



Biological Opinion
for the
USFWS Region 7 Polar Bear and Pacific Walrus
Deterrence Program

Marine Mammals Management Office
Anchorage, Alaska

Prepared by:
Fairbanks Fish and Wildlife Field Office
U.S. Fish and Wildlife Service
101 12th Ave, Room 110
Fairbanks, AK 99701

January 13, 2014

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Introduction

This document transmits the Service’s biological opinion (BO) in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*, ESA), regarding effects to the polar bear (*Ursus maritimus*) and Pacific walrus (*Odobenus rosmarus divergens*; walrus) of the Service’s deterrence activities for these species.

Provisions of the Marine Mammal Protection Act (16 U.S.C. 1631 *et seq.*, MMPA) support the formal process in which the Service issues Letters of Authorization (LOAs) to citizens to perform otherwise prohibited acts that result in take (as defined by the MMPA) of polar bears and Pacific walruses. LOAs allow the use of deterrence to prevent polar bears and Pacific walruses from damaging private property or endangering personal safety [16 U.S.C. 1371(a)(4)(A)(ii) and (iii), respectively]. Section 101(a)(4)(A) of the MMPA specifically identifies the circumstances when the deterrence of a polar bear may occur and by whom. Under section 109(h), Federal, State, or local governmental officials or employees may also deter polar bears (e.g., for the welfare of the animal) when acting in the course of their official duties. Private persons may enter into a cooperative agreement with the Service under section 112(c) to carry out deterrence measures when acting in their capacity as designated persons under such an agreement and in full compliance with its terms and conditions. Thus, LOAs provide a mechanism for otherwise lawful activities to take place in areas where interactions with marine mammals are deemed imminent, the types and/or number of interactions with humans could potentially be harmful to those animals (as defined by the MMPA), or there is a heightened safety issue to humans.

The Proposed Action

Deterrence activities are used predominantly to limit human-bear interactions to maintain human safety, but are also used to minimize walrus-human interactions for the safety of walruses in certain industrial circumstances. Deterrence activities can be passive and preventative (75 FR 61631) or active, and both are necessary components of an effective human-polar bear interaction plan. Passive techniques do not require authorization, and their effects on polar bears have been analyzed previously under the ESA (75 FR 61361, USFWS 2010). This BO analyzes effects of active deterrence, a deterrence tool often needed when passive and preventative techniques are ineffective. LOAs allow trained and qualified (i.e., persons with documents verifying their training level) citizens to actively deter animals from humans and human habitation for the safety of the animals and people. The use of active deterrence techniques, such as “hazing” with mechanized conveyances, such as vehicles or vessels; and shooting projectiles

from a firearm, requires a higher level of training by the user than passive and preventative techniques, and therefore is authorized under the previous stated sections of the MMPA. This BO applies to deterrence LOAs issued through 1 February 2018 unless circumstances require re-initiation of consultation or negate the validity of this consultation.

The Service's deterrence authorizations of take for polar bears strive to:

1. Prevent bears from associating food with humans and communities;
2. "Condition" bears to avoid humans, human activities and communities;
3. Promote movement of bears by actively redirecting them into corridors, such as coastal travel routes;
4. Minimize extended use of areas near communities; and
5. Minimize bear entry into communities.

The Service's deterrence authorizations of take for Pacific walrus strive to:

1. Move walruses away from certain areas during human activities;
2. Discourage walruses from entering specific areas; and
3. Prevent walruses from becoming injured during human activities.

Active deterrence actions must not result in the death or serious injury of any marine mammal.

Requirements for Deterrence Authorization

Application packet

An application for an intentional take (deterrence) authorization must include the following information, either as separate documents or incorporated into a single document:

- (1) Plan of Operations for the activity that includes a project description, project dates and duration, the specific location(s), and the estimated area affected;
- (2) A site-specific plan to monitor effects of the activity on polar bears and Pacific walruses that may be present during the ongoing activities; and
- (3) A site-specific polar bear and/or walrus awareness and interaction plan. An interaction plan outlines the steps the applicant will take to limit animal-human interactions, increase site safety, and minimize impacts to marine mammals.

