. Such habitats could include bays, ice, reefs, and nearshore, coastal, continental shelf, oceanic, and bathypelagic waters and/or substrates (p. 3-279). The Beaufort and Chukchi Seas support at least 98 fish species from 23 families. The greatest number of species is found in the Chukchi Sea (p. 3-279).

Common diadromous fishes found in the Beaufort and Chukchi Seas are salmonids and include Arctic cisco (*Coregonus autumnalis*), least cisco (*Coregonus sardinella*), humpback whitefish (*Coregonus pidschian*), broad whitefish (*Coregonus nasus*), and Dolly Varden (*Salvelinus malma*). Although present in Arctic waters, all five Pacific salmon species significantly decrease in abundance north of the Bering Strait and from west to east along the Beaufort and Chukchi Seas. Pink salmon and chum salmon are the most common Pacific salmon in Arctic waters. Warming of waters in the Beaufort, Chukchi, and Bering Seas has resulted in species of salmon migrating further northward; this trend is expected to continue as the water temperature continues to increase. The National Marine Fisheries Service (NMFS) does not allow commercial fishing for salmon in the Chukchi and Beaufort Seas in the U.S. Exclusive Economic Zone (pp. 3-154 and 3-155).

Common pelagic fish in the Beaufort Sea and Chukchi Sea include Pacific sand lance (*Ammodytes hexapterus*), Pacific herring (*Clupea pallasii*), Arctic cod (*Boreogadus saida*), capelin (*Mallotus villosus*), snailfish (*Liparidae*), and lanternfish (*Benthosema glaciale*) (p. 3-280). Most fish in the Beaufort and Chukchi Seas are demersal species, often migratory, living on or near the bottom. Species occurring in the Chukchi Sea include Arctic staghorn sculpin (*Gymnocanthus tricuspis*), shorthorn sculpin (*Myoxocephalus scorpius*), Bering flounder, and Arctic cod. The most abundant demersal fish occurring in the Chukchi Sea are cod (family Gadidae), poachers (family Agonidae), Bering flounder (*Hippoglossoides robustus*), and sculpins (family Cottidae). Greenlings (family Hexagrammidae), eelpouts (family Zoarcidae), smelts (family Osmeridae), wolfish (family Anarhichadidae), and snailfish (*Lycodes* spp.) are also present in Arctic waters. In the Beaufort Sea, Arctic cod, eelpouts, and walleye pollock (*Theragra chalcogramma*) comprised the majority of the catch in recent benthic trawl surveys (pp. 3-280 and 3-281).

4.6 MARINE AND COASTAL BIRDS

Because of the limited seasonal nature of open-water and snow-free conditions, the Beaufort and Chukchi Seas support a smaller number of avian species than onshore. Most birds occurring in the Beaufort and Chukchi Seas and their adjacent coastal habitats are migratory, being present for all or part of the period between May and early November (p. 3-248).

Two species that are listed as threatened under the Endangered Species Act (ESA) regularly occur in the Beaufort and Chukchi Sea Planning Areas. These species are the spectacled eider (*Somatria fischeri*) and the Alaska breeding population of the Steller's eider. Spectacled eiders use important molting and staging areas including the Ledyard Bay Critical Habitat Unit located in the Chukchi Sea. On the Arctic Coastal Plain, large numbers of spectacled eiders, representing about 2 percent of the world's population, are present each summer. In addition, Kittlitz's murrelet and the yellow-billed loon, both candidate species for ESA listing, occur in the coastal and inland waters adjacent to the Chukchi Sea Planning Area (pp. 3-251 through 3-253).

4.7 MARINE MAMMALS

Fifteen species of marine mammals have been identified in the Beaufort and Chukchi Sea Planning Areas (Table 1). Four of these species are listed as threatened or endangered under the ESA, one is a candidate species, and two are proposed for listing as threatened species. See pp. 3-194 to 3-217 of the 2012-2017 Five Year PEIS (USDOI, BOEM, 2012) and pp. 273-334 of the Chukchi Sea Planning Area, Sale 193 Final Second Supplemental EIS (USDOI, BOEM, Alaska OCS Region, 2015-a) for a more detailed description of life history and attributes.

This EA focuses on species of critical importance to either subsistence practices or trophic function of the Arctic food web. For descriptions of fin whales, humpback whales, gray whales, minke whales, narwhals, and harbor porpoises, the reader is referred to pp. 3-199, 3-205, 3-206, and 3-207 of the 2012-2017 Five Year PEIS, respectively.

Bowhead Whale

The endangered bowhead whale occurs in seasonally ice-covered waters of the Arctic and near-Arctic, in the Western Arctic Basin. Bowhead whales generally migrate from winter breeding areas (November to March) in the northern Bering Sea, through the Chukchi Sea in the spring (March through June) where most calving occurs, and into the Canadian Beaufort Sea where they spend much of the summer (mid-May through September).

Table 1. Arctic Marine Mammals

Species	Status
ORDER CETACEA	
Suborder Mysticeti (baleen whales)	
Balaenoptera acutorostrata (minke whale)	–
Balaenoptera mysticetus (bowhead whale)	E/D
Balaenoptera physalus (fin whale)	E/D
Eschrichtius robustus (gray whale)	DL/D
Megaptera novaeangliae (humpback whale)	URD(a)
Suborder Odontoceti (toothed whales and dolphins)	
Delphinapterus leucas (beluga whale)	–
Monodon monoceros (narwhal)	–
Orcinus orca (killer whale)	D
Phocoena phocoena (harbor porpoise)	–
ORDER CARNIVORA	
Suborder Pinnipedia (seals, sea lions, and walrus)	
Erignathus barbatus (bearded seal)	PT
Odobenus rosmarus divergens (Pacific walrus)	C
Phoca fasciata (ribbon seal)	–
Phoca hispida (ringed seal)	PT
Phoca largha (spotted seal)	DL(b)
Suborder Fissipedia (polar bears)	
Ursus maritimus (polar bear)	T/D

Key: Status: E = endangered under the ESA; T = threatened under the ESA; C = candidate for listing under the ESA; DL = delisted under the ESA; D = depleted under the Marine Mammal Protection Act (for the killer whale, it only applies to the AT1 group of eastern North Pacific transient killer whales); PT = proposed for listing as threatened under the ESA; – = not listed.

(a) Status: URD = under review for delisting, 2015
http://www.nmfs.noaa.gov/pr/species/esa/delisted.htm

(b) Status: DL = delisted, 2013
http://alaskafisheries.noaa.gov/protectedresources/seals/ice.htm

In the fall (September through November), bowheads were historically presumed to return along this general route, closer to shore across the Beaufort Sea and through the middle of the Chukchi Sea and closer to shore, to the Bering Sea to overwinter in polynyas and along edges of the pack ice.

The main fall migration begins in late August. The first whales are typically the larger ones, which establish the migration route in the Beaufort Sea. Migration through the eastern Alaskan portion of the Beaufort Sea continues through September and into October. In contrast to the presumed route that the paragraph above describes, a recent study shows the fall migration from Amundsen Gulf to Barrow, including some whales that traveled inshore and others that traveled offshore (p. 3-196). From Barrow to the Bering Sea, bowheads occurred throughout much of the Chukchi Sea. All of the tagged whales traveled through the Chukchi Sea Planning Area during the fall migration, but only one whale did so during the spring migration. Most whales traversed the planning area in less than one week; however, one whale remained in the area for 30 days. In addition, during the fall migration, several whales passed Barrow, and then returned to Barrow for a period of time before continuing their migration to the Bering Sea.

Another study notes that, during fall, many bowheads use the area near Barrow and the northern half of the Chukchi Sea Planning Area (p. 3-196). The study also indicates that bowheads use the eastern Chukchi Sea, especially nearshore from Wainwright to the Bering Sea, less often than previously presumed. Further, the study shows that bowheads use the western Chukchi Sea, including nearshore areas along the Russian Chukchi Peninsula north of the Bering Strait, extensively during the fall.

Bearded Seal

Most of the bearded seals offshore Alaska occur over the continental shelf of the Bering, Chukchi, and Beaufort Seas. Their densities are greatest during the summer and lowest during the winter. They migrate north through the Bering Strait in April and May to summer ice on the edge of the Chukchi Sea. Others remain in the open waters of the Chukchi Sea. During spring, they prefer areas that contain 70 to 90 percent sea-ice cover and are most abundant 32 to 161 kilometers (km) (20 to 100 miles [mi]) from shore.

Ringed Seal

The ringed seal, the most abundant seal in the Arctic, occurs throughout the Beaufort and Chukchi Seas. They live on and under extensive, largely unbroken, shorefast ice; however, many ringed seals overwinter and give birth in pack ice areas. Ice cover strongly influences ringed seal movements. They continue to use sea ice as resting platforms during the summer and fall, and many occur during ice-free periods during the summer and fall in the Chukchi Sea. In December 2014, NMFS proposed critical habitat for the Arctic ringed seal in the northern Bering, Chukchi, and Beaufort Seas.

Pacific Walrus

The Pacific walrus ranges through the shallow continental shelf waters of the Chukchi Sea where its distribution is closely linked with the seasonal distribution of the pack ice. While they occasionally move into the western Beaufort Sea during summer, most of the population is found in the Chukchi Sea during the summer months. Pacific walrus occupy two large Arctic areas during summer: (1) from the Bering Strait west to Wrangell Island, and (2) along the northwestern coast of Alaska from about Point Hope to north of Point Barrow. Within this area, summer and fall haul-outs include Cape Lisburne, Corwin Bluff, Point Lay Barrier Islands, Icy Cape, Wainwright, Naokok, Asiniak Point, and Peard Bay. The majority of the population occurs north and west of Barrow, with the highest seasonal abundance along the pack-ice front. Walrus forage in most areas they occupy, and areas of concentrated foraging generally correspond to regions of high benthic biomass, such as in the northeastern (Hanna Shoal) and southwestern Chukchi Sea (Jay et al., 2012; pp. 1-13). With the southern advance of the pack ice in the Chukchi Sea during the fall (October to December), most of the Pacific walrus population migrates south of the Bering Strait. The population of the Pacific walrus has been declining, mainly due to major stressors such as subsistence harvest and loss of sea ice.

Polar Bear

Polar bears occur in the Chukchi and Beaufort Seas, from the Bering Strait to the maritime areas of Arctic Canada. In 2010, the U.S. Fish and Wildlife Service designated the following critical habitat for the polar bear: barrier islands, sea ice in both the U.S. Chukchi and Beaufort Seas, and

terrestrial denning habitat. Seasonal movements of polar bears reflect changing ice conditions and breeding behavior. In spring, polar bears in the Beaufort Sea overwhelmingly prefer regions with ice concentrations greater than 90 percent and composed of ice floes 2 to 10 km (1.2 to 6.2 mi) in diameter. Mature males range offshore in early spring, but move closer to shore during the spring breeding season. With the breakup of the ice during spring and early summer, polar bears move northward, where they select habitats with a high proportion of old ice. To reach this ice, polar bears could migrate as much as 1,000 km (620 mi). As ice re-forms in the fall, the bears move southward, and by late fall are distributed seaward of the Chukchi and Beaufort Sea coasts. During winter, polar bears prefer the lead ice system and polynyas at the shear zone between the shorefast ice and the active offshore ice and areas where beach-cast marine mammal carcasses occur.

In the fall, polar bears aggregate along the Beaufort Sea coastline in areas where Alaska Natives harvest and butcher marine mammals, primarily bowhead whales. Polar bears are attracted to these areas because they feed off the carcasses. Specific aggregation areas include Point Barrow, Cross Island, and Kaktovik.

This stock is experiencing a population decline due to loss of sea ice (partly due to climate change), potential overharvest, and human activities (including industrial activities) in nearshore and offshore environments (pp. 3-202 through 3-204).

Beluga Whale

Beluga whales occur in coastal waters of the Chukchi and Beaufort Seas in summer and fall. Ice cover, tidal conditions, access to prey, temperature, and human interactions affect the seasonal distribution of beluga whales. Some beluga whales migrate more than 2,700 km (1,500 mi) between the Bering Sea and the Mackenzie River estuary in Canada, sometimes moving more than 180 km (100 mi) per day. They will ascend large rivers and are apparently unaffected by salinity changes.

Killer Whale

The killer whale occurs along the entire Arctic coast within the Chukchi Sea and other waters to the south (p. 3-207).

Ribbon and Spotted Seals

The ribbon seal inhabits the Chukchi and western Beaufort Seas. They occur in the open sea, generally in the summer; on the pack ice, generally in winter; and only rarely on shorefast ice. The ribbon seal rarely occurs on land. Many ribbon seals migrate from the Bering Sea into the Chukchi Sea for the summer.

A distinct population segment of the spotted seal occurs in the Beaufort and Chukchi Seas in the summer. Terrestrial haul-out sites are generally located on isolated mud, sand, or gravel beaches or on rocks close to shore. Spotted seals frequently enter estuaries and sometimes ascend rivers, presumably to feed on anadromous fishes. Spotted seals migrate out of the Arctic region in the fall (September to mid-October) as the shorefast ice re-forms and the pack ice advances southward.

4.8 SUBSISTENCE

Traditionally, Alaska Natives hunted, fished, and lived off the land out of necessity. Alaska Natives view subsistence hunting and gathering as a core value of their traditional cultures. Since contact with Western ways of life, they have gradually made the transition to a mixture of subsistence and cash-based economies, varying in degrees from community to community. Most subsistence activities are group activities that further core values of community, kinship, cooperation, and reciprocity (pp. 3-376 and 3-378). Current Federal regulations define subsistence use as "the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools or transportation; for the making and selling of handicraft articles out of nonedible byproducts of fish and wildlife resources taken for personal or family consumption; for barter or sharing for personal or family consumption; and for customary trade" (16 U.S.C. § 3113). *See also* 36 CFR 13.420, 36 CFR 242.4, 50 CFR 36.2, and 50 CFR 100.4.

