United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Fairbanks Fish and Wildlife Field Office
101 12th Avenue, Room 110
Fairbanks, Alaska 99701
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MEMORANDUM

To: **Fred King, Chief of Leasing and Environment (Acting), Bureau of Ocean Energy, Management, Regulation, and Enforcement**

From: **Sarah C. Conn, Field Supervisor, Fairbanks Fish & Wildlife Field Office**

Subject: **ESA section 7 conference on the Pacific walrus and consultation for polar bear critical habitat for ongoing activities associated with Northstar**

Cc: **Craig Perham, Wildlife Biologist, Marine Mammals Management**
Terry DeBruyn, Supervisory Wildlife Biologist, Marine Mammals Management

This memorandum responds to your request for conference on Pacific walrus and consultation on polar bear critical habitat pursuant to Section 7 of the Endangered Species Act of 1973, as amended (ESA). We understand the Bureau of Ocean Energy, Management, Regulation, and Enforcement (BOEMRE) proposes to continue permitting operations at the Northstar offshore oil production facility (Northstar). The Service first consulted on effects of this project on Steller's (*Polysticta stelleri*) and spectacled (*Somateria fischeri*) eiders on March 11, 1999 and amended the resulting Biological Opinion (BO) on September 1, 2009 to include an analysis of effects on polar bears (*Ursus maritimus*), yellow-billed loons (*Gravia adamsii*), and Kittlitz's murrelet (*Brachyramphus brevirostris*). Since the last amendment the Service added the Pacific walrus (*Odobenus rosmarus divergens*) to the candidate list and designated critical habitat for the polar bear under the ESA. This memo supplements the current BO with analysis of effects on these entities.

THE PROPOSED ACTION

For a complete description of the proposed Action, please see previous versions of the BO for this project. Northstar consists of a 5-acre man-made gravel island with a work surface for drilling, oil production, and two sub-sea pipelines buried 3x the depth of the deepest ice gouges that transport materials to and from the island to infrastructure at Prudhoe Bay. One pipeline transports crude oil to shore near Point Storkersen and connects with the TAPS pipeline. The other pipeline imports gas from the Central Compressor Plant in the Prudhoe Bay field for gas injection and power generation at Northstar. The island is 9.6 km north of Point Storkersen and 5.5 km from the closest barrier island in 12 meters of water. Drilling activities may be conducted at two well sites from fall through spring annually. Permanent living quarters and supporting oil production facilities are also located on the island.

Typical activities associated with Northstar are as follows:

- Each month, four to seven aerial surveys are flown to inspect the pipelines for leaks and spills. Helicopters make approximately 135 round trips from the mainland to Northstar to transport crew and materials. Recommended flight corridors and altitude restrictions in the U.S. Army Corps of Engineer permit are maintained.
- During the open water period, there are 100-200 helicopter round trips, 350-500 hovercraft round trips, 40-50 tug and barge trips, and 50-150 Alaska Clean Seas Bay-class boat round trips between West Dock and Northstar. The number of trips varies depending upon the level of construction or repair planned. Annual repair activities may consist of removing damaged concrete blocks and replacing them with new ones, installing a new layer of filter fabric, installing gravel bags to build up and stabilize the subgrade, and overlaying geogrid to reduce the susceptibility of the fabric to abrasion.
- Vibratory or impact pile driving activities may also take place in some years.
- During the ice season, one 11-15 km ice road connecting Northstar to the mainland near West Dock is built. Hagglunds tracked vehicles make approximately 40 round trips between West Dock and Northstar and a hovercraft makes approximately 575 round trips.
- Spill response activities occasionally take place in response to small spills that have occurred. From 2005 to 2009, 40 reportable spills of drilling mud, corrosion inhibitor, sewage, methanol, motor oil, diesel fuel, hydraulic fluid, lube oil, power drilling fluid, and propylene glycol occurred. Most spills occurred on the island, but a few occurred on ice. No chemicals reached marine waters. Contaminated snow, ice, and gravel were removed with various equipment, hand tools, and absorbents, and all spilled pollutants were recovered (Richardson 2007, Aerts et al. 2008). BOEMRE anticipates a similar level of small spills will continue to occur.
- Monitoring for marine mammals includes aerial surveys, acoustic buoy deployment, and visual surveys from the island.