Because interaction plans are an important, highly effective, mandatory tool for avoiding, minimizing, monitoring, and reporting interactions between Industry activities/personnel and polar bears and Pacific walruses, we describe interaction plan requirements in more detail below.

Interaction Plans

Interaction plans describe measures the applicant will implement to (1) minimize project impacts on polar bears and walruses, including the need for deterrence and (2) polar bear and walrus

encounter procedures, including the project's personnel training program and the chain of command for responding to marine mammal sightings. Thus, interaction plans must include:
For polar bears:

- (1) Attractants management: establishing protocols and procedures to limit attractants to wild animals within property boundaries by storing garbage, human waste, food, and other products in areas not accessible to bears;
- (2) Snow management (where applicable): establishing protocols and procedures to remove snow around buildings and work areas to increase visibility, such as planning the placement of snow berms;
- (3) Lighting systems management: establishing protocols to ensure lighting is adequate to detect bears.
- (4) Depictions of pad and facility layout with identification of "at-risk" locations and situations with solutions that minimize risk.
- (5) Bear avoidance and encounter procedures.
- (6) Personnel training materials and procedures used for polar bear awareness and/or deterrence training, including specialized training for polar bear monitors;
- (7) Applicants must specify trained and qualified personnel to perform deterrence activities.
 - a. Deterrence personnel will be approved by the Service based on training and experience. Training can include, but is not limited to other agency training in bear safety, such as training provided by the Alaska Department of Fish and Game. However, the majority of deterrence training will be conducted at the time of application review by Service biologists or third party trainers approved by the Service that have completed a Service Train-the-Trainer bear deterrence course. Refresher training for personnel and trainers can occur annually, but not less than every three years.

For Pacific walruses:

- (1) Pacific walrus avoidance and encounter procedures, which define marine and terrestrial (haul-out) components; and
- (2) Personnel training materials and procedures used for walrus awareness and/or deterrence training;

Walrus and Bear Observation and Reporting Procedures

Event reports: With the exception of the NSB, holders of deterrence LOAs must report all animals observed during project activities, and all instances involving harassment activities. Because some villages observe polar bears daily, documenting all polar bear sightings would be an onerous and likely impossible task. Thus, the NSB only would be required to report human-polar bear interactions with deterrence personnel. All observations need to be reported as soon as possible and no later than 24 hours after the occurrence (See attached forms.). Information must include but is not limited to:

- (1) Date, time, and location of observation;
- (2) Number, sex, and age of animals (if determinable);
- (3) Observer name, company name, LOA number, and contact information;
- (4) Weather, visibility, and ice conditions at the time of observation;
- (5) Estimated closest point of approach for animals from personnel and/ or facilities;
- (6) Industry activity at time of sighting, and possible attractants present;
- (7) Behavior of animals at initial sighting and after contact;
- (8) Description of the encounter;
- (9) Duration of the encounter;
- (10) Actions taken, and; if deterrence occurs:
 - a. Type of deterrence used; and
 - b. Behavior of animal after deterrence.

Annual reports: An annual report of all encounters and hazing events must be submitted to the Service's MMM office within 60 days from the expiration date of the LOA. The annual report must include, but is not limited to:

- (1) A summary of monitoring effort including: total hours spent monitoring for marine mammals;
- (2) A summary of total animals observed; and
- (3) A summary of deterrence actions.

Availability of Biologist for Advice

If questions or concerns regarding polar bears or walrus arise during the project period, Service biologists are available for consultation. Contact phone numbers must be listed in the interaction plan. Because the need for deterrence activities directed toward walrus are rare, may require novel techniques, and could occur in novel situations, Service biologists must be involved in developing the deterrence plans. If necessary, Service biologists may elect to personally perform deterrence actions or choose to monitor deterrence actions on site, depending on circumstances.