The subsistence harvest plays an important role in the predominantly Alaska Native communities adjacent to the Chukchi and Beaufort Sea Planning Areas. The communities bordering the Chukchi and Beaufort Seas whose people rely on marine subsistence resources are Point Hope, Point Lay, Wainwright, Barrow, Nuiqsut, and Kaktovik. They are part of the Arctic's North Slope Borough, which has been described as "the most organized, strongest, and best-funded subsistence economy in Alaska." The Alaska Natives living in these communities are primarily Iñupiat Eskimo, whose traditional culture is based on cooperation, kinship ties, kinship sharing, and subsistence hunting and gathering. Whaling, particularly for the bowhead and beluga whales, is at the core of their traditional culture. Hunters in the communities along the Beaufort Sea also hunt for bearded, spotted, and ringed seals and walrus. This includes the inland community of Nuiqsut on the Colville River delta; the Nuiqsut Iñupiat go by boat to the mouth of the Colville River and out to Cross Island in the Beaufort Sea for the fall bowhead whale hunt. An example of trade, bartering, and kinship sharing of marine mammal subsistence foods between coastal communities and inland communities is Anaktuvuk Pass, an inland community in the North Slope Borough about 250 miles southeast of Barrow (pp. 3-386 and 3-389).

While Alaska Natives rely on many important subsistence resources in or near the sea, they also rely on freshwater and terrestrial subsistence resources. However, even in communities where terrestrial resources such as caribou or freshwater and saltwater fish supply more meat, marine mammals still are culturally most important (p. 3-396). Various types of subsistence resources utilized by the communities adjacent to the Chukchi and Beaufort Sea Planning Areas are as follows:

- marine mammal species,
- terrestrial mammal species,
- fish species,
- bird species, and
- other resources (including berries, bird eggs, clams, etc.) (pp. 3-398, 3-399, and 3-400).

4.9 SOCIOCULTURAL RESOURCES

The Chukchi and Beaufort Sea Planning Areas lie off the northern coast of the North Slope Borough, which is located largely in the North Slope region of Alaska. The population of the North Slope Borough in 2010 was 9,430, almost 54 percent of which were Alaska Natives (p. 3-386).

Chukchi Sea communities include Barrow, Wainwright, Point Hope, and Point Lay along the coast, while Atqasuk lies somewhat inland. Barrow is the largest community on the North Slope and serves as the region's administrative and commercial hub, with 61 percent Alaska Natives. Subsistence whaling, hunting, and fishing are important to the economy, and many residents with full- or part-time employment continue to hunt and fish for food. The other, smaller communities are comprised of more than 86 percent Alaska Natives that also rely heavily on subsistence harvesting.

Beaufort Sea communities are Nuiqsut and Kaktovik. Deadhorse is a workers' enclave that houses as many as 5,000 transient workers from the nearby Prudhoe Bay oil fields. Workers also stay at a camp in Nuiqsut near the Alpine field west of Prudhoe Bay. There is no workers' camp in or near Kaktovik, the nearest village to the east of Prudhoe Bay. Alaska Natives account for approximately 90 percent of the populations in both Nuiqsut and Kaktovik (pp. 3-386, 3-388, and 3-389).

Alaska Natives successfully have incorporated modern technology into their subsistence way of life. Rifles and whale bombs have replaced spears and harpoons; aluminum skiffs are employed along with skin boats (umiat); whaling crews use electronic global positioning and communication devices; and snow machines and all-terrain vehicles have replaced dog teams and sleds (p. 3-390). Adoption of modern technology further reflects shifting from a purely hunting and gathering subsistence economy to a mixture of subsistence and cash-based economies.

4.10 HEALTH STATUS OF ALASKA NATIVES IN THE NORTH SLOPE BOROUGH

Alaska Native health has undergone profound changes since 1950, and the changes in health status among the Iñupiat residents of the North Slope mirrors State-wide trends in Alaska Native health status in many respects. Since 1950, infant mortality, overall mortality, and life expectancy have improved significantly. However, over the same time period, cancer, chronic diseases (such as diabetes, cardiovascular disease, cardiopulmonary disease, hypertension, and asthma), and social pathology have increased. Alcohol and drug problems, associated accidental and intentional injury, depression, anxiety, assault, and domestic violence are now highly prevalent and cause disproportionate health impacts and mortality for these communities. Suicide, especially among youth, exceeds the U.S. rate by numerous orders of magnitude (pp. 3-415, 3-416, and 3-417).

4.11 ENVIRONMENTAL JUSTICE

A large number of minority and low-income individuals are located in the Arctic region. The number of minority individuals in the region exceeds 50 percent of the regional population. The number of minority individuals exceeds the State average by 20 percentage points (p. 3-413).

Chapter 5 Environmental Consequences

5.1 Alternative A – Proposed Action Alternative (PAA)

Under the PAA, BOEM and BSEE would promulgate the final rule, and any future oil and gas exploration drilling on the Arctic OCS would be governed by the new and revised requirements. To assess the level of potential environmental impacts associated with the PAA (Appendix B provides impact level definitions), it is first necessary to understand the *type* of activities that would be affected by the final rules.

The effects of the final rule must be considered in the context of Arctic EPs and exploration activities typical of the Chukchi and Beaufort Sea Planning Areas. Recent EPs and recent BOEM environmental documents were used to help inform and prepare this EA (USDOI, BOEM, Alaska OCS Region, 2011-a; USDOI, BOEM, Alaska OCS Region, 2011-c; USDOI, BOEM, 2012; USDOI, BOEM, Alaska OCS Region, 2015-a; and USDOI, BOEM, Alaska OCS Region, 2015-b). These environmental documents are incorporated by reference to help understand the nature of exploration activities considered in the Arctic, differentiate the potential effects of exploration activities under the final rule (relative to existing standards), and ensure the context, intensity, scope, timing, and general location are representative of recent and foreseeable exploration drilling operations on the Arctic OCS.

In a typical Arctic exploration scenario, exploration wells would be drilled during the open-water season in the Arctic OCS, which runs as soon as ice and weather conditions allow, generally from July through October. The drilling would continue as necessary during subsequent open-water seasons until all wells are completed. Exploratory drilling operations would be conducted by floating drilling vessels and "jackup rigs" (collectively known as mobile offshore drilling units or MODUs); MODUs would be supported by additional vessels for ice management, anchor handling, crew and supplies transport, waste storage and transport, and spill response. The handling of all drill cuttings, muds, and other discharges would comply with the requirements of the relevant U.S. Environmental Protection Agency (USEPA) Region 10 National Pollutant Discharge Elimination System (NPDES) permit. The number of wells may vary depending on the EP. The number of wells drilled in a given season would depend upon, among other things, ice conditions, length of time that each drilling site is accessible, and conditions of plan approval (USDOI, BOEM, Alaska OCS Region, 2011-c; USDOI, BOEM, Alaska OCS Region, 2015-a; USDOI, BOEM, Alaska OCS Region, 2015-b). Exploratory drilling activities would occur an average of 30 to 45 days at each drill site in the Chukchi Sea and 34 to 44 days in the Beaufort Sea. During such operations, accidental spills are possible. For the purposes of analysis, the EA assumes a large oil spill would be ≥1,000 barrels (bbl), and a catastrophic spill, although not expected to occur, could approach 2.1 million bbl of crude oil in the Chukchi Sea Planning Area and 3.9 million bbl of crude oil in the Beaufort Sea Planning Area (USDOI, BOEM, Alaska OCS Region, 2011-b, Appendix D; USDOI, BOEM, 2012, p. 4-167).

To analyze the potential economic ramifications of the final rule (see Regulatory Impact Analysis), BOEM and BSEE also estimated exploration activities that could occur in the Beaufort and Chukchi seas between 2019 and 2026. This EA is consistent with that framework,

wherein this analysis compares the potential effects for a representative EP, with and without the rulemaking in place.

Many of these provisions, identical or similar in nature, were already included as Conditions of Approval to Arctic OCS EPs. The requirements in the final rule would not affect the broad types of activities, or types of vessels, or other technology used in oil and gas exploration on the OCS. The differences are related to the potential for more nuanced operational changes, such as the potential for additionally staged equipment and vessel traffic and/or slightly longer use of equipment and vessels. The environmental effects of provisions of the final rule that would modify exploration planning and operations are described below.

5.1.1 Provisions that would not cause Environmental Impacts

BOEM and BSEE have determined that the following provisions of the final rule are purely informational or administrative in nature and would not cause environmental impacts. While globally designed to enhance the safety and careful planning of operations, they do not prescribe or modify any actions or operations that would impact the environment. Instead, they are proposed to enhance general planning and reporting to improve and/or document the overall management and effectiveness of operations. Therefore, further environmental analysis of the following provisions is not necessary:

§ 250.105	Definitions.
§ 250.188	What incidents must I report to BSEE and when must I report them?
§ 250.198	Documents incorporated by reference.
§ 250.418	What additional information must I submit with my APD [application for a permit to drill]?
§ 250.470	What additional information must I submit with my APD for Arctic OCS exploratory drilling operations?
§ 250.1920	What are the auditing requirements for my Safety and Environmental Management System (SEMS) program?
§ 254.6	Definitions.
§ 254.52	Format of response plan.
§ 254.55	Spill response plans for facilities located in Alaska State waters seaward of the coast line in the Chukchi and Beaufort Seas.
§ 254.65	Purpose.
§ 254.70	What are the additional requirements for facilities conducting exploratory drilling from a MODU on the Arctic OCS?
§ 254.80	What additional information must I include in the “Emergency response action plan” section for facilities conducting exploratory drilling from a MODU on the Arctic OCS?
§ 254.90(b)	What are the additional requirements for exercises of your response personnel and equipment for facilities conducting exploratory drilling from a MODU on the Arctic OCS? (Notification of Regional Supervisor 60 days before handling, storing, or transporting oil)
§ 550.105	Definitions.
§ 550.200	Definitions.

§ 550.204	When must I submit my IOP for proposed Arctic exploratory drilling operations and what must the IOP include?
§ 550.220	If I propose activities in the Alaska OCS Region, what planning information must accompany the EP?

5.1.2 Operational Provisions Analyzed

This EA analyzes the direct, indirect, and cumulative effects of operational provisions of the final rule. The effects analysis is organized into three themes:

- The **pollution prevention** provision proposed at Section 250.300, which clarifies existing requirements for the capture of petroleum-based drilling mud and associated cuttings, as well as BSEE's existing, discretionary authority to require capture of water-based drilling mud and associated cuttings under certain circumstances, and is intended to prevent discharge of oil into the marine environment and to minimize other effects of mud and cuttings on water quality, subsistence activities, and marine fauna.

- Provisions intended to **reduce the likelihood of a spill occurring** include the following:

§ 250.720(c)	When and how must I secure a well?
§ 250.452	What are the real-time monitoring requirements for Arctic OCS exploratory drilling operations?
§ 250.473	What must I do to protect health, safety, property, and the environment while operating on the Arctic OCS?

- Provisions intended to **reduce the size and/or duration of an oil spill** and therefore its environmental effects include the following:

§ 250.471	What are the requirements for Arctic OCS source control and containment equipment (SCCE)?
§ 250.472	What are the relief rig requirements for the Arctic OCS?
§ 254.90(a) & (c)	What are the additional requirements for exercises for your response personnel and equipment for facilities conducting exploratory drilling from a MODU on the Arctic OCS?

The complete regulatory text of the operational provisions is provided in Appendix A. There is an explanatory summary for each provision presented in the preamble of the final rule.

The final rule would largely contribute to the avoidance of or reduction in potential adverse environmental effects that could otherwise occur absent the final rulemaking. However, in some cases, specific provisions of the PAA could also trigger additional activities that could cause additive, adverse effects. For that reason, the effects analyses in 5.1.3 of the Final EA are organized by 1) adverse effects avoided because of the rule, and 2) adverse effects caused by the rule.

5.1.3 Environmental Analysis of Operational Provisions

5.1.3.1 Pollution Prevention: Summary Description of § 250.300(b)

Section 250.300(b) would revise BSEE's pollution prevention regulation as it pertains to spent mud and cuttings generated during Arctic OCS exploratory drilling operations. Operators can use drilling fluids (i.e., mud) that are water-based or that contain petroleum (i.e., oil). Cuttings generated using the latter would be contaminated with oil, and discharge of such mud or cuttings into the marine environment also would discharge the associated oil. Currently, under 30 CFR 250.300, no petroleum-based substances can be added to the drilling mud system without prior approval of the BSEE Regional Supervisor, who must also approve the method of disposal of drilling mud and cuttings. Additionally, USEPA NPDES general permits for discharges from oil and gas exploration facilities on the Arctic OCS, which became effective on November 28, 2012, effectively prohibit discharge of oil-based mud and cuttings and authorize the discharge of only water-based drilling fluids and associated cuttings, and only within certain parameters (USEPA, 2015). Operators can choose to use oil-based or synthetic-based fluids during exploration activities, but those drilling fluids and associated cuttings may not be discharged into the marine environment. These permits currently are scheduled to expire on November 27, 2017.