THE ACTION AREA

The Action Area includes the Northstar island and facility, subsea pipelines, vehicle (aerial, boat, and ice vehicle) travel routes, and all terrestrial and marine areas where direct and indirect effects of the proposed Action may affect Pacific walrus (walrus) and polar bear critical habitat.

STATUS OF THE PACIFIC WALRUS AND POLAR BEAR CRITICAL HABITAT

Abundance and Distribution

The Pacific walrus is a social and gregarious pinniped that ranges into the East Siberian Sea and Beaufort Sea (Fay 1982: 7–21, Figure 1 in Garlich-Miller et al. 2011). Pacific walruses are ecologically distinct from other walrus populations, primarily because they undergo significant seasonal migrations between the Bering and the Chukchi Seas and rely principally on broken pack ice habitat to access offshore breeding and feeding areas (Fay 1982: 279). Waters deeper than 100 m (328 ft) and the extent of the pack ice are factors that limit distribution to the north (Fay 1982: 23). Walruses are rarely spotted south of the Alaska Peninsula and Aleutian archipelago; however, migrant animals (mostly males) are occasionally reported in the North

Pacific (Service 2010, unpublished data). Unlike other pinnipeds, walruses are not adapted for a pelagic existence and must haul out on ice or land regularly to rest between feeding bouts (Ray et al. 2006, 76 FR 7634: 7638). Individual groups may range from less than 10 to more than 1,000 animals (Gilbert 1999: 75–84, Ray et al. 2006).

Based on harvest data from the 18th and 19th centuries, Fay (1982: 241) speculated that the pre-exploitation population was represented by a minimum of 200,000 animals. Since that time, population size is believed to have fluctuated in response to varying levels of human exploitation. Large-scale commercial harvests are believed to have reduced the population to 50,000–100,000 animals in the mid- 1950s (Fay et al. 1997: 539). The population apparently increased rapidly in size during the 1960s and 1970s in response to harvest regulations that limited the take of females (Fay et al. 1989: 4). Population estimates from between 1975 and 1990 obtained via aerial surveys ranged from 201,039 to 290,000 individuals. In a 2006 survey in the pack ice of the Bering Sea, the number of walruses within the surveyed area was estimated at 129,000 (95% CI: 55,000; 507,000; Speckman et al. 2010). However, uncertainty exists regard the accuracy of this estimate because field crews experienced weather difficulties that forced the early termination of this survey, and differences in survey methods among years means that establishing a trend in population estimates is not possible (76 FR 7634: 7639).

Pacific walruses are highly mobile, and their distribution varies markedly in response to seasonal and inter-annual variations in sea-ice cover. During the January to March breeding season, walruses congregate in the Bering Sea pack ice in areas where open leads (fractures in sea ice caused by wind drift or ocean currents), polynyas (enclosed areas of unfrozen water surrounded by ice), or thin ice allow access to water (Fay 1982: 21, Fay et al. 1984: 89–99). The specific location of winter breeding aggregations varies annually depending upon the distribution and extent of ice. Breeding aggregations have been reported southwest of St. Lawrence Island, Alaska; south of Nunivak Island, Alaska; and south of the Chukotka Peninsula in the Gulf of Anadyr, Russia (Fay 1982, p. 21, Mymrin et al. 1990: 105–113, Figure 1 in Garlich-Miller et al. 2011). In spring, as the Bering Sea pack ice deteriorates, most of the population migrates northward through the Bering Strait to summer feeding areas over the continental shelf in the Chukchi Sea. However, several thousand animals, primarily adult males, remain in the Bering Sea during the summer months, foraging from coastal haulouts in the Gulf of Anadyr, Russia, and in Bristol Bay, Alaska (Figure 1 in Garlich-Miller et al. 2011).