Methods of Deterrence

Polar Bears

Passive and Preventative Deterrence Tools

Passive and preventative deterrence tools, described in the Service's Deterrence Guidelines (75 FR 61631), are a required first step of an interaction plan. *Passive deterrence* measures are those that dissuade polar bears from gaining access to property or people. *Preventative deterrence* measures are those that can dissuade a polar bear from initiating an interaction with property or people. These guidelines were developed for use by anyone who wants to deter polar bears from damaging property or for passively preventing encounters. They do not require authorization from the Service. Examples of passive and preventative deterrence tools include the use of:

1. Noise, such as pyrotechnics;
2. Physical barriers and containers;

3. Electric fences; and
4. Artificial lighting.

Active Deterrence Tools

If passive and preventative techniques are ineffective, persons with LOAs can actively deter polar bears for the safety of humans and bears. Active deterrence is an action directed at an animal to achieve a specific effect, such as halting the approach or causing the withdrawal of a bear from a specific location or situation. The intent of active deterrence measures is to elicit an immediate behavior response from the animal. Active deterrence measures may be carried out by trained and qualified individuals. Examples of active deterrence tools include the use of:

1. Bear monitors for quick detection of bears;
2. less-lethal projectiles
 - a. direct contact (bean bags, rubber bullets);
 - b. noisemakers;
3. an approaching vehicle;
4. an approaching vessel;
5. an approaching aircraft;
6. dogs for bear deterrence; and
7. Chemical spray (bear spray).

Each LOA and the approved interaction plan state the authorized methods of deterrence for polar bears and walruses which could be used by the applicant. Authorized methods may vary on a case by case basis, and may include acoustic (e.g., car horns or sirens), visual (e.g., approaching vehicle), and other methods such as chemical repellants, and less-lethal shotgun ammunition (i.e., rubber bullets, bean bags, screamers, crackershells) for polar bears. Vehicles, such as pick-up trucks, are the most-used and the most effective tool used to deter bears, and are generally used with sirens, horns and lights. In the marine environment, vessels would have minimal, if any, need for polar bear deterrence. However, if ice maintenance is required for overall industry operations (e.g., during offshore drilling), one to two bears on ice floes may be deterred annually. We referred to the use of direct-contact projectiles as “less-lethal” methods because severe injury or death could occur from their use. Regardless of the type of deterrence used, they must be conducted in a manner that minimizes the potential of injury to the animal, and the LOA recipient is responsible for the appropriate use of deterrence techniques and keeping his/her deterrence training current.

Lethal Take

If a polar bear interaction escalates into a life threatening situation, section 101(c) of the MMPA allows, without specific authorization, the take (including lethal take) of a polar bear if such taking is imminently necessary for self-defense or to save the life of a person in immediate danger and such taking is reported to the Service, MMM office within 24 hours.

In the event that an animal is severely injured or killed during a deterrence event it must be reported immediately to the Service. Single points of contact (SPOC) will be designated as a condition of the deterrence authorization. The injured bear or carcass should not be left unattended until a Service representative can receive it. If the bear is dead, the responsible party will be required to transfer the carcass (including the hide and skull) to a Service law enforcement officer or designated representative. The responsible party will be questioned regarding the incident.

Walruses

The general protocol for deterring walruses is to gradually increase the intensity of deterrence actions to achieve the desired response by the walruses, beginning with avoiding situations where deterrence might be necessary. The use of passive and preventative deterrence techniques that minimize interactions with walruses is preferred to active deterrence techniques because the infrequent use of active deterrence has not allowed development, testing, and standardization of deterrence techniques. Deterrence actions may be needed for walruses at sea or on land where actions and safeguards may differ significantly.

At sea walruses are at a reduced risk of an adverse impact from deterrence activities than when on land. Walruses may need to be deterred from marine areas where activities such as well drilling, seismic surveys, or ice management, etc. are occurring. Occasionally, walruses may haul out on vessel transoms, enter “moon pools” of drilling vessels, or enter other work areas. In these cases, walruses may need to be deterred for the safety of the animal. If a very small number of walruses (≤ 10) are in the area, Service personnel or designated persons may: (1) cautiously approach the animals, (2) approach and make noise, or (3) gently nudge (e.g., with a pole) the animal to stimulate a retreat response by the animal. Instances such as these are rare and usually involve younger individuals. In most documented observations, walruses did not require any directed deterrence response and eventually left on their own (unpubl. Service data).