Section 250.300(b) would require operators to capture all petroleum-based mud from Arctic OCS exploratory drilling operations, and cuttings from operations that utilize petroleum-based mud, to prevent their discharge into the marine environment. Section 250.300(b) would clarify the BSEE Regional Supervisor's authority to require the capture of water-based mud and associated cuttings, based on factors including, but not limited to the following:

a) the proximity of the exploratory drilling operations to subsistence hunting activities;
b) the extent to which discharged mud or cuttings could cause marine mammals to alter their migratory patterns in a manner that interferes with subsistence activities; or,
c) the extent to which discharged mud or cuttings could adversely affect marine mammals, fish, or their habitat.

5.1.3.1.1 Pollution Prevention: Environmental Analysis of § 250.300

This section of the PAA is designed to reduce the likelihood of adverse environmental and sociocultural effects from the discharge of drilling mud and cuttings into the marine environment. Several stakeholders, primarily Alaska Natives, have expressed concern that mud and cuttings from exploratory drilling operations could adversely affect marine species (e.g., whales and fish) and their habitat, and compromise the effectiveness of subsistence hunting activities. The release of mud and cuttings can result in increased turbidity and concentrations of total suspended solids in the water column, which could displace marine mammals, if present, from the drill sites and could adversely affect habitat and prey within and around the drill site (USDOI, BOEM, Alaska OCS Region, 2011-c; USDOI, BOEM, Alaska OCS Region, 2015-a; USDOI, BOEM, Alaska OCS Region, 2015-b). Mysticetes have a more highly developed olfactory ability than microsmatic mammals like humans (Thewissen et al., 2011). Thewissen et al. (2011) hypothesize that bowhead whales use olfaction to detect conspecific mates and/or,

more likely, clouds of the plankton on which they feed. Displacement of marine mammals could force subsistence hunting farther away from shore, which in turn can increase transit time, reduce the likelihood of successful harvest, increase exposure to adverse weather and dangerous sea states, and increase safety concerns for subsistence hunters. Finally, the farther away whales are harvested from a community, the greater the length of towing time necessary to bring the animals back to shore for processing. This increased tow time could negatively affect the viability of the meat and blubber because of spoilage.

Pollution Prevention: Direct and Indirect Effects

By reducing discharges of petroleum-based mud and, in certain circumstances, water-based mud and associated cuttings into the marine environment, this section of the PAA would help avoid or minimize certain adverse environmental impacts during the exploration drilling in the Chukchi and Beaufort Seas, as described in the following paragraphs.

Suspended sediment, solids, and turbidity in the water column around the vicinity of drill sites would incrementally decrease, which would result in increased light transmissivity and visibility (USDOI, BOEM, Alaska OCS Region, 2015-a, p. 165; USDOI, BOEM, Alaska OCS Region, 2015-b, pp. 11, 93, 97-99, 102, and 103). Exposure in the lower water column would be reduced for some fish species, such as sculpin species, yellow fin sole, Bering flounder, starry flounder, and sand lance. This would increase visibility (and, therefore, feeding ability), cause less interruption to reproductive behaviors, and reduce the potential for smothering of the fish and their benthic prey (USDOI, BOEM, Alaska OCS Region, 2011-a, p. 78; USDOI, BOEM, Alaska OCS Region, 2011-c, p. 80; USDOI, BOEM, Alaska OCS Region, 2015-b, pp. 101-103). Certain impacts would be avoided for weak swimming or non-swimming developmental life stages of larvae, fry, smolt, or eggs of fishes in the vicinity of the drill sites, such as epipelagic Arctic cod eggs and larvae and capelin juveniles, or demersal fish life stages with strong affinities to benthic habitats, such as sculpins, flounder, snailfish, saffron cod eggs, capelin eggs, and Arctic cod juveniles and adults (USDOI, BOEM, Alaska OCS Region, 2011-a, p. 79; USDOI, BOEM, Alaska OCS Region, 2015-b, pp. 101 and 103). Additionally, decreased suspended solids would reduce localized and temporary losses of some benthic and pelagic organisms (USDOI, BOEM, Alaska OCS Region, 2015-b, p. 103). Decreasing turbidity and concentrations of total suspended solids in the water column could lessen displacement of marine mammals from the drill sites and improve habitat and prey within and around the drill site. For example, walrus foraging habitat, which can be affected by accumulation of sediments on the sea floor, would be less affected (USDOI, BOEM, Alaska OCS Region, 2011-c, p. 96; USDOI, BOEM, Alaska OCS Region, 2015-b, pp. 97-98).

Hydrocarbon concentrations, including polycyclic aromatic hydrocarbons and some metals, would be reduced in the lower water column and seafloor sediments around the drill sites. Decreased concentrations of hydrocarbons and metals in the lower water column and seafloor sediments would reduce the potential for physiological and toxicological effects on fish adults, eggs, and larvae in the vicinity of the drill sites (USDOI, BOEM, Alaska OCS Region, 2011-c, p. 80; USDOI, BOEM, Alaska OCS Region, 2015-b, p. 102). Some marine mammals, such as the bowhead whale and the Pacific walrus, would also benefit, because their prey would be exposed to lower concentrations of hydrocarbons and metals (USDOI, BOEM, Alaska OCS Region, 2011-a, pp. 90 and 99). For example, Pacific walrus, which feed primarily on benthic invertebrates, some of which are known to concentrate contaminants, would ingest lower levels

of hydrocarbons and/or metals (USDOI, BOEM, Alaska OCS Region, 2011-c, p. 96; USDOI, BOEM, Alaska OCS Region, 2015-b, p. 98).

As previously indicate, mysticetes have a more highly developed **olfactory ability** than microsmatic mammals like humans (Thewissen et al., 2011; USDOI, BOEM, Alaska OCS Region, 2015-b, p. 374). Bowhead whales could rely on this ability to detect conspecific mates and/or, more likely, clouds of the plankton on which they feed. If certain species of whales are in fact temporarily avoiding the areas around drilling due to their detection of odors from mud and cuttings, this provision of the PAA could avoid potential harassment or some behavioral cost, as well as any incremental effect on subsistence activities related to marine mammals that could have deviated from a preferred migration pathway.

While the PAA can be expected to reduce or avoid certain adverse environmental, subsistence, and sociocultural effects from the discharge of drilling mud and cuttings into the marine environment, Section 250.300(b) also could contribute to incremental or additive, adverse effects by requiring activities which include the prolonged use of equipment, particularly vessels already on-site, or the use of additional equipment to capture mud and associated cuttings. Additive, adverse effects related to Section 250.300 could include the following:

Air quality could be adversely impacted by the introduction of additional emissions from vessels operating over a longer period of time, or from the use of additional vessels (needed to capture mud and cuttings) (USDOI, BOEM, Alaska OCS Region, 2011-c, pp. 65-71). However, any effects related to vessel and support equipment emissions would still be localized and temporary. Based on these factors and the short duration of the potential increased operational time, the change in exploration activities given the rule requirements would have a minor effect (USDOI, BOEM, Alaska OCS Region, 2015-b, pp. 99 and 100).

Water quality could be adversely impacted by prolonged use of vessels, or the use of additional vessels during any increased operational time (USDOI, BOEM, Alaska OCS Region, 2011-c, pp. 72-73). However, any effects related to vessel discharges would still be localized and temporary. Based on these factors and the short duration of the potential increased operational time, the change in exploration activities given the rule requirements would have a minor effect.

Marine and coastal birds could be impacted adversely by vessel noise during any increased operational time or from the use of additional vessels. Routine vessel traffic has limited potential to disturb birds, and could temporarily move them a short distance to another location (USDOI, BOEM, Alaska OCS Region, 2011-c, p. 84; USDOI, BOEM, Alaska OCS Region, 2015-b, p. 108). Several species of birds, such as the spectacled and Steller's eiders, also could be subject to vessel collisions during this time because they fly low and fast over the ocean and often do not or cannot react in time to avoid vessels (USDOI, BOEM, Alaska OCS Region, 2011-c, p. 85; USDOI, BOEM, Alaska OCS Region, 2015-b, p. 108). These effects would be localized and temporary. Based on these factors and the short duration of the potential increased operational time, the change in exploration activities given the rule requirements would have a minor effect.

Fish could be adversely impacted by vessel noise during any increased operational time or from the use of additional vessels. Fish also could be indirectly affected by water quality degradation (USDOI, BOEM, Alaska OCS Region, 2011-c, pp. 89-108; USDOI, BOEM, Alaska OCS

Region, 2015-b, p. 100). These effects would still be localized and temporary. Based on these factors and the short duration of the potential increased operational time, the change in exploration activities given the rule requirements would have a minor effect (USDOI, BOEM, Alaska OCS Region, 2015-b, p. 100).

Marine mammals could be adversely impacted by vessel noise during any increased operational time or from the use of additional vessels. Vessel noise could contribute to an incremental increase in communication masking and limited behavioral disturbance related to noise exposure (USDOI, BOEM, Alaska OCS Region, 2011-c, pp. 90-91, 96-97, 99, and 101; USDOI, BOEM, Alaska OCS Region, 2015-b, pp. 115 and 116). Some species of marine mammals also could be subject to vessel collisions during this time. Additionally, marine mammals could be indirectly affected by water quality degradation and impacts on prey species (USDOI, BOEM, Alaska OCS Region, 2011-c, pp. 89-108; USDOI, BOEM, Alaska OCS Region, 2015-b, p. 116). These effects would still be localized and temporary. Based on these factors and the short duration of the potential increased operational time, the change in exploration activities given the rule requirements would have a minor effect (USDOI, BOEM, Alaska OCS Region, 2015-b, p. 100).

Increased use of vessels, use of additional vessels, or prolonged use of vessels on the OCS attributable to the requirements of § 250.300(b) could slightly increase the risk of non-permitted vessel discharges, collisions, allisions, vessel groundings, equipment failures, etc. The types of small spills most likely to result from such events during exploration activities would be localized and temporary; the difference in risk given the rule requirements would be minor and lead to a slightly greater potential for oil spill effects on the marine environment.

Pollution Prevention: Cumulative Effects

The Arctic Ocean ecosystem as a whole is rapidly changing, with melting sea ice and increasing sediment input from numerous regional river systems (USDOI, BOEM, Alaska OCS Region, 2015-a). Open-water seasons are longer than in past years, and there has been a reduction in multi-year ice. As the ice cover is reduced, the number of cargo, tourism, and research vessels in the region is expected to continue increasing (USDOI, BOEM, Alaska OCS Region, 2011-a, p. 74). Other events that are currently ongoing in the U.S. Arctic region, or that could occur in the foreseeable future, and that could affect water quality include increased air traffic, fuel and petroleum spills, permitted and non-permitted discharges, long-distance aerosol-transported pollutants, the discharge of other pollutants, warming temperatures, ocean acidification, and risk of invasive species from ship hulls and equipment deployed (USDOI, BOEM, Alaska OCS Region, 2011-a; USDOI, BOEM, Alaska OCS Region, 2015-a). This provision of the PAA would not necessitate any operations that would meaningfully further exacerbate the degradation of the marine water quality or pelagic or benthic habitat. By reducing discharges of petroleum-, and, in certain circumstances, water-based mud and associated cuttings into the marine environment, promulgation of this provision of the PAA potentially would decrease incremental cumulative impacts on fish, marine mammals, and subsistence harvests in the Chukchi and Beaufort Seas. Any reduction of cumulative impacts from this provision of the PAA likely would be limited to the immediate areas surrounding the drill sites. The incremental change in potential cumulative adverse effects would be temporary, localized, and minor.

5.1.3.2 Reducing the Likelihood of an Oil Spill Occurring: Summary Description

§ 250.720(c)	When and how must I secure a well?
§ 250.452	What are the real-time monitoring requirements for Arctic OCS exploratory drilling operations?
§ 250.473	What must I do to protect health, safety, property, and the environment on the Arctic OCS?

Section 250.720(c) would require operators to ensure that any equipment left on or in a temporarily abandoned well that has penetrated below the surface casing be secured in a manner that prevents or minimizes the likelihood of the equipment being damaged or the integrity of the well and equipment being compromised. The primary concern is for ice that could sever, dislodge, or drag any exploration-related equipment, obstructions, or protrusions left on the well or the adjacent seafloor. If ice were to contact equipment left on or in a well that had penetrated hydrocarbons, the impact could damage the well and potentially compromise the cement, casing, or safety valves and plugs inside the well and could result in the discharge of hydrocarbons.

Section 250.452 would require real-time and continuous data gathering on the BOP control system, the fluid handling systems on the rig, and the well's downhole conditions. In addition, this provision would require operators to provide data during operations to an onshore location where it must be stored and monitored by personnel who are capable of interpreting the data. Such personnel also must have the capability for continuous and reliable contact with rig personnel to ensure the ability to communicate information or instructions between the rig and onshore facility in real time, while operations are underway. This section also would require that real-time monitoring data be available to BSEE upon request to enable BSEE to perform its oversight role and to monitor responses to events as they unfold. This provision would increase the level of oversight of well conditions during operations, ensuring that onshore personnel are in a position to review data, help rig personnel conduct operations in a safe manner, and be able to assist the rig crew in identifying and evaluating unusual conditions that could arise during operations.

Section 250.473 would require that all equipment and materials proposed for use in Arctic OCS exploration drilling operations be rated or de-rated for service under conditions that can be reasonably expected during operations. Because of the extreme cold temperatures and potential ice loading anticipated at drill sites, operators must ensure that the equipment and materials proposed for use can operate safely and effectively in such conditions. For example, cranes must be designed to withstand ice loads, and operational limitations of components under extreme cold temperatures (e.g., reduced tensile strength) must be understood and accounted for. Also, capping and containment equipment must be specifically designed to withstand the demands of Arctic conditions. This provision also would require operators to employ measures to address human factors such as safety of the workforce, health, and decision-making in the context of weather conditions that can be reasonably expected during operations.