Summer distributions (both males and females) in the Chukchi Sea vary annually, depending upon the extent of sea ice. When broken sea ice is abundant, walruses are typically found in patchy aggregations over continental shelf waters. Individual groups may range from less than 10 to more than 1,000 animals (Gilbert 1999: 75–84, Ray et al. 2006: 405). Summer concentrations have been reported in loose pack ice off the northwestern coast of Alaska, between Icy Cape and Point Barrow, and along the coast of Chukotka, Russia, as far west as Wrangel Island (Fay 1982: 16–17, Gilbert et al. 1992: 1–33, Belikov et al. 1996: 267–269). In years of low ice concentrations in the Chukchi Sea, some animals range east of Point Barrow into the Beaufort Sea; walruses have also been observed in the Eastern Siberian Sea in late summer (Fay 1982: 16–17, Belikov et al. 1996: 267– 269). The pack ice of the Chukchi Sea usually reaches its minimum extent in September. In years when the sea ice retreats north beyond the continental shelf, walruses congregate in large numbers (up to several tens of thousands of

animals in some locations) at terrestrial haulouts on Wrangel Island and other sites along the northern coast of the Chukotka Peninsula, Russia, and northwestern Alaska (Fay 1982: 17, Belikov et al. 1996: 267–269, Kochnev 2004: 284–288, Ovsyanikov et al. 2007: 1–4, Kavry et al. 2008: 248–251). In late September and October, walruses that summered in the Chukchi Sea typically begin moving south in advance of the developing sea ice. Satellite telemetry data indicate that male walruses that summered at coastal haulouts in the Bering Sea also begin to move northward towards winter breeding areas in November (Jay and Hills 2005: 197). The male walruses' northward movement appears to be driven primarily by the presence of females at that time of year (Freitas et al. 2009: 248–260).

Range-wide Threats and Uncertainties

The two main stressors in the Action Area for the Pacific walrus are loss of sea ice resulting from climate change and subsistence hunting. We discuss these factors and others that may be affecting the population in the Action Area below.

Loss of Sea Ice

Loss of sea ice is likely to cause walruses to become increasingly dependent on coastal haulouts for most of the summer and into the fall and early winter, which has several consequences. First, high concentrations at coastal haulouts will likely lead to localized prey depletion and decreased body condition as walruses expend increasing amounts of energy as they travel further from shore in search of prey (76 FR 7634: 7646). Second, an increased dependence on coastal haulouts is likely to cause walruses to experience increased anthropogenic and natural disturbance; exposure to disturbance at coastal haulouts will likely to lead to increased injury and mortality via trampling as walruses stampede into the water following disturbances (76 FR 7634: 7648). Third, as they become increasingly dependent on coastal haulouts, walruses will become more susceptible to predation by polar bears (especially on calves) and hunting by humans. Predators and human hunters may also indirectly cause calves to be crushed and die by causing stampedes (76 FR 7634: 7648).

Subsistence Harvest

Pacific walrus have been an important subsistence resource for coastal Alaskan and Russian Natives for thousands of years (Ray 1975), and harvest is likely to continue into the foreseeable future (76 FR 7634: 7673). However, adequate regulations for this harvest are lacking (76 FR 7634: 7661). No Statewide harvest quotas exist in Alaska, although some local harvest management programs exist. Subsistence harvest reporting in the U.S. is required under section 109(i) of the MMPA and is administered through a Marking, Tagging, and Reporting Program (MTRP; 50 CFR 18.23(f)). Compliance rates vary annually with estimates from 60 to 100 percent. The Russian reporting program, administered through the Russian Agricultural Department, has traditionally been conducted by village hunting teams. However, unaffiliated hunting has increased, and no mechanism exists for these individuals to report their harvest, which creates a harvest rate with an unknown low bias (Kochnev 2010, pers. comm). Additionally, Russians do not adjust harvest estimates for animals struck and lost. The Service uses a 42 percent correction factor to estimate total subsistence harvest levels for both countries.

Recent (2003–2007) annual harvest removals in the U.S. and Russia have ranged from 4,960 to 5,457 annually, or approximately 4 percent of the minimum population estimate of 129,000

animals (Garlich-Miller et al. 2011). However, lack of information/uncertainty regarding the population status and trend makes it difficult to quantify sustainable removal levels (Garlich-Miller et al. 2011). Harvest is likely to continue at or near current levels, despite walrus population declines in response to loss of summer sea ice (76 FR 7634:7657).