The most commonly applied deterrence measure to date has been during marine seismic surveys. Operators are required to keep a small mitigation gun firing when making turns or short transits and then gradually ramp up the full gun array with the goal of keeping animals out of the area of ensonification (≥ 160 dB re 1 μ Pa) and allowing time for animals to move before seismic data acquisition begins. This has been a common procedure since 2006, but determining the actual number of animals deterred by such activities is unknown and cannot be determined with accuracy because it is assumed the walruses are underwater and their numbers and behaviors cannot be observed. While these measures are currently required mitigation measures under the Incidental Take Regulations (76 FR 47010, 78 FR 35364), the Service may choose authorize these measures via intentional take LOAs.

Ice floes that contain hauled out walruses that threaten the safety of vessels or drill rigs may require walrus deterrence during ice management activities. The general procedure of increasing the intensity of the deterrence activities is also required in these situations. Ice management vessels should approach walrus-occupied ice as slow as possible (perhaps with increasing deck

activities [noise]) until the walrus calmly leave the ice. In some instances, it may be necessary to gently nudge the ice floe. Ice containing walrus should not be encountered with enough force to substantially deflect it from its path or break it apart. Walrus-constrained ice management requires real-time consultation with Service personnel during the active ice management phase. A walrus ice management deterrence LOA was issued to Shell for their 2012 drilling operations in the Chukchi Sea, but no walrus were present on the few pieces of ice that were managed.

It is possible that large numbers of walrus could be encountered in the water in predictable locations where additional mitigation measures, such as seasonal restrictions, rerouting vessels, or reduced vessel traffic may be required for deterrence LOAs issued for activities in areas such as the Hanna Shoal Walrus Use Area (HSWUA) and the corridor used by walrus traveling to and from the HSWUA and a coastal haulout. Industry requests for intentional take authorization in the HSWUA and movement corridors during times of high walrus use would be considered on a case-by-case basis and increased monitoring and mitigation measures may be applied. A 2013 LOA issued to Shell Oil included provisions for operations in the HSWUA, but only one group of six walrus were encountered during those operations.

Use of coastal haulouts by walrus is increasing in frequency and duration of use which may overlap with the short construction season in those areas. Additional caution is needed for animals on shore compared to animals on ice or near a vessel due to the potential for a stampede and injuries. Currently, the approach of the Service is to have Service personnel conduct any active deterrence activities near coastal haulouts. In addition, no deterrence activities would be authorized for activities occurring directly on a haulout site. Deterrence would only be authorized for animals that may come ashore near (within one mile [1.6 km]) an occupied haulout.

In many cases, industrial operations that include running of equipment, artificial lighting, loud noises, etc. will deflect approaching walrus. When activities are proposed for areas near known walrus coastal haulouts, scheduling work completion prior to typical haulout formation would avoid the need for deterrence. A secondary approach in these situations would be to begin activities prior to haulout formation and then prevent potential haulout expansion to the project area through use of continual disturbance in the project area. Temporary fencing is also an option to keep a haulout from expanding toward a project area. This technique would apply to areas near haulouts (within one mile) and would not be used at a known historic haulouts (e.g., Point Lay). To date, no deterrence LOAs have been issued for activities that could overlap temporally and spatially with coastal haulouts and the Service expects that very few (0-1/year) would be issued in the near future due to the remoteness of most haulout locations and lack of development activities in those areas.

In most cases, active deterrence of small numbers of walrus will be conducted by Service personnel. If Service-designated personnel conduct the deterrence then real-time consultation

with the Service will be required throughout the active deterrence of walruses. Otherwise, reporting procedures and requirements for human-walrus interaction are similar to polar bears.

Who Can Receive Deterrence Take LOAs

Any individual conducting an activity in polar bear or walrus habitat such that the likelihood of interacting with these species is high can apply for deterrence authorization. MMM has ultimate discretion regarding the need for deterrence LOAs. Historically for polar bears, most deterrence activities are carried out by the North Slope Borough (NSB) around villages and by oil and gas companies (Industry) within the North Slope oilfields. The Service and other federal agencies (e.g., the Bureau of Land Management and the Bureau of Ocean Energy Management) that provide permits to oil and gas entities often require development and implementation of human-polar bear/walrus interaction plans that can include deterrence actions. Other entities, such as the U.S. military, the mining industry, contractors for municipal construction projects (i.e., Kaktovik Airport Constructors) and academic researchers may also need to deter polar bears or walruses to maintain a safe work environment.