Reducing the Likelihood of an Oil Spill Occurring: Environmental Analysis

§ 250.720(c)	When and how must I secure a well?
§ 250.452	What are the real-time monitoring requirements for Arctic OCS exploratory drilling operations?
§ 250.473	What must I do to protect health, safety, property, and the environment on the Arctic OCS?

These provisions are designed to decrease the likelihood of the occurrence of oil spills during Arctic OCS exploratory drilling operations, thus reducing the possibility that an oil spill would impact environmental resources. However, implementation of Section 250.720(c) could also cause potential adverse environmental effects given the fact that additional operational requirements and/or time may be necessary to comply with the provision. Specifically, additional equipment or prolonged use of the equipment already on-site, such as aircraft and vessels, could be necessary to implement the provisions of the final rule and to handle additional crew and supply requirements, to conduct any required marine mammal and ice observations, etc. No potential adverse environmental effects are associated with Sections 250.452 and 250.473. The effects analyses related to these Sections are organized by 1) adverse effects potentially avoided or reduced because of the rule and 2) adverse effects caused by the rule.

5.1.3.2.1 Reducing the Likelihood of an Oil Spill Occurring: Direct and Indirect Effects

By incrementally improving well control and thereby reducing the likelihood of oil spills occurring during exploratory drilling operations, these sections of the PAA may help avoid adverse environmental impacts associated with oil spills that could otherwise occur absent the enhanced regulatory requirements. Although oil spills could be less likely to occur, the context and intensity of potential effects should an oil spill occur would not necessarily change because of these provisions alone. The nature and relevance of impacts avoided would depend on the size, timing, and location of the avoided (or reduced number of) oil spill(s). Effects potentially avoided or reduced because of fewer oil spills could include a commensurate reduction in spill-related impacts on air and water quality; coastal, benthic, and pelagic habitats; marine life; and sociocultural systems. The type and nature of spill-related impacts that could be avoided are briefly summarized in Table 2, but are discussed in detail in USDOI, BOEM, Alaska OCS Region (2011-c); USDOI, BOEM (2012); USDOI, BOEM, Alaska OCS Region (2015-a); and USDOI, BOEM, Alaska OCS Region, (2015-b).

Table 2. Adverse Effects Potentially Avoided (or Reduced) from Decreasing the Likelihood of an Oil Spill Occurring

Water and Air Quality	Coastal, Pelagic, and Marine Benthic Habitats	Marine Life	Sociocultural Systems
Reduced deterioration in air and water quality from a spill and spill response, including less impact from emissions and discharges related to clean-up activities such as *in-situ* burning, use of dispersants, and the presence of response vessels	Reduced amount of oil transported to barrier island beaches, coastal beaches, or lagoon beaches by currents or tides Reduced oil stranding on beaches, penetration into subsurface layers or transportation to higher elevations by storm waves and tides, and impacts on vegetation behind beaches Reduced injury to or mortality of vegetation and invertebrates in or on the substrate of coastal and estuarine habitats Less potential change in flora and fauna community structure and direct loss of habitat Reduced exposure for zooplankton and other less motile organisms in the water column Reduced exposure of pelagic organisms to lethal or sublethal concentrations of hydrocarbons or mixtures of hydrocarbons and dispersants, if used during cleanup operations	Reduced impacts on invertebrates and their habitat and local populations of intertidal organisms Reduced acute and chronic effects during various life stages to pelagic fish adults, juveniles, eggs, and larvae Reduced lethal and sublethal effects from oil contact to small obligate benthic species, eggs, larvae, and some managed species in EFH areas and their prey Reduced losses of early life stages and long-term sublethal impacts that could cause moderate to major population effects on managed species Reduced acute and chronic effects on marine and coastal birds and less potential for sublethal and lethal effects on these species contacted by spilled oil, especially those spills entering coastal lagoons and delta areas where oil may impact birds using those habitats for molting and staging Reduced impacts from vessel and aircraft noise associated with spill response to threatened and endangered birds and marine and coastal birds Reduced impacts on mysticete whales resulting from direct contact, reduction of prey availability, toxic exposure, and disturbance from cleanup operations Reduced impacts on odontocetes through skin contact, inhalation, or ingestion of contaminated prey, or exposure in open water, nonlethal effects such as skin irritation Reduced impacts on polar bears, their prey, and critical habitat, especially related to feeding and denning	Reduced impacts on important subsistence resources, such as whales (beluga and bowhead), walrus, seabirds, waterfowl, fish, and land mammals, and sociocultural systems Reduced oil contamination of beaches, which can have a profound impact on whaling because, even if bowhead whales were not contaminated, Iñupiat subsistence whalers would not be able to bring them ashore and process them on a contaminated shoreline Reduced disruption of community activities and traditional practices for harvesting, sharing, and processing subsistence resources, which are interconnected with the subsistence lifestyles of Alaska Native communities Reduced disruptions that could cause breakdowns in family ties, compromise a community's sense of well-being, and damage sharing linkages with other communities Reduced health impacts on Alaska Natives, other minority population groups and low-income communities

While the PAA is expected to avoid or minimize some of the potential adverse environmental impacts associated with oil spills by reducing the likelihood of spills, Section 250.720(c) could also contribute to incremental or additive, adverse effects. The following activities associated with requirements of the PAA could contribute to adverse effects: the prolonged use of equipment, such as vessels and aircraft, already on-site, or the use of additional equipment. Additive, adverse effects from the PAA could include the following:

Air quality could be adversely affected by the introduction of additional emissions from aircraft and vessels during any increased operational time, or the use of additional vessels (USDOI, BOEM, Alaska OCS Region, 2011-c, pp. 65-71; USDOI, BOEM, Alaska OCS Region, 2015-b, pp. 99 and 100). However, any effects would still be localized and temporary. Based on these factors and the short duration of the potential increased operational time, these activities would have a minor effect.

Water quality could be adversely affected by prolonged use of vessels or the use of additional vessels during any increased operational time (USDOI, BOEM, Alaska OCS Region, 2011-c, pp. 72-73). However, any effects would be localized and temporary. Based on these factors and the short duration of the potential increased operational time, these activities would have a minor effect (USDOI, BOEM, Alaska OCS Region, 2015-b, pp. 99 and 100).

Marine and coastal birds could be adversely impacted from vessel and aircraft noise during any increased operational time or from use of additional vessels. Routine vessel traffic has limited potential to disturb birds and could temporarily move them a short distance to another location (USDOI, BOEM, Alaska OCS Region, 2011-c, p. 84; USDOI, BOEM, Alaska OCS Region, 2015-b, p. 108). Several species of birds, such as the spectacled and Steller's eiders, could also be subject to vessel collisions during this time because they fly low and fast over the ocean and often do not or cannot react in time to avoid vessels (USDOI, BOEM, Alaska OCS Region, 2011-c, p. 85; USDOI, BOEM, Alaska OCS Region, 2015-b, p. 108). These effects would be localized and temporary. Based on these factors and the short duration of the potential increased operational time, these activities would have a minor effect.

Fish could be adversely impacted from vessel and aircraft noise during any increased operational time or from use of additional vessels. Fish could also be indirectly affected by water quality degradation (USDOI, BOEM, Alaska OCS Region, 2011-c, pp. 89-108; USDOI, BOEM, Alaska OCS Region, 2015-b, p. 100). These effects would be localized and temporary. Based on these factors and the short duration of the potential increased operational time, these activities would have a minor effect (USDOI, BOEM, Alaska OCS Region, 2015-b, p. 100).

Marine mammals could be adversely impacted from vessel and aircraft noise during any increased operational time or from use of additional vessels. Vessel noise may contribute to an incremental increase in communication masking and limited behavioral disturbance related to noise exposure (USDOI, BOEM, Alaska OCS Region, 2011-c, pp. 90-91, 96-97, 99, and 101; USDOI, BOEM, Alaska OCS Region, 2015-b, pp. 115 and 116). Some species of marine mammals could also be subject to vessel collisions during this time. Additionally, marine mammals could be indirectly affected by water quality degradation and impacts to prey species (USDOI, BOEM, Alaska OCS Region, 2011-c, pp. 89-108; USDOI, BOEM, Alaska OCS Region, 2015-b, p. 116). These effects would be localized and temporary. Based on these factors and the short duration of the potential increased operational time, these activities would

have a minor effect.

Increased use of vessels or use of additional vessels on the OCS caused by Section 250.720(c) would increase the risk of accidental discharges (from collisions, allisions, vessel groundings, equipment failures, etc.). According to the United States Coast Guard (USCG), the majority of the oil spills in U.S. waters between 1969 and 2011 involved discharges between one and 100 gallons (USCG, 2012). Given this statistic and the short duration of any increased operational time, the possibility of a large or catastrophic oil spill from such accidents is unlikely. A small spill, which would be localized and temporary, would have minor effects on the marine environment.

These provisions could prolong the timeframe needed to drill and subsequently complete a well; thus, a well that could typically be drilled in one season could potentially require two seasons to complete. Whenever a well is re-entered or operations are interrupted, the likelihood of a well integrity event that could lead to an accidental release is increased.

Reducing the Likelihood of an Oil Spill Occurring: Cumulative Effects

In the Chukchi Sea and Beaufort Sea Planning Areas there are few nearby industrial emissions sources and no substantial population centers (USDOI, BOEM, Alaska OCS Region, 2011-a; USDOI, BOEM, Alaska OCS Region, 2015-a). The main sources of impacts have been associated with oil- and gas-related activities, military operations, scientific research activities, climate change, and subsistence hunting and other activities associated with regional native villages (USDOI, BOEM, Alaska OCS Region, 2011-c; USDOI, BOEM, 2012; USDOI, BOEM, Alaska OCS Region, 2015-a). Marine vessel traffic in the area is mainly attributed to fishing and hunting vessels, icebreakers, USCG vessels, supply ships and barges with their associated towing vessels, and vessels supporting oil, gas, and research activities in the region. Marine vessel traffic has increased in recent years due to advances in the technology of ice strengthening and ice breaking capacities of marine vessels, receding ice cover as a result of climate change, and increased interest in scientific and economic pursuits in the area. Most observers expect these phenomena to continue increasing (USDOI, BOEM, Alaska OCS Region, 2011-c; USDOI, BOEM, Alaska OCS Region, 2015-a). Air traffic has historically been limited to the movement of people and supply materials between industry operations, native villages, and military outposts. In recent years, air traffic has increased mostly from academic and commercial ventures and military operations. Air traffic is expected to continue at present levels for the reasonably foreseeable future (USDOI, BOEM, Alaska OCS Region, 2011-c; USDOI, BOEM, Alaska OCS Region, 2015-a). Additionally, in the winter months, the Arctic atmosphere becomes contaminated with pollution through long-range transport of emissions from coal burning and metal smelting in Europe and Russia, referred to as the Arctic haze.

Air quality is well within the NAAQS and State of Alaska AAQS. Impacts on air quality in the region can be attributed to various factors, including marine vessel and air traffic, the North Slope oil fields, and Arctic haze. All activities in the past and occurring now have caused little deterioration in air quality. Most observers do not expect this to change due to the reasonably foreseeable future of North Slope area activities, such as oil and natural gas development and production (USDOI, BOEM, Alaska OCS Region, 2015-a). Section 250.720(c) could potentially give rise to the prolonged or additional use of marine vessels and aircraft, which could potentially deteriorate air quality. The additional air emissions would be relatively small

compared with those from existing and future activities in the area, and would be spatially and temporally limited. Therefore, cumulative impacts on air quality from these provisions of the PAA would be minor.

Impacts on **water quality** are associated with climate change, industry-, community-, military-, and research-related discharges, and naturally occurring processes. As mentioned earlier, marine vessel traffic has increased in recent years and is expected to increase in the future. This increases the risk of vessel accidents, vessel groundings, potential oil and cargo spills, permitted discharges, and introduction of marine invasive species. Future impacts on water quality would be caused primarily by the effects of climate change and ocean acidification on ocean chemistry, discharge of pollution into marine waters from point-source and nonpoint-source discharges, and oil industry-related activities such as drilling operations and support vessel discharges (USDOI, BOEM, Alaska OCS Region, 2015-a). Although Section 250.720(c) could result in additional vessel traffic in the areas surrounding the exploration drilling sites for a short period of time, this increase would be negligible compared to existing and future activities in the area. Therefore, cumulative impacts on water quality from these provisions of the PAA would be minor. Further, they are designed to reduce the likelihood of oil spills that could result in adverse cumulative impacts on water quality.

Cumulative impacts on bird species result from direct injury or mortality of marine and coastal birds due to collisions with onshore and offshore structures, ingestion of trash or debris, or exposure to discharges or emissions; loss or degradation of habitat due to coastal development, climate change, or construction and operations activities; and behavioral disturbances due to commercial and recreational boating and small aircraft traffic (USDOI, BOEM, 2012; USDOI, BOEM, Alaska OCS Region, 2015-a). Many bird species are currently experiencing a loss or degradation of habitat due to land development and climate change, and these impacts, along with impacts from oil and gas development and marine vessel and air traffic, are expected to continue into the foreseeable future (USDOI, BOEM, 2012; USDOI, BOEM, Alaska OCS Region, 2015-a). Section 250.720(c) could result in additional vessel and air traffic in the areas surrounding the exploration drilling sites for a short period of time. However, the increase in traffic would be negligible compared to existing and future activities in the region. Therefore, cumulative impacts on marine and coastal birds from these provisions of the PAA would be minor. Further, they are designed to reduce the likelihood of oil spills that could result in adverse cumulative impacts on birds.