Walrus Research
The Division of Management Authority (DMA) permits walrus research under the MMPA. Currently, the DMA permits researchers to capture up to 40 walrus annually and take tissue samples from them, collect tissue samples using small harpoons on 6,150 non-captured individuals, attach satellite tracking devices using a bow and arrow on 150 non-captured individuals, and survey the entire Pacific walrus population from aircraft. Permits contain measures to minimize effects of research activities (e.g., to avoid causing stampedes at haulouts).

Pollution and Contaminants
Oil and gas activities are a source of human disturbance in walrus habitat. For example, noise from aircraft may disturb walrus at haulouts, possibly causing stampedes. Underwater noise, such as open-water seismic exploration that produces underwater sounds (e.g., with air gun arrays), may potentially affect marine mammal hearing or communication. These activities are regulated and their disturbance is authorized through the issuance of Incidental Take Regulations in the Chukchi and Beaufort seas as well as coastal areas adjacent to them and subsequent Letters of Authorization under the MMPA that require measures to minimize impacts (73 FR 33212, 76 FR 47010). Additionally, the probability of an oil spill that would negatively affect a large portion of the walrus population is extremely low. Therefore, oil and gas activities do not currently appear to threaten the extinction of walrus, and they are not likely to pose an extinction risk in the foreseeable future (76 FR 7634: 7671).

Other Activities
Human activity such as commercial fisheries interactions, and shipping in walrus habitat could disturb walrus. While human activity may disturb walrus, they are only likely to cause minor behavioral changes (e.g., walrus may look in the direction of the disturbance or swim away).

Summary
The Pacific walrus ranges across the shallow continental shelf waters of the northern Bering Sea and Chukchi Sea, occasionally ranging into the East Siberian and Beaufort Seas. A recent survey estimated the population estimate for this species to be a minimum of 129,000, although uncertainty exists regarding the accuracy of this estimate. Factors associated with climate change (i.e., loss of sea ice) and hunting, the main causes of population loss, are likely to continue into the foreseeable future.

Status of Polar Bear Critical Habitat

The Service designated polar bear critical habitat on November 24, 2010 (75 FR 76086). The Primary Constituent Elements (PCEs) of critical habitat for the polar bear are:

1) **Sea-ice habitat** used for feeding, breeding, denning, and movements, which is sea ice over waters 300 m (984.2 ft) or less in depth that occurs over the continental shelf with adequate prey resources (primarily ringed and bearded seals) to support polar bears.

2) **Terrestrial denning habitat**, which includes topographic features, such as coastal bluffs and river banks, with the following suitable macrohabitat characteristics:
   a) Steep, stable slopes (range 15.5–50.0), with heights ranging from 1.3 to 34 m (4.3 to 111.6 ft), and with water or relatively level ground below the slope and relatively flat terrain above the slope;
   b) Unobstructed, undisturbed access between den sites and the coast;
   c) Sea ice in proximity to terrestrial denning habitat prior to the onset of denning during the fall to provide access to terrestrial den sites; and
   d) The absence of disturbance from humans and human activities that might attract other polar bears.
3) **Barrier island habitat** used for denning, refuge from human disturbance, and movements along the coast to access maternal den and optimal feeding habitat, which includes all barrier islands along the Alaska coast and their associated spits, within the range of the polar bear in the United States, and the water, ice, and terrestrial habitat within 1.6 km (1 mi) of these islands (no-disturbance zone).

Critical habitat does not include manmade structures (e.g., houses, gravel roads, generator plants, sewage treatment plants, hotels, docks, seawalls, pipelines) and the land on which they are located existing within the boundaries of designated critical habitat on the effective date of this rule.

As described in the status sections for the Pacific Walrus, sea ice, including ice designated as critical habitat, is rapidly diminishing. Terrestrial denning locations in Alaska do not appear to be a limiting factor. However, rain-on-snow events may decrease den quality, and later onset of freeze-up in the fall may limit sea ice in proximity and therefore access to terrestrial denning habitat (72 FR 1064). Erosion of barrier islands and the Arctic shoreline, presumably caused by climate change (Mars and Houseknecht 2008), may be changing terrestrial denning habitat by creating or destroying bluffs.