North Slope Borough Public Safety Operations

The Service provides funding to the NSB to support their Polar Bear Patrol. The patrol's primary objective is "to limit polar bear/human interactions within the North Slope villages of Alaska" (NSB 2012). Through this program, the NSB "has taken on the responsibility for protecting polar bears by minimizing situations where bears might be lethally taken to protect human safety" (NSB 2012). These activities include deterrence actions, and the Service issues an intentional take LOA to the NSB annually. The LOA includes restrictions and requirements to minimize or avoid impacts to polar bears. The NSB communities involved in this program are: Kaktovik, Nuiqsut (including Cross Island), Barrow, Atqasuk, Wainwright, Point Lay, and Point Hope.

Industrial and other Activities

Oil and Gas Operations

Oil and gas industry operations include exploration, development, and production activities in terrestrial and marine habitats along the arctic coast and within the Chukchi and Beaufort seas of Alaska. Industry operations include (but are not limited to) on-pad activities year round, off-pad activities during winter (e.g., ice road travel), sea ice travel, vessel activities, seismic operations, aviation, onshore and offshore drilling. For descriptions of these activities, please see the following biological opinions:

- Programmatic Biological Opinion for Polar Bears (*Ursus maritimus*), Polar Bear Critical Habitat, and Conference Opinion for the Pacific Walrus (*Odobenus rosmarus divergens*) on Beaufort Sea Incidental Take Regulations (USFWS 2011);
- Biological Opinion and Conference Opinion for Oil and Gas Activities in the Beaufort and Chukchi Sea Planning Areas on Polar Bears (*Ursus maritimus*), Polar Bear Critical Habitat, Spectacled Eiders (*Somateria fischeri*), Spectacled Eider Critical Habitat, Steller's Eiders

(*Polysticta stelleri*), Kittlitz's Murrelets (*Brachyramphus brevirostris*), and Yellow-billed Loons (*Gavia adamsii*) (USFWS 2012);

- Biological Opinion for the National Petroleum Reserve – Alaska Integrated Activity Plan, 2013 (USFWS 2013a); and
- Biological Opinion for Polar Bears (*Ursus maritimus*) and Conference Opinion for Pacific Walrus (*Odobenus rosmarus divergens*) on the Chukchi Sea Incidental Take Regulations (USFWS 2013b).

Other Industrial Activities

Intentional take authorizations have been authorized for coal exploration on the west coast of Alaska. In the future, exploration for coal, increased shipping and/or commercial fishing in the region may result in requests for deterrence authorizations.

U.S. Military

The U.S. Air Force (USAF) and its contractors have received multiple deterrence authorizations for polar bears. These have specifically supported the USAF's long range and short range radar sites along the coast of Alaska. Remediation of decommissioned military sites along the Alaska coast may also lead to potential deterrence requests near terrestrial walrus haul-outs. The U.S. Coast Guard has also worked with the Service to minimize human-polar bear interactions through deterrence.

Construction Projects

Certain state or local capital improvement or construction projects along the Alaska coast may also require deterrence authorizations for polar bears and walruses if projects occur in bear habitat or near potential walrus haul-outs.

Researchers

Arctic researchers have received intentional take authorizations for field crews and camps in terrestrial and marine environments.

Action Area

The Action Area includes areas on the North Slope of Alaska and arctic waters within the U.S. within the range of the polar bear and Pacific walrus. See the current Chukchi and Beaufort Sea Incidental Take Regulations, (78 FR 35364 and 76 FR 47010, respectively).

Status and Environmental Baseline

The Status and Environmental Baselines for polar bears and walruses have not changed substantially, including effects of climate change, within the last few years and have been

described in previous BOs. Therefore, please refer to the Status and Environmental Baseline sections of the BOs listed in the Oil and Gas Operations section above.