Fish and EFH in the region have been impacted by various activities such as subsistence fishing, commercial shipping, coastal modifications, hardrock mining, dredging and disposal operations, anchoring, and climate change (USDOI, BOEM, 2012; USDOI, BOEM, Alaska OCS Region, 2015-a). As mentioned above, the number of marine vessels in the region will continue to increase, which could cause impacts on fish via water quality deterioration from potential cargo and oil spills and permitted discharges, noise, and the introduction of marine invasive species. Climate change is anticipated to cause major effects in the future, including warming sea surface, reduction in sea ice, and increased ocean water acidity. These factors are affecting and will continue to affect fish and fish habitat in a substantial way (USDOI, BOEM, Alaska OCS Region, 2015-a). Subsistence fishing in the region is likely to continue at a similar level (USDOI, BOEM, Alaska OCS Region, 2015-a). Section 250.720(c) could result in additional vessel traffic in the areas surrounding the exploration drilling sites for a short period of time.

However, the increase in traffic would be negligible compared to existing and future activities in the area. Therefore, cumulative impacts on fish and EFH from these provisions of the PAA would be minor. Further, they are designed to reduce the likelihood of oil spills that could result in adverse cumulative impacts on fish and EFH.

Ongoing and future activities or phenomena that affect **marine mammals** in Arctic waters include: onshore and offshore oil and gas development (and infrastructure), other kinds of onshore development on or near riverine systems flowing into Arctic waters, marine vessel traffic, recreational and subsistence fishing, marine mammal subsistence harvests, pollution (and marine debris), climate change, diseases, and natural catastrophes (USDOI, BOEM, 2012; USDOI, BOEM, Alaska OCS Region, 2015-a). Decreasing sea ice is changing patterns of habitat use for marine mammals, increasing the available range of some whales but decreasing available habitat for ice seals, polar bears, and walrus. Changes in sea-ice extent related to climate change are altering the behavior and foraging opportunities of some marine mammal species, such as the walrus and polar bear (USDOI, BOEM, Alaska OCS Region, 2011-c, p. 107; USDOI, BOEM, Alaska OCS Region, 2015-b, p. 149). Activities entailing the use of marine vessels and aircraft can impact marine mammals by temporarily altering their behavior (USDOI, BOEM, Alaska OCS Region, 2015-b, pp. 115-116). Potential behavior changes include deflections away from vessels or aircraft, cessation of calling, masking of received sounds, temporary separations of mother/calf pairs, and interruptions of foraging, resting, or other behaviors, all of which have energetic costs (USDOI, BOEM, Alaska OCS Region, 2011-c, p. 107; USDOI, BOEM, Alaska OCS Region, 2015-b, pp. 115, 116, and 148). Sound specifically has the potential to cause deflection of whales from hunting and migration areas, masking of environmental sounds and intra-species communication, and physiological damage to marine mammal hearing (USDOI, BOEM, Alaska OCS Region, 2011-c, p. 89; USDOI, BOEM, Alaska OCS Region, 2015-b, p. 148). Accidental vessel collisions with marine mammals are another concern, especially during inclement weather conditions. These activities and phenomena are expected to continue (and increase) in the foreseeable future (USDOI, BOEM, Alaska OCS Region, 2011-a; USDOI, BOEM, Alaska OCS Region, 2015-a). Section 250.720(c) could result in additional vessel and air traffic in the areas surrounding the exploration drilling sites for a short period of time. However, the increase in traffic would be negligible compared to existing and future activities in the area. Therefore, cumulative impacts on marine mammals from these provisions of the PAA would be minor. Further, they are designed to reduce the likelihood of oil spills that could result in adverse cumulative impacts on marine mammals.

5.1.3.3 Reducing the Size and/or Duration of an Oil Spill: Summary Description

§ 250.471	What are the requirements for Arctic OCS source control and containment equipment?
§ 250.472	What are relief rig requirements for the Arctic OCS?
§ 254.90	What are the additional requirements for exercises for your response personnel and equipment for facilities conducting exploratory drilling from a MODU on the Arctic OCS?

Section 250.471 would require operators using a MODU for Arctic OCS exploratory drilling to have access to, and the ability to deploy SCCE (e.g., a capping stack, cap and flow system, and containment dome) within specified timeframes when drilling or working below the surface

casing. Section 250.471 would require operators to demonstrate that they would have access to, and could deploy, well control and containment resources that would be adequate to promptly respond to a loss of well control. Ensuring that operators have redundancies in place is critical, as there is no guarantee that any measure could control or contain a worst-case discharge scenario.

Section 250.472 would require Arctic OCS exploratory drilling operators drilling or working below the surface casing to have access to a separate relief rig that would be staged at a location such that it could arrive on site and be capable of controlling a wild well under anticipated Arctic OCS conditions within specified timeframes (or accomplish the same by alternative procedures or equipment). Although SCCE could, in some circumstances, be able to contain or establish control over a well after a blowout, in some cases only a relief well would be able to kill and permanently plug an out-of-control well. Thus, it is crucial that operators have access to a relief rig capable of drilling a relief well, if needed before the seasonal ice encroachment, or alternative procedures or equipment that accomplish the same objective. This provision addresses the geographical and logistical challenges of bringing equipment and resources into the region, especially when the time available to mount response operations is limited by changing weather and ice conditions as the end of the drilling season approaches.

Section 254.90 would require Arctic OCS exploratory drilling operators to incorporate additional elements into their oil spill response training and exercise activities and provide notice of the commencement and cessation of covered operations, and would clarify the authority of the BSEE Regional Supervisor to conduct exercises, prior to and during exploratory drilling operations, to test response preparedness.

5.1.3.3.1 Reducing the Size and/or Duration of an Oil Spill: Environmental Analysis

§ 250.471	What are the requirements for Arctic OCS source control and containment equipment?
§ 250.472	What are relief rig requirements for the Arctic OCS?
§ 254.90	What are the additional requirements for exercises for your response personnel and equipment for facilities conducting exploratory drilling from a MODU on the Arctic OCS?

These provisions are designed to reduce the duration and/or magnitude of a potential oil spill and therefore lessen or potentially avoid resulting environmental effects. These provisions are not designed to reduce the likelihood of a spill occurring like the provisions discussed previously (Sections 250.720(c), 250.452, and 250.473); instead, the requirements could affect the exposure potential context and severity of exposure of various Arctic resources in the event of an oil spill. Both sets of provisions taken together would reduce the likelihood and adverse nature of potential environmental effects from an oil spill if a spill were to occur. Therefore, the preceding analyses of avoided direct, indirect, and cumulative effects (for Sections 250.720(c), 250.452, and 250.473) are applicable to these provisions. In summary, effects potentially avoided or reduced through promulgation of these provisions of the final rule could include direct and indirect impacts on air and water quality; coastal, benthic, and pelagic habitat and invertebrates; fish; EFH; coastal and marine birds; marine mammals; and sociocultural systems. The exact nature of avoided impacts depends on the size, timing, and location of the avoided (or reduced) oil spill.

While these provisions of the PAA are designed to reduce the duration and/or magnitude of a potential oil spill from Arctic OCS exploratory drilling operations, there are some potential adverse environmental effects associated with these provisions. The potential environmental effects associated with Section 250.472 would result from the additional vessels, aircraft, and/or operational time that could be needed to comply with the staging and deployment requirements for SCCE and relief rigs when an operator is drilling below or working below the surface casing in an exploratory well. While it is possible that the requirements could be satisfied through strategic use of vessels and operational time already contemplated in drilling plans, there is a reasonable likelihood that additional vessels and/or operational time could be needed. For example, under Section 250.471, operators could need access to another vessel to store and deploy a capping stack and containment dome, a vessel to receive fluids from the cap and flow system or containment dome, etc. The potential environmental effects associated with Section 254.90 would also result from the additional deployment of vessels and equipment to participate in oil spill response training and exercise activities. These provisions have the potential to increase operational time and/or the number and use of vessels, aircraft, and other equipment in similar ways to other provisions previously discussed. As such, the preceding environmental analysis for Section 250.720(c) effectively analyzes the potential adverse environmental effects associated with these proposed provisions. Increased or additional use of vessels, aircraft, and other equipment could cause an incremental increase in adverse direct and indirect impacts on air and water quality, marine and coastal birds, fish, and marine mammals. These effects would still be localized and temporary. Therefore, these provisions of the final rule would only have a minor effect on the marine environment. Additionally, the cumulative impact analysis from the preceding analysis determined that cumulative impacts on air and water quality, fish and EFH, marine and coastal birds, and marine mammals from comparable requirements of the PAA would also be minor. That conclusion holds for these proposed provisions meant to reduce the size or duration of a spill.

5.2 Alternative B – Include a Requirement for More Frequent Blowout Preventer Testing

Under Alternative B, the final rule would be promulgated but an additional requirement would be included that would increase the BOP pressure testing frequency for exploratory drilling operations in the Arctic OCS from every 14 days to every seven days.

An additional section would be added to the rulemaking to require a BOP pressure-test every seven days (instead of every 14 days under the existing rules). This would address concerns regarding the potential for extreme weather conditions to compromise the integrity or functionality of a BOP, particularly one that is maintained on a surface vessel or facility such as a jackup rig under Arctic OCS conditions.

The environmental effects for Alternative B are similar to those under Alternative A except that the potential environmental effects—whether adverse or beneficial—associated with more frequent BOP pressure-testing would occur. This provision could further reduce the likelihood of adverse environmental impacts and sociocultural effects associated with oil spills by reducing the probability of spills through more frequent testing to ensure that BOPs are capable of performing if needed. On the other hand, more frequent testing could also potentially affect equipment durability because of the increase in the number of times the BOP is subjected to

repetitive testing, which might partially offset the potential risk that the equipment will not perform properly when needed. More frequent testing could also increase the risk of potential environmental consequences (such as a non-catastrophic oil spill) directly related to performance of the tests themselves. For example, each time a BOP pressure test is performed, there is some risk that an error could occur or that some piece of equipment could fail; increasing the frequency of such tests (and, thus, the overall number of tests) would increase the number of possible opportunities for such hazards to occur. More frequent BOP pressure testing could also contribute to additional incremental or additive, adverse effects from the prolonged use of equipment, such as vessels and aircraft already on-site, or the use of additional equipment. Additive, adverse effects could include impacts on air and water quality, marine and coastal birds, fish, and marine mammals; however, these effects would be localized and temporary. Based on these factors and the short duration of the potential increased operational time, promulgation of more frequent BOP pressure testing would have minor effects on the resources listed above.

5.3 ALTERNATIVE C – NO ACTION ALTERNATIVE (NAA)

Under the NAA, the final rule would not be promulgated. Any future exploration drilling on the Arctic OCS would be governed by the existing regulatory framework, potentially causing effects comparable to those described in previous Arctic OCS NEPA documents (*see* USDOI, MMS, Alaska OCS Region, 2008; USDOI, BOEM, Alaska OCS Region, 2011-a; USDOI, BOEM, Alaska OCS Region, 2011-b; USDOI, BOEM, Alaska OCS Region, 2011-c; USDOI, BOEM, 2012; USDOI, BOEM, Alaska OCS Region, 2015-a; and USDOI, BOEM, Alaska OCS Region, 2015-b). No substantially different effects to the environment would occur compared to those analyzed in the existing NEPA documents cited above. Selection of the NAA would not reduce the likelihood or severity of impacts on the Arctic environment vis-à-vis existing rules. Accordingly, the NAA would forego some of the potential benefits of reduced or avoided environmental effects anticipated from the rule. It is possible that some of the equivalent requirements could be achieved through conditions of approval on plans or permits. The NAA would also obviate the limited potential adverse effects anticipated from the rule.

Chapter 6 Public Comment

The draft proposed rule and Draft EA were made available for public comment from February 24, 2015, to April 27, 2015. No comments were submitted on the Draft EA. Changes to the EA were based on new information or revisions to the rulemaking.

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APPENDIX A. REGULATORY PROVISIONS OF THE FINAL RULE

TITLE 30—Mineral Resources

CHAPTER II—BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT, DEPARTMENT OF THE INTERIOR

PART 250—OIL AND GAS AND SULFUR OPERATIONS IN THE OUTER CONTINENTAL SHELF

1. The authority citation for 30 CFR part 250 is revised to read as follows:

Authority: 30 U.S.C. 1751, 31 U.S.C. 9701, 33 U.S.C. 1321(j)(1)(C), 43 U.S.C. 1334.

2. Amend § 250.105 by:

a. Revising the definition of "District Manager"; and

b. Adding definitions for "Arctic OCS", "Arctic OCS conditions", "Cap and flow system", "Capping stack", "Containment dome", and "Source control and containment equipment (SCCE)" in alphabetical order.

The revision and additions read as follows:

§ 250.105 Definitions.

* * * * *

Arctic OCS means the Beaufort Sea and Chukchi Sea Planning Areas (for more information on these areas, see the Proposed Final OCS Oil and Gas Leasing Program for 2012-2017 (June 2012) at http://www.boem.gov/Oil-and-Gas-Energy-Program/Leasing/Five-Year-Program/2012-2017/Program-Area-Maps/index.aspx).

Arctic OCS conditions means, for the purposes of this part, the conditions operators can reasonably expect during operations on the Arctic OCS. Such conditions, depending on the time of year, include, but are not limited to: extreme cold, freezing spray, snow, extended periods of low light, strong winds, dense fog, sea ice, strong currents, and dangerous sea states. Remote location, relative lack of infrastructure, and the existence of subsistence hunting and fishing areas are also characteristic of the Arctic region.