Human activities such as ground-based vehicular traffic and low-flying aircraft occur in polar bear critical habitat. These activities may temporarily create disturbance between den sites and the coast (e.g., disturbance from ice roads), and may temporarily degrade the ability of barrier island habitat from being a refuge from human disturbance. For example, vessels may need to use barrier islands to weather out a storm, and this may interfere with a polar bear's ability to use barrier islands for the same purpose. However, these activities are usually infrequent and have short-term effects.

Summary

While other activities may diminish the quality of polar bear critical habitat, the primary factor affecting its status is loss of the sea ice critical habitat unit from climate change.

ENVIRONMENTAL BASELINE

Baseline of the Pacific Walrus

In years of low ice concentrations in the Chukchi Sea, some animals range east of Point Barrow into the Beaufort Sea (Fay 1982). However, although Pacific walruses can occur in the Beaufort Sea in the vicinity of Northstar, they do so in extremely very low numbers. This is because habitat is limited by a relatively narrow continental shelf. The deeper, less-productive waters of this area provide poor feeding grounds. From 1994 to 2004, industry monitoring programs recorded 11 animals in the Beaufort Sea. During Pacific walrus movement studies from 2007-2009, the U.S. Geological Survey showed that only a few tagged walruses entered the extreme western portion of the Beaufort Sea near Barrow (http://alaska.usgs.gov/science/biology/walrus/tracking.html). Northstar operations may occasionally encounter small groups of walruses swimming in open water, hauled out onto ice floes or along the coast, or hauled out on Northstar infrastructure.

Baseline of Polar Bear Critical Habitat

The man-made island supporting Northstar infrastructure is not considered part of polar bear critical habitat. However, the Action Area includes a small portion of adjacent sea ice, barrier island, and terrestrial denning critical habitat. Most human activities in the Action Area support oil and gas activities (e.g., helicopter flights, sea ice travel, and marine vessel traffic). However, other activities such as helicopter flights of polar bear researchers also occasionally occur.

EFFECTS OF THE ACTION

Effects of the Action on Pacific Walrus

Proposed activities could potentially result in disturbances. For example, on three occasions, one to three walrus have hauled out on the armor surrounding the Northstar facility. Thus, walrus can occur in the Action Area, and ongoing activities associated with Northstar may affect walruses.

Northstar infrastructure as an attractant. Walruses could be attracted to and haul out on Northstar equipment or infrastructure. Because very few walruses occur in the Action Area, most likely only a few walruses would haul out on Industry-related structures at any given time, which minimizes the risk to smaller individuals to being crushed by a stampede. Additionally, measures included in LOAs will further minimize effects of disturbance. Therefore, we expect disturbance of walrus hauled out on Industry infrastructure to occur rarely, and when it occurs will have only a minor effect on the walruses in the Action Area.

Effect of disturbance. The proposed Action includes use of aircraft, boats, and ice vehicles, all of which can disturb walrus, if present. The responses of walruses to disturbance stimuli are variable, but generally, individual walruses that are hauled out are more sensitive to disturbance than swimming individuals. Disturbance events are known to cause walrus groups to abandon land or ice haulouts in a stampede and occasionally result in trampling injuries or cow-calf separations, both of which are potentially fatal. Because very few walrus are expected to haul out on or near Northstar infrastructure, the likelihood of a disturbance causing a stampede that would result in fatalities is low. Swimming walruses may respond to disturbances by looking in the direction of the disturbance or by swimming away.

Northstar as physical obstructions. It is unlikely that walrus movements in the water would be displaced by Northstar because walruses can easily swim around such infrastructure. Walruses may experience disturbance from vessel traffic, and their reaction would vary depending upon the vessel type, distance, speed, and previous exposure to disturbances. Vessel traffic could temporarily interrupt the movement of walruses or displace some animals when vessels pass through an area, but this displacement would likely have a minor effect that would be of a short duration.

Effects of a small oil spill. It is likely that small spill(s) of refined oil (e.g., fuel leaks from vessels) or chemicals will occur during the timeframe of the proposed Action, and some of these chemicals may enter the open water and come into contact with walrus or their prey. These chemicals have the potential to impact walruses. However, walruses may not be severely affected by an oil spill through direct contact. Walruses have thick skin and blubber layers for insulation and very little hair. Thus, they exhibit no grooming behavior, which lessens their chance of ingesting oil. Heat loss is regulated by control of peripheral blood flow through the animal's skin and blubber. The peripheral blood flow is decreased in cold water and increased at warmer temperatures. Direct exposure of walruses to oil is not believed to have any effect on the insulating capacity of their skin and blubber, although it is unknown if oil could affect their peripheral blood flow.