Effects of the Action

Deterrence may occur if polar bears approach humans or places where humans live, work, or congregate. Effects on polar bears are generally similar among activities. However, village personnel often encounter and thus initiate deterrence actions more frequently than personnel engaged in other activities. For that reason, we first describe effects of deterrence generally and then enumerate the expected frequency of deterrence events for the NSB and other activities separately.

Polar Bears

The effects of deterrence, as authorized in intentional take LOAs, may fall into three categories.

(1) **Minor Effects.** Acoustic and vehicular deterrence methods (starting a vehicle or revving an engine, honking horn) would usually have only minor effects, such as short-term stress, and are not likely to result in injury to or death of polar bears (75 FR 61631). However, as described above, trained individuals may use other mechanisms (e.g., chemical repellants, electric fences, and firearm projectiles such as bean bags, rubber bullets and cracker shells) to harass or deter polar bears away from personnel and equipment.

(2) **Short-term Pain.** Bears deterred using direct-contact projectiles, such as bean bags and rubber bullets, would likely experience stress, short-term pain, and could be bruised. Cracker shell rounds are meant to explode near a bear to redirect it away from humans; they are not meant to contact the bear. If performed correctly, polar bears deterred using cracker shells usually only experience short-term stress similar to acoustic and visual techniques, most bears would experience only minor, temporary, behavioral changes (e.g., running or swimming away).

(3) **Injury.** The third category of effects could come from inadvertent misuse of firearm projectiles or unpredictable adverse outcomes from approved deterrence methods. In extremely rare circumstances, if performed incorrectly, use of any type of projectile could cause severe injury or death. For example, during a deterrence event associated with an LOA in August 2011, a polar bear was killed when a cracker shell round was mistaken for a rubber bullet (USFWS data).

We expect the majority of effects to be minor, short-term behavioral changes to animals.

Effects of NSB Deterrence Actions

Although the NSB would have authorization to use projectiles to deter bears, we anticipate the majority of deterrence events would not involve direct contact with the bear. Most deterrence events would not entail using direct contact projectile rounds (i.e., bean bags or rubber bullets;

Table 1). Across the NSB in 2007, 2008, 2009, and 2011, NSB personnel saw 477 polar bears in 198 sightings; 160 of those sightings required deterrence actions with 428 polar bears deterred (Table 1).

Table 1. Data reported to MMM from the NSB for 2007, 2008, 2009, and 2011.

Deterrence technique	No. of bears deterred
Cracker shells	321 (in 198 bear groups)
Direct contact projectiles	32
Other deterrence	124
No deterrence	49*
Total	477

*The number of bears seen but not deterred is likely under-reported because polar bear sightings in villages occur daily, and complete reporting is unlikely.

On average, NSB personnel reported 198 polar bear groups annually and used projectiles 74% of the time [(115 cracker shells + 32 bean bags or rubber bullets)/198 groups] x 100 = 73.7%. We estimate the NSB will use direct-contact projectile rounds during about 16% [(32/198) x 100 = 16.16%] of reported sightings and deter polar bears using direct-contact projectile rounds approximately 8 times (50 bears x 16% = 8 bears) annually. For the purposes of this BO, we conservatively estimate that *up to 10 polar bears may experience low-level injuries such as bruising from direct-contact projectiles*. We also estimate that about 58% [(115 cracker shells/198 groups) x 100 = 58%] of sightings will result in the use of cracker shells, and about 120 bears (477 bears/4 years = 119.25 bears) would be deterred using this method annually. When used correctly, crackershell usually cause, at most, insignificant behavior changes in polar bears.

While the intent of using projectiles is to redirect bears away from humans without causing severe injuries or death to the bear, in extremely rare circumstances projectiles may contact a bear, causing injury or death. In 2012, a polar bear died because a bear guard with the oil and gas industry mistakenly used a crackershell to deter a bear at close range rather than a beanbag round. Although very unlikely, misuse of projectiles could cause severe injury or death at most once annually.