* * * * *

Cap and flow system means an integrated suite of equipment and vessels, including a capping stack and associated flow lines, that, when installed or positioned, is used to control the flow of fluids escaping from the well by conveying the fluids to the surface to a vessel or facility equipped to process the flow of oil, gas, and water. A cap and flow system is a high pressure system that includes the capping stack and piping necessary to convey the flowing fluids through

the choke manifold to the surface equipment.

Capping stack means a mechanical device, including one that is pre-positioned, that can be installed on top of a subsea or surface wellhead or blowout preventer to stop the uncontrolled flow of fluids into the environment.

* * * * *

Containment dome means a non-pressurized container that can be used to collect fluids escaping from the well or equipment below the sea surface or from seeps by suspending the device over the discharge or seep location. The containment dome includes all of the equipment necessary to capture and convey fluids to the surface.

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District Manager means the BSEE officer with authority and responsibility for operations or other designated program functions for a district within a BSEE Region. For activities on the Alaska OCS, any reference in this part to District Manager means the BSEE Regional Supervisor.

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Source control and containment equipment (SCCE) means the capping stack, cap and flow system, containment dome, and/or other subsea and surface devices, equipment, and vessels the collective purpose of which is to control a spill source and stop the flow of fluids into the environment or to contain fluids escaping into the environment. "Surface devices" refers to equipment mounted or staged on a barge, vessel, or facility to separate, treat, store and/or dispose of fluids conveyed to the surface by the cap and flow system or the containment dome. "Subsea devices" includes, but is not limited to, remotely operated vehicles, anchors, buoyancy equipment, connectors, cameras, controls and other subsea equipment necessary to facilitate the deployment, operation, and retrieval of the SCCE. The SCCE does not include a blowout preventer..

* * * * *

3. Amend § 250.188 by adding paragraph (c) to read as follows:

§ 250.188 What incidents must I report to BSEE and when must I report them?

* * * * *

(c) On the Arctic OCS, in addition to the requirements of paragraphs (a) and (b) of this section, you must provide to the BSEE inspector on location, if one is present, or to the Regional Supervisor, both of the following:

(1) An immediate oral report if any of the following occur:

(i) Any sea ice movement or condition that has the potential to affect your operation or trigger ice management activities;

(ii) The start and termination of ice management activities; or

(iii) Any “kicks” or operational issues that are unexpected and could result in the loss of well control.

(2) Within 24 hours after completing ice management activities, a written report of such activities that conforms to the content requirements in § 250.190.

4. Amend § 250.198 by adding paragraph (h)(95) to read as follows:

§ 250.198 Documents incorporated by reference.

* * * * *

(h) ** *

(95) ANSI/API RP 2N, Third Edition, “Recommended Practice for Planning, Designing, and Constructing Structures and Pipelines for Arctic Conditions”, Third Edition, April 2015; incorporated by reference at § 250.470(g);

* * * * *

5. Amend § 250.300 by revising paragraphs (b)(1) and (2) to read as follows:

§ 250.300 Pollution prevention.

* * * * *

(b)(1) The District Manager may restrict the rate of drilling fluid discharges or prescribe alternative discharge methods. The District Manager may also restrict the use of components that could cause unreasonable degradation to the marine environment. No petroleum-based substances, including diesel fuel, may be added to the drilling mud system without prior approval of the District Manager. For Arctic OCS exploratory drilling, you must capture all petroleum-based mud to prevent its discharge into the marine environment. The Regional Supervisor may also require you to capture, during your Arctic OCS exploratory drilling operations, all water-based mud from operations after completion of the hole for the conductor casing to prevent its discharge into the marine environment, based on various factors including, but not limited to:

(i) The proximity of your exploratory drilling operation to subsistence hunting and fishing locations;

(ii) The extent to which discharged mud may cause marine mammals to alter their migratory patterns in a manner that impedes subsistence users’ access to, or use of, those resources, or increases the risk of injury to subsistence users; or

(iii) The extent to which discharged mud may adversely affect marine mammals, fish, or their habitat.

(2) You must obtain approval from the District Manager of the method you plan to use to dispose of drill cuttings, sand, and other well solids. For Arctic OCS exploratory drilling, you must capture all cuttings from operations that utilize petroleum-based mud to prevent their discharge into the marine environment. The Regional Supervisor may also require you to capture, during your Arctic OCS exploratory drilling operations, all cuttings from operations that

utilize water-based mud after completion of the hole for the conductor casing to prevent their discharge into the marine environment, based on various factors including, but not limited to:

(i) The proximity of your exploratory drilling operation to subsistence hunting and fishing locations;

(ii) The extent to which discharged cuttings may cause marine mammals to alter their migratory patterns in a manner that impedes subsistence users' access to, or use of, those resources, or increases the risk of injury to subsistence users; or

(iii) The extent to which discharged cuttings may adversely affect marine mammals, fish, or their habitat.

* * * * *

6. Amend § 250.418 by adding paragraph (j) to read as follows:

§ 250.418 What additional information must I submit with my APD?

* * * * *

(j) For Arctic OCS exploratory drilling operations, you must provide the information required by § 250.470.

7. Add § 250.452 to read as follows:

§ 250.452 What are the real-time monitoring requirements for Arctic OCS exploratory drilling operations?

(a) When conducting exploratory drilling operations on the Arctic OCS, you must gather and monitor real-time data using an independent, automatic, and continuous monitoring system capable of recording, storing, and transmitting data regarding the following:

(1) The BOP control system;

(2) The well's fluid handling systems on the rig; and

(3) The well's downhole conditions as monitored by a downhole sensing system, when such a system is installed.

(b) During well operations, you must transmit the data identified in paragraph (a) of this section as they are gathered, barring unforeseeable or unpreventable interruptions in transmission, and have the capability to monitor the data onshore, using qualified personnel. Onshore personnel who monitor real-time data must have the capability to contact rig personnel during operations. After well operations, you must store the data at a designated location for recordkeeping purposes as required in §§ 250.740 and 250.741. You must provide BSEE with access to your real-time monitoring data onshore upon request.

8. Add an undesignated center heading and §§ 250.470 through 250.473 to subpart D to read as

follows:

ADDITIONAL ARCTIC OCS REQUIREMENTS

§ 250.470 What additional information must I submit with my APD for Arctic OCS exploratory drilling operations?

In addition to complying with all other applicable requirements included in this part, you must provide with your APD all of the following information pertaining to your proposed Arctic OCS exploratory drilling:

(a) A detailed description of:

(1) The environmental, meteorological, and oceanic conditions you expect to encounter at the well site(s);

(2) How you will prepare your equipment, materials, and drilling unit for service in the conditions identified in paragraph (a)(1) of this section, and how your drilling unit will be in compliance with the requirements of § 250.713.

(b) A detailed description of all operations necessary in Arctic OCS conditions to transition the rig from being under way to conducting drilling operations and from ending drilling operations to being under way, as well as any anticipated repair and maintenance plans for the drilling unit and equipment. You should include, among other things, a description of how you plan to:

(1) Recover the subsea equipment, including the marine riser and the lower marine riser package;

(2) Recover the BOP;

(3) Recover the auxiliary sub-sea controls and template;

(4) Lay down the drill pipe and secure the drill pipe and marine riser;

(5) Secure the drilling equipment;

(6) Transfer the fluids for transport or disposal;

(7) Secure ancillary equipment like the draw works and lines;

(8) Refuel or transfer fuel;

(9) Offload waste;

(10) Recover the Remotely Operated Vehicles;

(11) Pick up the oil spill prevention booms and equipment; and

(12) Offload the drilling crew.

(c) A description of well-specific drilling objectives, timelines, and updated contingency plans for temporary abandonment of the well, including but not limited to the following:

(1) When you will spud the particular well (i.e., begin drilling operations at the well site) identified in the APD;

(2) How long you will take to drill the well;

(3) Anticipated depths and geologic targets, with timelines;

(4) When you expect to set and cement each string of casing;

(5) When and how you would log the well;

(6) Your plans to test the well;

(7) When and how you intend to abandon the well, including specifically addressing your plans for how to move the rig off location and how you will meet the requirements of § 250.720(c);

(8) A description of what equipment and vessels will be involved in the process of temporarily abandoning the well due to ice; and

(9) An explanation of how you will integrate these elements into your overall program.

(d) A detailed description of your weather and ice forecasting capability for all phases of the drilling operation, including:

(1) How you will ensure your continuous awareness of potential weather and ice hazards at, and during transition between, wells;

(2) Your plans for managing ice hazards and responding to weather events; and

(3) Verification that you have the capabilities described in your BOEM-approved EP.

(e) A detailed description of how you will comply with the requirements of § 250.472.

(f) A statement that you own, or have a contract with a provider for, source control and containment equipment (SCCE), which is capable of controlling and/or containing a worst case discharge, as described in your BOEM-approved EP, when proposing to use a MODU to conduct exploratory drilling operations on the Arctic OCS. The following information must be included in your SCCE submittal:

(1) A detailed description of your or your contractor's SCCE capability to stop or contain flow from an out-of-control well, including your operating assumptions and limitations; your access to and ability to deploy, in accordance with § 250.471, all necessary SCCE; and your ability to evaluate the performance of the well design to determine how you can achieve a full shut-in without having reservoir fluids discharged into the environment;

(2) An inventory of the local and regional SCCE, supplies, and services that you own or for which you have a contract with a provider. You must identify each supplier of such equipment and services and provide their locations and telephone numbers;

(3) Where applicable, proof of contracts or membership agreements with cooperatives,

service providers, or other contractors who will provide you with the necessary SCCE or related supplies and services if you do not possess them. The contract or membership agreement must include provisions for ensuring the availability of the personnel and/or equipment on a 24-hour per day basis while you are drilling below or working below the surface casing;

(4) A detailed description of the procedures you plan to use to inspect, test, and maintain your SCCE; and

(5) A detailed description of your plan to ensure that all members of your operating team, who are responsible for operating the SCCE, have received the necessary training to deploy and operate such equipment in Arctic OCS conditions and demonstrate ongoing proficiency in source control operations. You must also identify and include the dates of prior and planned training.

(g) Where it does not conflict with other requirements of this subpart, and except as provided in paragraphs (g)(1) through (11) of this section, you must comply with the requirements of API RP 2N, Third Edition "Planning, Designing, and Constructing Structures and Pipelines for Arctic Conditions" (incorporated by reference as specified in § 250.198), and provide a detailed description of how you will utilize the best practices included in API RP 2N during your exploratory drilling operations. You are not required to incorporate the following sections of API RP 2N into your drilling operations:

(1) Sections 6.6.3 through 6.6.4;

(2) The foundation recommendations in Section 8.4;

(3) Section 9.6;

(4) The recommendations for permanently moored systems in Section 9.7;

(5) The recommendations for pile foundations in Section 9.10;

(6) Section 12;

(7) Section 13.2.1;

(8) Sections 13.8.1.1, 13.8.2.1, 13.8.2.2, 13.8.2.4 through 13.8.2.7;

(9) Sections 13.9.1, 13.9.2, 13.9.4 through 13.9.8;

(10) Sections 14 through 16; and

(11) Section 18.

§ 250.471 What are the requirements for Arctic OCS source control and containment?

You must meet the following requirements for all exploration wells drilled on the Arctic OCS:

(a) If you use a MODU when drilling below or working below the surface casing, you must have access to the following SCCE capable of stopping or capturing the flow of an out-of-control well:

(1) A capping stack, positioned to ensure that it will arrive at the well location within 24 hours after a loss of well control and can be deployed as directed by the Regional Supervisor pursuant to paragraph (h) of this section;

(2) A cap and flow system, positioned to ensure that it will arrive at the well location within 7 days after a loss of well control and can be deployed as directed by the Regional Supervisor pursuant to paragraph (h) of this section. The cap and flow system must be designed to capture at least the amount of hydrocarbons equivalent to the calculated worst case discharge rate referenced in your BOEM-approved EP; and

(3) A containment dome, positioned to ensure that it will arrive at the well location within 7 days after a loss of well control and can be deployed as directed by the Regional Supervisor pursuant to paragraph (h) of this section. The containment dome must have the capacity to pump fluids without relying on buoyancy.

(b) You must conduct a monthly stump test of dry-stored capping stacks. If you use a pre-positioned capping stack, you must conduct a stump test prior to each installation on each well.

(c) As required by § 250.465(a), if you propose to change your well design, you must submit an APM. For Arctic OCS operations, your APM must include a reevaluation of your SCCE capabilities for any new Worst Case Discharge (WCD) rate, and a demonstration that your SCCE capabilities will meet the criteria in § 250.470(f) under the changed well design.

(d) You must conduct tests or exercises of your SCCE, including deployment of your SCCE, when directed by the Regional Supervisor.

(e) You must maintain records pertaining to testing, inspection, and maintenance of your SCCE for at least 10 years and make the records available to any authorized BSEE representative upon request.

(f) You must maintain records pertaining to the use of your SCCE during testing, training, and deployment activities for at least 3 years and make the records available to any authorized BSEE representative upon request.

(g) Upon a loss of well control, you must initiate transit of all SCCE identified in paragraph (a) of this section to the well.

(h) You must deploy and use SCCE when directed by the Regional Supervisor.

(i) Operators may request approval of alternate procedures or equipment to the SCCE requirements of subparagraph (a) of this section in accordance with § 250.141. The operator must show and document that the alternate procedures or equipment will provide a level of safety and environmental protection that will meet or exceed the level of safety and environmental protection required by BSEE regulations, including demonstrating that the alternate procedures or equipment will be capable of stopping or capturing the flow of an out-of-control well.

§ 250.472 What are the relief rig requirements for the Arctic OCS?