However, damage to the skin of pinnipeds can occur from contact with oil because some of the oil penetrates the skin, causing inflammation and death of some tissue. The dead tissue is discarded, leaving behind an ulcer. While these skin lesions have only rarely been found on oiled seals, the effects on walruses may be greater because of a lack of hair to protect the skin. Direct exposure to oil can also result in conjunctivitis. Like other pinnipeds, walruses are susceptible to oil contamination in their eyes and continuous exposure to oil may cause permanent eye damage, and prolonged exposure (24 hours) to hydrocarbon fumes has been shown to have significant adverse health effects on pinnipeds.

Any oil spill to marine waters in the Action Area will result in a spill response effort. Walruses are sensitive to disturbance, and may be adversely affected by the activities and significant human presence that would result from these spill response activities (see disturbance effects above).

While it is possible that walruses may be impacted by a small spill to marine waters, as stated previously, the Beaufort Sea is not within the primary range for the Pacific walrus and very low numbers are present in the Action Area. Therefore, the probability of walruses encountering oil or chemicals from a small spill in the Action Area, or being adversely affected by disturbance from oil spill response efforts are extremely low, and at most very few individuals would be affected.

Effects of a large oil spill. The probability of a large spill to marine waters is very low (76 FR 47010), and therefore cannot be said to be reasonably certain to occur (USFWS 2011). If a large spill to marine waters does occur during the open-water season, oil in the water column could drift offshore and possibly encounter a small number of walruses that may be present in the

Action Area. Spilled oil during the ice-covered season that is not cleaned up could become part of the ice substrate and be eventually released back into the environment during the following open-water season. Walruses may also be exposed to oil that has accumulated at the edge of a contaminated shore or ice lead as they repeatedly enter and exit the water in these types of habitat. Similar to small spills, any walruses present in the area of a spill would likely be disturbed by spill response activities. While the disturbance is an impact it would also reduce the probability that walruses would be exposed to oil.

For the purposes of this analysis, we assume that if a large oil spill were to occur, most of the benthic fauna (including walruses prey) that come in contact with oil would be killed. Bivalves that survived could become contaminated from oil in bottom sediments, possibly resulting in slower growth and a decrease in reproduction. Bivalve mollusks, a preferred prey species of the walrus, are not effective at processing hydrocarbon compounds, resulting in highly concentrated accumulations and long-term retention of the contamination within the organism, which could be passed to walrus. In addition, because walruses feed primarily on mollusks, they could be more vulnerable to a loss of this prey species than other pinnipeds that feed on a larger variety of prey. Furthermore, complete recovery of a bivalve mollusk population could take 10 years or more, forcing walruses to find other food resources or move to other areas. However, because very few walruses occur in the Action Area, and because it does not support productive feeding grounds for walrus, even if a large spill were to occur the potential effect on the walrus population is low, and would be limited to a few individuals.

Interrelated and Interdependent Effects

We did not identify any interrelated or interdependent actions for the Pacific walrus.

Summary

Industry noise, disturbance, and associated vessel traffic may have a more pronounced impact than physical obstructions or human encounters on walruses in the Action Area. Walruses may temporarily flee from human activity when disturbed. If they are on land, ice, or industry structures, walrus may enter the water and swim away. Walruses encountering human activity may swim away or temporarily stop foraging. Because very few walruses occur in the Action Area, however, we expect few walruses to be affected by the proposed Action. Additionally, LOAs issued under the proposed Regulations will require mitigation measures to reduce disturbance impacts on walruses. Thus, we consider the likely effects of the proposed Action on walrus populations to be minimal.