Effects of Deterrence from Industrial and other Activities

In 2012, the Service issued 18 intentional take authorizations, 16 to the oil and gas industry and two to non-industry entities (the U.S. Air Force and the NSB). In, 2013, personnel associated with the Kaktovik Airport relocation project received and LOA. Most deterrence events associated with oil and gas operations, the USAF, and municipal construction projects did not

entail using direct contact projectile rounds (i.e., bean bags or rubber bullets; Table 1). For example, from 2006 through 2010, the entire North Slope oil and gas industry reported sightings of 1,414 polar bears, of which 209 (15%) were deterred (C. Perham, pers. communication, email, July 12, 2011). During those events, only 0-5 polar bears were deterred with bean bags and 0-1 with rubber bullets annually. In 2011, a polar bear died because personnel mistakenly used a crackershell to deter a bear at close range rather than a beanbag round. Of the 410 bears observed as a result of oil and gas activities in 2012, 48 bears (12%) were deterred from facilities and people. The percent of bears deterred by the NSB is not available; the NSB encounters bears daily and generally does not report sightings that do not result in deterrence actions. No bears were deterred during USAF or the Kaktovik airport relocation activities.

Based on significant history with deterrence actions associated with the activities above, we estimate fewer than 5 polar bears would be subjected to direct-contact projectiles annually, where direct-contact projectiles have the potential to cause the severest effects on polar bears. Although very unlikely, misuse of projectiles could cause severe injury or death at most once annually. We note that although deterrence activities result in some negative impacts to individual bears on rare occasions, the use of deterrence actions effectively reduces the need for lethal take of polar bears, and thus as a whole contribute to the conservation of polar bears.

Pacific Walruses

Because very few deterrence LOAs (0-3/year) would be issued in areas where walruses occur in large numbers (> 10), we expect that very few walruses (≤ 30) would have the potential to be deterred. Occasionally, however, a few walruses may need to be deterred from work areas for the safety of personnel or the animals. We expect this annual number would be small (≤ 30) based on the number of observed animals in the area when ramp-up occurs in past projects where the ramp-up technique is used. Additionally, walruses could be deterred using noise during ramp-up before seismic activities. Likely responses of walruses to these deterrence actions would be short-term behavioral changes (e.g., swimming away) that would have negligible effects on very few individuals. Because we expect very few deterrence actions to occur and individuals would likely experience only minor behavior changes from approved deterrence techniques, we expect the proposed action would not have population-level impacts.

Cumulative Effects

Cumulative Effects for polar bears and walruses has not changed substantially within the last few years and have been described in previous BOs. Therefore, please refer to the Cumulative Effects sections of the BOs listed in the Oil and Gas Operations section above.

Comprehensive Ongoing Consultation Process for Activities in the U.S. Arctic

This consultation is one of several consultations concerning activities occurring in terrestrial and marine environments of Alaska. For example, at the lease sale stage in waters of the Outer

Continental Shelf (OCS), we conduct consultations that analyze the effects of oil and gas activities through the end point of development, to ensure that lease sales do not go forward in instances in which we can foresee that the sum total of exploration, development, production, and abandonment are likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. A similar process applies to long-term land-use planning which sets in motion lease sales and opportunities for subsequent exploration, development and production in NPR-A as managed by the BLM. For OCS waters managed by BOEM and NPR-A lands managed by the BLM, if oil and gas development and production proposals result from their planning and leasing programs, we again evaluate and conduct consultations as projects are proposed. These project-specific consultations closely examine the particular details of the projects, including the nature, scope and location of the activities, in light of up-to-date evaluations of the status of listed species and critical habitat, to ensure that the specific projects do not jeopardize listed species or destroy or adversely modify critical habitat. Relevant new information, such as oil spill risk assessments, will be included, as appropriate, in upcoming consultations as projects are proposed. This multi-tiered and multi-step consultation process ensures a dynamic analysis of the potential effects of all activities such that a jeopardy/adverse modification determination can be made at any stage if necessary. As a result, this ongoing process provides comprehensive protection for listed/candidate species and critical habitat at all stages and ensures that our consultation obligations under the ESA are thoroughly and continually fulfilled. It also creates an overlapping web of consultations and associated documents that address the same activities, albeit at differing temporal and spatial scales, occasionally under multiple Federal authorities.