(a) In the event of a loss of well control, the Regional Supervisor may direct you to drill a relief

well using the relief rig able to kill and permanently plug an out-of-control well as described in your APD. Your relief rig must comply with all other requirements of this part pertaining to drill rig characteristics and capabilities, and it must be able to drill a relief well under anticipated Arctic OCS conditions.

(b) When you are drilling below or working below the surface casing during Arctic OCS exploratory drilling operations, you must have access to a relief rig, different from your primary drilling rig, staged in a location such that it can arrive on site, drill a relief well, kill and abandon the original well, and abandon the relief well prior to expected seasonal ice encroachment at the drill site, but no later than 45 days after the loss of well control.

(c) Operators may request approval of alternative compliance measures to the relief rig requirement in accordance with § 250.141. The operator must show and document that the alternate compliance measure will meet or exceed the level of safety and environmental protection required by BSEE regulations, including demonstrating that the alternate compliance measure will be able to kill and permanently plug an out-of-control well.

§ 250.473 What must I do to protect health, safety, property, and the environment while operating on the Arctic OCS?

In addition to the requirements set forth in § 250.107, when conducting exploratory drilling operations on the Arctic OCS, you must protect health, safety, property, and the environment by using the following:

(a) Equipment and materials that are rated or de-rated for service under conditions that can be reasonably expected during your operations; and

(b) Measures to address human factors associated with weather conditions that can be reasonably expected during your operations including, but not limited to, provision of proper attire and equipment, construction of protected work spaces, and management of shifts.

9. Amend § 250.720 by adding paragraph (c) to read as follows:

§ 250.720 When and how must I secure a well?

* * * * *

(c) For Arctic OCS exploratory drilling operations, in addition to the requirements of paragraphs (a) and (b) of this section:

(1) If you move your drilling rig off a well prior to completion or permanent abandonment, you must ensure that any equipment left on, near, or in a wellbore that has penetrated below the surface casing is positioned in a manner to:

(i) Protect the well head; and

(ii) Prevent or minimize the likelihood of compromising the down-hole integrity of the well or the effectiveness of the well plugs.

(2) In areas of ice scour you must use a well mudline cellar or an equivalent means of

minimizing the risk of damage to the well head and wellbore. BSEE may approve an equivalent means that will meet or exceed the level of safety and environmental protection provided by a mudline cellar if the operator can show that utilizing a mudline cellar would compromise the stability of the rig, impede access to the well head during a well control event, or otherwise create operational risks.

10. Amend § 250.1920 by:

a. Adding a sentence at the end of paragraphs (b)(5), (c), and (d); and

b. Adding paragraphs (f) and (g).

The additions read as follows:

§ 250.1920 What are the auditing requirements for my SEMS program?

* * * * *

(b) ** *

(5) ** * For exploratory drilling operations taking place on the Arctic OCS, you must conduct an audit, consisting of an onshore portion and an offshore portion, including all related infrastructure, once per year for every year in which drilling is conducted.

* * * * *

(c) ** * For exploratory drilling operations taking place on the Arctic OCS, you must submit an audit report of the audit findings, observations, deficiencies and conclusions for the onshore portion of your audit no later than March 1 in any year in which you plan to drill, and for the offshore portion of your audit, within 30 days of the close of the audit.

(d) * * * For exploratory drilling operations taking place on the Arctic OCS, you must provide BSEE with a copy of your CAP for addressing deficiencies or nonconformities identified in the onshore portion of the audit no later than March 1 in any year in which you plan to drill, and for the offshore portion of your audit, within 30 days of the close of the audit.

* * * * *

(f) For exploratory drilling operations taking place on the Arctic OCS, during the offshore portion of each audit, 100 percent of the facilities operated must be audited while drilling activities are underway. You must start and close the offshore portion of the audit for each facility within 30 days after the first spudding of the well or entry into an existing wellbore for any purpose from that facility.

(g) For exploratory drilling operations taking place on the Arctic OCS, if BSEE determines that the CAP or progress toward implementing the CAP is not satisfactory, BSEE may order you to shut down all or part of your operations.

PART 254 – OIL-SPILL RESPONSE REQUIREMENTS FOR FACILITIES LOCATED SEAWARD OF THE COAST LINE

11. The authority citation for 30 CFR part 254 continues to read as follows:

Authority: 33 U.S.C. 1321.

12. Amend § 254.6 by:

a. Revising the definition of "Adverse weather conditions;" and

b. Adding definitions for "Arctic OCS" and "Ice intervention practices" in alphabetical order.

The revision and additions read as follows:

§ 254.6 Definitions.

* * * * *

Adverse weather conditions means, for the purposes of this part, weather conditions found in the operating area that make it difficult for response equipment and personnel to clean up or remove spilled oil or hazardous substances. These conditions include, but are not limited to: fog, inhospitable water and air temperatures, wind, sea ice, extreme cold, freezing spray, snow, currents, sea states, and extended periods of low light. Adverse weather conditions do not refer to conditions under which it would be dangerous or impossible to respond to a spill, such as a hurricane.

Arctic OCS means the Beaufort Sea and Chukchi Sea Planning Areas (for more information on these areas, see the Proposed Final OCS Oil and Gas Leasing Program for 2012-2017 (June 2012) at http://www.boem.gov/Oil-and-Gas-Energy-Program/Leasing/Five-Year-Program/2012-2017/Program-Area-Maps/index.aspx).

* * * * *

Ice intervention practices mean the equipment, vessels, and procedures used to increase oil encounter rates and the effectiveness of spill response techniques and equipment when sea ice is present.

* * * * *

13. Add § 254.55 to subpart D to read as follows:

§ 254.55 Spill response plans for facilities located in Alaska State waters seaward of the coast line in the Chukchi and Beaufort Seas.

Response plans for facilities conducting exploratory drilling operations from a MODU seaward of the coast line in Alaska State waters in the Chukchi and Beaufort Seas must follow the requirements contained within subpart E of this part, in addition to the other requirements of this subpart. Such response plans must address how the source control procedures selected to comply with State law will be integrated into the planning, training, and exercise requirements of §§ 254.70(a), 254.90(a), and 254.90(c), in the event that the proposed operations do not incorporate the capping stack, cap and flow system, containment dome, and/or other similar subsea and surface devices and equipment and vessels referenced in those sections.

14. Add subpart E to read as follows:

Subpart E—Oil-Spill Response Requirements for Facilities Located on the Arctic OCS

Sec. 254.65 Purpose.

254.66 through 254.69 [Reserved]

254.70 What are the additional requirements for facilities conducting exploratory drilling from a MODU on the Arctic OCS?

254.71 through 254.79 [Reserved]

254.80 What additional information must I include in the "Emergency response action plan" section for facilities conducting exploratory drilling from a MODU on the Arctic OCS?

254.81 through 254.89 [Reserved]

254.90 What are the additional requirements for exercises of your response personnel and equipment for facilities conducting exploratory drilling from a MODU on the Arctic OCS?

Subpart E—Oil-Spill Response Requirements for Facilities Located on the Arctic OCS

§ 254.65 Purpose.

This subpart describes the additional requirements for preparing OSRPs and maintaining oil spill preparedness for facilities conducting exploratory drilling operations from a mobile offshore drilling unit (MODU) on the Arctic OCS.

§§ 254.66 through 254.69 [Reserved]

§ 254.70 What are the additional requirements for facilities conducting exploratory drilling from a MODU on the Arctic OCS?

In addition to meeting the applicable requirements of this part, your OSRP must:

(a) Describe how the relevant personnel, equipment, materials, and support vessels associated with the capping stack, cap and flow system, containment dome, and other similar subsea and surface devices and equipment and vessels will be integrated into oil spill response incident action planning;

(b) Describe how you will address human factors, such as cold stress and cold related conditions, associated with oil spill response activities in adverse weather conditions and their impacts on decision-making and health and safety; and

(c) Undergo plan-holder review prior to handling, storing, or transporting oil in connection with seasonal exploratory drilling activities, and all resulting modifications must be submitted to the Regional Supervisor. If this review does not result in modifications, you must inform the Regional Supervisor in writing that there are no changes. The requirements of this paragraph (c) are in lieu of the requirements in § 254.30(a).

§§ 254.71 through 254.79 [Reserved]

§ 254.80 What additional information must I include in the "Emergency response action plan" section for facilities conducting exploratory drilling from a MODU on the Arctic OCS?

In addition to the requirements in § 254.23, you must include the following information in the emergency response action plan section of your OSRP:

(a) A description of your ice intervention practices and how they will improve the effectiveness of the oil spill response options and strategies that are listed in your OSRP in the presence of sea ice. When developing the ice intervention practices for your OSRP, you must consider, at a minimum, the use of specialized tactics, modified response equipment, ice management assist vessels, and technologies for the identification, tracking, containment and removal of oil in ice.

(b) On areas of the Arctic OCS where a planned shore-based response would not satisfy § 254.1(a):

(1) A list of all resources required to ensure an effective offshore-based response capable of operating in adverse weather conditions. This list must include a description of how you will ensure the shortest possible transit times, including but not limited to establishing an offshore resource management capability (e.g., sea-based staging, maintenance, and berthing logistics); and

(2) A list and description of logistics resupply chains, including waste management, that effectively factor in the remote and limited infrastructure that exists in the Arctic and ensure you can adequately sustain all oil spill response activities for the duration of the response. The components of the logistics supply chain include, but are not limited to:

(i) Personnel and equipment transport services;

(ii) Airfields and types of aircraft that can be supported;

(iii) Capabilities to mobilize supplies (e.g., response equipment, fuel, food, fresh water) and personnel to the response sites;

(iv) Onshore staging areas, storage areas that may be used en-route to staging areas, and camp facilities to support response personnel conducting offshore, nearshore and shoreline response; and

(v) Management of recovered fluid and contaminated debris and response materials (e.g., oiled sorbents), as well as waste streams generated at offshore and on-shore support facilities (e.g., sewage, food, and medical).

(c) A description of the system you will use to maintain real-time location tracking for all response resources while operating, transiting, or staging/maintaining such resources during a spill response.

§§ 254.81 through 254.89 [Reserved]

§ 254.90 What are the additional requirements for exercises of your response personnel and equipment for facilities conducting exploratory drilling from a MODU on the Arctic OCS?

In addition to the requirements in § 254.42, the following requirements apply to exercises for your response personnel and equipment for facilities conducting exploratory drilling from a MODU on the Arctic OCS:

(a) You must incorporate the personnel, materials, and equipment identified in § 254.70(a), the safe working practices identified in § 254.70(b), the ice intervention practices described in § 254.80(a), the offshore-based response requirements in § 254.80(b), and the resource tracking requirements in § 254.80(c) into your spill-response training and exercise activities.

(b) For each season in which you plan to conduct exploratory drilling operations from a MODU on the Arctic OCS, you must notify the Regional Supervisor 60 days prior to handling, storing, or transporting oil.

(c) After the Regional Supervisor receives notice pursuant to § 254.90(b), the Regional Supervisor may direct you to deploy and operate your spill response equipment and/or your capping stack, cap and flow system, and containment dome, and other similar subsea and surface devices and equipment and vessels, as part of announced or unannounced exercises or compliance inspections. For the purposes of this section, spill response equipment does not include the use of blowout preventers, diverters, heavy weight mud to kill the well, relief wells, or other similar conventional well control options.

CHAPTER V—BUREAU OF OCEAN ENERGY MANAGEMENT, DEPARTMENT OF THE INTERIOR

PART 550—OIL AND GAS AND SULFUR OPERATIONS IN THE OUTER CONTINENTAL SHELF

15. The authority citation for 30 CFR part 550 is revised to read as follows:

Authority: 30 U.S.C. 1751; 31 U.S.C. 9701; 43 U.S.C. 1334.

16. Amend § 550.105 by adding definitions for “Arctic OCS” and “Arctic OCS conditions” in alphabetical order to read as follows:

§ 550.105 Definitions.

* * * * *

Arctic OCS means the Beaufort Sea and Chukchi Sea Planning Areas (for more information on these areas, see the Proposed Final OCS Oil and Gas Leasing Program for 2012-2017 (June 2012) at http://www.boem.gov/Oil-and-Gas-Energy-Program/Leasing/Five-Year-Program/2012-2017/Program-Area-Maps/index.aspx).

Arctic OCS conditions means, for the purposes of this part, the conditions operators can reasonably expect during operations on the Arctic OCS. Such conditions, depending on the time of year, include, but are not limited to: extreme cold, freezing spray, snow, extended periods of

low light, strong winds, dense fog, sea ice, strong currents, and dangerous sea states. Remote location, relative lack of infrastructure, and the existence of subsistence hunting and fishing areas are also characteristic of the Arctic region.

* * * * *

17. Amend § 550.200 in paragraph (a) by adding the term "IOP" in alphabetical order:

§ 550.200 Definitions.

* * * * *

(a) * * *

IOP means Integrated Operations Plan.

* * * * *

18. Add § 550.204 to read as follows:

§ 550.204 When must I submit my IOP for proposed Arctic exploratory drilling operations and what must the IOP include?

If you propose exploratory drilling activities on the Arctic OCS, you must submit an Integrated Operations Plan (IOP) to the Regional Supervisor at least 90 days prior to filing your EP. Your IOP must describe how your exploratory drilling program will be designed and conducted in an integrated manner that accounts for Arctic OCS conditions and include the following information:

(a) A description of how all vessels and equipment will be designed, built, and/or modified to account for Arctic OCS conditions;

(b) A schedule of your exploratory drilling program, including contractor work on critical components of your program;

(c) A description of your mobilization and demobilization operations, including tow plans that account for Arctic OCS conditions, as well as your general maintenance schedule for vessels and equipment;

(d) A description of your exploratory drilling program objectives and timelines for each objective, including general plans for abandonment of the well(s), such as:

(1) Contingency plans for temporary abandonment in the event of ice encroachment at the drill site;

(2) Plans for permanent abandonment; and

(3) Plans for temporary seasonal abandonment.