Effects of the Action on Polar Bear Critical Habitat

Physical Effects on the Primary Constituent Elements of Critical Habitat

All three critical habitat units were in part designated because they provide habitat for movements (sea ice and barrier island units) or access to and from the coast and den sites (terrestrial denning unit) for polar bears. Existing structures are excluded from critical habitat. However, human activities (e.g., noise produced by equipment and visual stimuli) at these facilities, especially those located on the coast where most polar bears are observed may interfere with the capability of critical habitat adjacent to facilities to provide their intended function, for example if polar bears alter travel routes to avoid contact with these facilities, and avoid denning, hunting, and resting near existing structures.

Effects on sea ice prey resources. Sea ice with adequate prey resources (primarily ringed and bearded seals) are an element of sea ice critical habitat. Northstar activities could affect the local abundance of ringed and bearded seal via disturbance, but given the small geographic area of these effects, particularly in relation to the size of the critical habitat unit, potential impacts to polar bear critical habitat and its ability to support polar bears is minimal.

Effects of Disturbance

Because the terrestrial denning and barrier island critical habitat units include lack of human disturbance as a PCE, the Service must separately analyze effects of disturbance on polar bears from its effects on critical habitat. The section of effects on polar bears in the 2009 version of the BO included an analysis of possible effects of disturbance on polar bears and whether these effects rise to the level of take under the ESA. In contrast, this section contains an analysis of disturbance on the ability of critical habitat to hold the value (e.g., lack of disturbance from humans) for which it was designated. Therefore, this section references disturbance of polar bears if it is meaningful to the discussion of the capability of critical habitat to support polar bears, but it is not a re-analysis of effects on polar bears and possible take.

The proposed Action includes an ice road used to access Northstar from the mainland each winter. Vehicles such as hovercraft that travel on the ice road could cause disturbances making this portion of critical habitat unavailable. However, if the road is established and used consistently prior to denning, bears most likely will not establish dens in the area.

Helicopter overflights could also make localized portions of all three critical habitat units temporarily unavailable for use by polar bears. Persistent aircraft travel to Northstar, however, could displace polar bears from localized areas in the flight path. Polar bears disturbed on nearby barrier islands may run and/or enter the water and start swimming; thus they stop using the habitat for the value which it was designated (i.e., for denning, a refuge from human disturbance, and movement along the coast to access maternal den and optimal feeding habitat). Evidence that bears can be re-sighted during repeated surveys in one fall season indicates that many of these disturbances are likely to be temporary (e.g., likely lasting a few moments to about five minutes) and the value of critical habitat will return to a zone free of human disturbance once the helicopter leaves. Thus, we expect temporary aerial disturbance will have no long-term effects on the intended purpose of designated barrier island critical habitat and the no disturbance zone.

On ice activities and operations occurring near the ice edge could displace seals from pupping lairs or haulouts, and seals could abandon breathing holes near Industry activity. Additionally, Industry could scare polar bears away from seal kills. If this occurs, the ability of sea ice critical habitat to provide foraging habitat to polar bears may be adversely affected. However, these disturbances will likely only temporarily affect a few ice seals and affect only an extremely small proportion of sea ice critical habitat.

Effects of Small Spills

As described earlier, we anticipate that small spills may occur as a result of the Action. Small spills could make localized areas of critical habitat unavailable temporarily because of

disturbance while clean up occurred or temporarily decrease the value of critical habitat through contamination. However, due to the temporary nature of these impacts (e.g., spill response activities) and small scale of these impacts any impacts to critical habitat resulting from a small spill will be minor.

Effects of Large Spills
As described earlier, the probability of a large spill occurring is low and cannot be said to be reasonably certain to occur. However, were a large spill to occur it would likely have a large effect on critical habitat and would impact all three critical habitat units. Spill response and cleanup activities could take place for years, causing persistent disturbance within all three critical habitat units that could decrease its value via human disturbance for an extended time.

Oil could remain in the water, on ice, or on shore where polar bears can access it. Thus, critical habitat may lose its value by continually exposing polar bears to contaminants. Additionally, spilled oil or other chemicals can concentrate and accumulate in leads and openings that occur during spring break up and autumn freeze-up periods. Such a concentration of spilled oil/chemicals would increase the chance that seals would be oiled, the main food source of polar bears. A local reduction in ringed seal numbers as a result of directly affecting seals or by affecting their prey could temporarily decrease the conservation role of sea ice critical habitat for polar bears (i.e., for hunting), as could deterrence activities to keep polar bears away from contaminated areas.

Oil spilled in the marine environment could wash up on the coast of the mainland or on barrier islands where polar bears may contact it. Individuals oiled along the coast or in sea ice or barrier island units could transport oil or other chemicals into the denning critical habitat unit, thus contaminating portions of it. While a portion of critical habitat could be affected if a large spill were to occur, the likelihood of a large spill is very low and cannot be said to be reasonably certain, further the amount of critical habitat that could be affected is small when compared to the size of the entire critical habitat unit.

Interrelated and Interdependent Effects

Deterrence activities could prevent polar bears from using localized areas of critical habitat adjacent to existing and future industry structures. This area, however, would be small such that, deterrence events are not expected to prevent polar bears from using the rest of critical habitat in the Action Area.

Summary

The proposed Action could affect PCEs and eliminate the ability of polar bears to use of a very localized area of critical habitat. The effects of some disturbance (e.g., from winter ice travel) would be temporary, while other disturbances within critical habitat would be more persistent (e.g., disturbance in critical habitat adjacent to Northstar). Small spills of chemicals and associated cleanup activities could temporarily degrade the value of localized areas of critical habitat. Large spills are not reasonably expected to occur. While Northstar activities may adversely affect localized areas of critical habitat, enough polar bear critical habitat will remain available to polar bears such that polar bear critical habitat will still be able to provide the function and conservation role for which it was designated.

CONCLUSION

Pacific Walrus

As detailed in the *Effects of the Action* section of this supplemental BO noise disturbance, vessel and aircraft traffic may result in minor, temporary changes in the behavior of a few walrus. Small spills of oil are likely to occur although given the low density of walrus in the Action Area and disturbance from the resulting spill response it is very unlikely walrus would be oiled. A large spill to marine waters is not reasonably certain to occur. However, were such an event to take place adverse effects to walrus would be limited because of the scarcity of walrus in the Action Area.

While the proposed Action may adversely affect walrus, the severity of these effects is limited because very few walrus occur in the Action Area, and because potential impacts will be avoided or minimized through Industries implementation of the requirements of the LOAs issued under the MMPA Incidental Take Regulations.

Few walrus are expected to be present in the Action Area, and the impacts on any walruses are expected to be minor. We therefore believe the proposed Action, when considered within the context of the environmental baseline, and cumulative effects, and given the estimated range-wide minimum population estimate of 129,000 walrus, is not likely to appreciably reduce the likelihood of survival and recovery of the Pacific walrus, and therefore are not likely to jeopardize its continued existence.

Polar Bear Critical Habitat

Although Northstar activities may adversely affect primary constituent elements within a localized portion of polar bear critical habitat, the proposed Action will be limited to a very small proportion of the extensive critical habitat and will not affect the ability of the remaining critical habitat to support polar bears. While disturbance within polar bear critical habitat may prevent some polar bears from using a small portion of critical habitat for essential life functions either temporarily (e.g., occasional on ice activities) or persistently (e.g., disturbance at Northstar adjacent to critical habitat), polar bears will still be able to carry out essential life function in the remaining areas of critical habitat. Thus, the three critical habitat units will still be able to provide their intended function and conservation role. In conclusion, after considering the indirect and direct effects of the Action, the cumulative effects identified, as well as the effects of interrelated and interdependent actions, when considered in conjunction with the environmental baseline the Service believes the proposed Action is not likely to destroy or adversely modify critical habitat.

RE-INITIATION NOTICE

This concludes formal consultation on effects to polar bears on the proposed Action. As provided in 50 C.F.R. 402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if

(1) The amount or extent of annual incidental take is exceeded;

(2) New information reveals effects of the action agency that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion;

(3) The agency action is subsequently modified in a manner that causes an effect to listed or critical habitat not considered in this opinion; and/or
(4) A new species is listed or critical habitat designated that may be affected by the action.

Thank you for your cooperation in the development of this amended biological and conference opinion. If you have any comments or require additional information, please contact Sarah C. Conn, Field Supervisor, Fairbanks Fish and Wildlife Field Office, 101 12th Ave., Fairbanks, AK, 99701, Telephone: 907/456-0499.

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