(e) A description of your weather and ice forecasting capabilities for all phases of the exploration program, including a description of how you would respond to and manage ice

hazards and weather events;

(f) A description of work to be performed by contractors supporting your exploration drilling program (including mobilization and demobilization), including:

(1) How such work will be designed or modified to account for Arctic OCS conditions; and

(2) Your concepts for contractor management, oversight, and risk management.

(g) A description of how you will ensure operational safety while working in Arctic OCS conditions, including but not limited to:

(1) The safety principles that you intend to apply to yourself and your contractors;

(2) The accountability structure within your organization for implementing such principles;

(3) How you will communicate such principles to your employees and contractors; and

(4) How you will determine successful implementation of such principles.

(h) Information regarding your preparations and plans for staging of oil spill response assets;

(i) A description of your efforts to minimize impacts of your exploratory drilling operations on local community infrastructure, including but not limited to housing, energy supplies, and services; and

(j) A description of whether and to what extent your project will rely on local community workforce and spill cleanup response capacity.

19. Revise § 550.206 to read as follows:

§550.206 How do I submit the IOP, EP, DPP, or DOCD?

(a) Number of copies. When you submit an IOP, EP, DPP, or DOCD to BOEM, you must provide:

(1) Four copies that contain all required information (proprietary copies);

(2) Eight copies for public distribution (public information copies) that omit information that you assert is exempt from disclosure under the Freedom of Information Act (FOIA) (5 U.S.C. 552) and the implementing regulations (43 CFR part 2); and

(3) Any additional copies that may be necessary to facilitate review of the IOP, EP, DPP, or DOCD by certain affected States and other reviewing entities.

(b) Electronic submission. You may submit part or all of your IOP, EP, DPP, or DOCD and its accompanying information electronically. If you prefer to submit your IOP, EP, DPP, or DOCD electronically, ask the Regional Supervisor for further guidance.

(c) Withdrawal after submission. You may withdraw your proposed IOP, EP, DPP, or DOCD at any time for any reason. Notify the appropriate BOEM OCS Region if you do.

20. Amend § 550.220 by revising paragraph (a) and adding paragraph (c) to read as follows:

§ 550.220 If I propose activities in the Alaska OCS Region, what planning information must accompany the EP?

* * * * *

(a) Emergency plans. A description of your emergency plans to respond to a fire, explosion, personnel evacuation, or loss of well control, as well as a loss or disablement of a drilling unit, and loss of or damage to a support vessel, offshore vehicle, or aircraft.

* * * * *

(c) If you propose exploration activities on the Arctic OCS, the following planning information must also accompany your EP:

(1) Suitability for Arctic OCS conditions. A description of how your exploratory drilling activities will be designed and conducted in a manner that accounts for Arctic OCS conditions and how such activities will be managed and overseen as an integrated endeavor.

(2) Ice and weather management. A description of your weather and ice forecasting and management plans for all phases of your exploratory drilling activities, including:

(i) A description of how you will respond to and manage ice hazards and weather events;

(ii) Your ice and weather alert procedures;

(iii) Your procedures and thresholds for activating your ice and weather management system(s); and

(iv) Confirmation that you will operate ice and weather management and alert systems continuously throughout the planned operations, including mobilization and demobilization operations to and from the Arctic OCS.

(3) Source control and containment equipment capabilities. A general description of how you will comply with § 250.471 of this title.

(4) Deployment of a relief well rig. A general description of how you will comply with § 250.472 of this title, including a description of the relief well rig, the anticipated staging area of the relief well rig, an estimate of the time it would take for the relief well rig to arrive at the site of a loss of well control, how you would drill a relief well if necessary, and the approximate timeframe to complete relief well operations.

(5) Resource-sharing. Any agreements you have with third parties for the sharing of assets or the provision of mutual aid in the event of an oil spill or other emergency.

(6) Anticipated end of seasonal operations dates. Your projected end of season dates, and the information used to identify those dates, for:

(i) The completion of on-site operations, which is contingent upon your capability in terms of equipment and procedures to manage and mitigate risks associated with Arctic OCS conditions;

and

(ii) The termination of drilling operations consistent with the relief rig planning requirements under § 250.472 of this title and with your estimated timeframe under paragraph (c)(4) of this section for completion of relief well operations.

APPENDIX B. LEVEL OF EFFECT DEFINITIONS

This section defines and explains the levels of effect used in the EA to evaluate potential environmental impacts of the rule. Impacts are described in terms of frequency, duration, general scope, and/or size and intensity. Each level considers such factors as the nature of the impact, the spatial extent, recovery times, and the effects of mitigation.

Air Quality

Negligible

No measureable changes in air quality attributable to activity.

Minor

Changes in air quality would be localized and temporary.

Moderate

- Project-related emissions cause pollutant concentrations of at least one pollutant to exceed one-half of the Prevention of Significant Deterioration maximum allowable increases; or
- project-related emissions cause pollutant concentrations of at least one pollutant to exceed one-half of the NAAQS, and,
- if applicable, the Alaska AAQS; or increases in emissions of nitrogen oxides (NO_x) and VOCs would result in the formation of ozone to a level that would be expected to exceed one-half the ozone NAAQS.

Major

- Impact on the shoreline would be above the significance levels defined in 40 CFR 51.165(b)(2) for any criteria pollutant; or
- increases in emissions of NO_x and VOCs would result in the formation of ozone to a level that would be expected to equal or exceed the ozone NAAQS.

Water Quality

Negligible

Temporary and localized impacts on water quality that do not cause an "unreasonable

degradation" under 40 CFR 125.122.

Minor

Long-term and/or widespread impacts on water quality that do not cause an "unreasonable degradation" under 40 CFR 125.122.

Moderate

Impacts on water quality that exceed NPDES permit criteria or cause a temporary or localized "unreasonable degradation" under 40 CFR 125.122.

Major

Impacts on water quality that cause long-term and widespread "unreasonable degradation" under 40 CFR 125.122.

Coastal, Benthic, and Pelagic Habitats

Negligible

- No measurable impacts. Population-level effects are not detectable.
- Localized, short-term disturbance or habitat effect experienced during one season that is not to accumulate across multiple seasons.
- No population-level impacts on reproductive success or recruitment are anticipated.
- Mitigation measures are implemented fully and effectively or are not necessary.

Minor

- Population-level effects are not detectable.
- Widespread annual or chronic disturbances or habitat effects are not anticipated to accumulate across one year, or localized effects that are anticipated to persist for more than one year.
- Mitigation measures could be implemented on some, but not all, impacting activities, indicating that some adverse effects are avoidable.
- Unmitigatable or unavoidable adverse effects are short-term and localized.

Moderate

- Disturbances could occur, but not on a scale resulting in population-level effects.
- Widespread annual or chronic disturbances or habitat effects could persist for more than one year and up to a decade.

Major

- Disturbances occur that result in measurable population-level effects.
- Widespread seasonal, chronic, or effects from subsequent seasons are cumulative and are likely to persist for more than one decade.
- Mitigation measures are implemented only for a small portion of similar impacting activities, but more widespread implementation for similar activities could be more effective in

reducing the level of avoidable adverse effects.
- Unmitigatable or unavoidable adverse effects are widespread and long lasting.

Lower Trophics

All levels of effects are the same as for marine benthic and pelagic habitats.

Fish and EFH

Negligible

Negligible for fish and EFH are the same as negligible for marine benthic and pelagic habitats.

Minor

- Population-level effects are not detectable. Temporary, nonlethal adverse effects on some individuals.
- Widespread annual or chronic disturbances or habitat effects not anticipated to accumulate across one year, or localized effects that are anticipated to persist for more than one year.
- Low mortality levels could occur, measurable in terms of individuals or less than 1 percent of the local post-breeding fish populations.
- Mitigation measures could be implemented on some, but not all, impacting activities, indicating that some adverse effects are avoidable.
- Unmitigatable or unavoidable adverse effects are short-term and localized.

Moderate

- Mortalities or disturbances could occur, but not on a scale resulting in population-level effects.
- Widespread annual or chronic disturbances or habitat effects could persist for more than one year and up to a decade.
- Some mortality could occur but remains limited to a number of individuals insufficient to produce population-level effects.
- Widespread implementation of mitigation measures for similar activities could be effective in reducing the level of avoidable adverse effects.

Major

Same as for marine benthic and pelagic habitats.

Marine and Coastal Birds

Negligible

- Localized short-term disturbance or habitat effect experienced during one season that is not anticipated to accumulate across one year.
- No mortality is anticipated.
- Mitigation measures implemented fully and effectively or are not necessary.

Minor

- Widespread annual or chronic disturbances or habitat effects not anticipated to accumulate across one year, or localized effects that are anticipated to persist for more than one year.
- Anticipated or potential mortality is estimated or measured in terms of individuals or less than 1 percent of the local post-breeding population.
- Mitigation measures are implemented on some, but not all, impacting activities, indicating that some adverse effects are avoidable.
- Unmitigatable or unavoidable adverse effects are short term and localized.

Moderate

Widespread annual or chronic disturbances or habitat effects anticipated to persist for more than one year, but less than a decade.

Major

- Widespread annual or chronic disturbance or habitat effect experienced during one season that would be anticipated to persist for a decade or longer.
- Anticipated or potential mortality is estimated or measured in terms of hundreds or thousands of individuals or less than 10 percent of the local post-breeding population, which could result in a long-term population-level effect.
- Mitigation measures are implemented for limited activities, but more widespread implementation for similar activities would be effective in reducing the level of avoidable adverse effects.
- Unmitigatable or unavoidable adverse effects are widespread and long lasting.

Marine Mammals

Negligible

- Localized, short-term disturbance or habitat effect experienced during one season that is not anticipated to accumulate across multiple seasons. Temporary, nonlethal adverse effects on a few individuals are possible.
- Could cause brief behavioral reactions such as temporary avoidances of or deflections around an area.
- No mortality or population-level effects are anticipated.
- Could affect an endangered or threatened species or critical habitat under the ESA.
- Mitigation measures are implemented fully and effectively or are not necessary.
- Unmitigatable or unavoidable adverse effects are difficult to measure or observe.

Minor

- Localized disturbance or habitat effects experienced during one season may accumulate across subsequent seasons, but not over one year.
- Temporary, nonlethal adverse effects to some individuals.
- Could cause behavioral reactions such as avoidances of or deflections around a localized area.

- Mortality or population-level effects are not anticipated.
- Could adversely affect an endangered or threatened species or critical habitat under the ESA.
- Mitigation measures are fully implemented or are not necessary.
- Unmitigatable or unavoidable adverse effects are short-term and localized.

Moderate

- Widespread annual or chronic disturbances or habitat effects could persist for more than one year and up to a decade.
- Mortalities or disturbances could occur, but would be below the estimated Potential Biological Removal. Population-level effects are not anticipated.
- Likely to adversely affect an endangered or threatened species or modify critical habitat under the ESA.
- Widespread implementation of mitigation measures for similar activities could be effective in reducing the level of avoidable adverse effects.
- Unmitigatable or unavoidable adverse effects are short-term and widespread or long-term and localized.

Major

- Widespread seasonal or chronic effects from subsequent seasons are cumulative and are likely to persist for more than one decade.
- Mortalities or disturbances could occur at or above the estimated Potential Biological Removal, which could be a population-level effect.
- Could adversely affect an endangered or threatened species or critical habitat under the ESA, but would not necessarily jeopardize the continued existence of an ESA-listed species.
- Mitigation measures are implemented only for a small portion of similar impacting activities, but more widespread implementation for similar activities could be more effective in reducing the level of avoidable adverse effects.
- Unmitigatable or unavoidable adverse effects are widespread and long lasting.

Sociocultural Systems

Negligible

Periodic disruption of social organization, cultural values, and/or institutional arrangements occurs without displacement of existing social patterns.

Minor

Disruption of social organization, cultural values, and/or institutional arrangement occurs for a period of less than one year, without a tendency toward displacement of existing social patterns.

Moderate

Chronic disruption of social organization, cultural values, and/or institutional arrangements occurs for a period of more than one year, without a tendency toward displacement of existing social patterns.

Major

Disruption of social organization, cultural values, and/or institutional arrangements with a tendency toward displacement of existing social patterns.

Subsistence

Negligible

Subsistence resources could be periodically affected with no apparent effect on subsistence harvests.

Minor

Adverse impacts on subsistence activities are of an accidental and/or incidental nature and limited to a short-term period.

Moderate

Adverse impacts which disrupt subsistence activities, or make subsistence resources unavailable, undesirable for use, or only available in greatly reduced numbers, for a substantial portion of a subsistence season for any community.

Major

Adverse impacts resulting in one or more important subsistence resources becoming unavailable, undesirable for use, or available only in greatly reduced numbers for any community.

The Department of the Interior Mission

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

BOEM
Bureau of Ocean Energy Management

The Bureau of Ocean Energy Management Mission

As a bureau of the Department of the Interior, the Bureau of Ocean Energy Management's (BOEM) primary responsibilities are to manage the mineral resources located on the Nation's Outer Continental Shelf (OCS) in an environmentally sound and safe manner.

BSEE
Bureau of Safety and Environmental Enforcement

The Bureau of Safety and Environmental Enforcement

BSEE works to promote safety, protect the environment, and conserve resources offshore through vigorous regulatory oversight and enforcement.