Conclusion

Polar Bears

Although some active deterrence actions used on polar bears, such as those involving direct-contact projectiles from a firearm, meets the definition of take under the ESA due to the potential to cause physical injury, most deterrence actions would result in minor disturbance of polar bears that would not result in injury. We estimate these low-level injuries (e.g., bruises) from direct-contact projectiles from a firearm would occur up to 8 and 5 times annually for NSB and other activities, respectively. While misuse of projectiles could cause in severe injury or death of polar bears, we anticipate this would occur at most twice annually. We assume alteration in behavior that has severe fitness consequences due to deterrence activities occurs only rarely. The combined level of effects would not cause population-level impacts. While adverse effects to polar bears may occur, after considering the indirect and direct effects of the entire proposed Action, together with the cumulative effects, as well as the effects of interrelated and interdependent actions, when considered in conjunction with the environmental baseline, and given the size of the worldwide polar bear population, it is the Service's biological opinion that *the Proposed Action is not reasonably likely to jeopardize the continued existence of polar bears by reducing appreciably the likelihood of survival and recovery of these species in the wild by reducing their reproduction, numbers, or distribution.*

Pacific Walruses

As detailed in the *Effects of the Action* section, the need for deterring walruses can be greatly reduced through project design. If deterrence is needed, it most likely would cause minor, short-term behavior changes to up to estimated 10 individuals annually. Because we expect the behavioral changes would not affect the fitness of walruses, we also expect the proposed action would not cause any population-level effects. The Service would consult and aid holders of deterrence LOAs with any deterrence actions when practical. After considering the indirect and direct effects of the entire proposed Action, together with the cumulative effects, as well as the effects of interrelated and interdependent actions, when considered in conjunction with the environmental baseline, and given the size of the worldwide Pacific walrus population, it is the Service's biological opinion that the *Proposed Action is not reasonably likely to jeopardize the continued existence of Pacific walruses by reducing appreciably the likelihood of survival and recovery of these species in the wild by reducing their reproduction, numbers, or distribution.*

Language for Inclusion in Intentional-take LOA

Deterrence LOAs will contain the following language:

The Service has completed intra-Service consultation under the Endangered Species Act of 1973, as amended (ESA), on the issuance of this LOA [cite this BO and provide a citation at the end of the LOA], and has determined its issuance is not likely to jeopardize the continuing existence of polar bears [or walrus, if applicable] so long as [insert applicant] follows the terms/conditions of this LOA. No additional authorization under the ESA is required.

Incidental Take Statement

Polar Bears

Traditional Incidental Take Statements (ITS) have three functions. They (1) enumerate take, (2) provide a threshold for re-initiation of consultation, and (3) authorize take while providing reasonable and prudent measures and implementing terms and conditions that minimize take. While we enumerate take of polar bears and provide a threshold for re-initiation of this consultation, we do not authorize take for reasons described below.

Take of marine mammals cannot be authorized under the ESA until it is authorized under the MMPA. Thus, consistent with ESA and regulations at 50 CFR §402.14(i), incidental take authorization for marine mammals is not provided until regulations, authorizations, or permits under section 101(a)(5) of the MMPA are in effect. Accordingly, the Service will authorize incidental take when, but not until, an LOA authorizing take under the MMPA is issued.

We adopt mitigation measures approved during the intentional take LOA application process and finalized in the interaction plan and/or as conditions of the LOA as the Reasonable and Prudent Measures and implementing Terms and Conditions for this BO. Additionally, monitoring will

provide the FWS with information indicating if the level of authorized take is exceeded; thus information obtained during monitoring would provide a mechanism for re-initiation of consultation for the proposed Action. These measures are non-discretionary, and will be binding conditions of any LOA for the exemption in section 7(o)(2) of the ESA to apply. These measures, which are essentially to comply with the mitigation measures and reporting requirements contained within the intentional take LOA, are the only Reasonable and Prudent Measures and implementing Terms and Conditions associated with the BO. No additional measures are required.

Pacific Walruses

Because the Pacific walrus is a candidate under the ESA, effects to this species are not defined in terms of take under the ESA as they are for listed species. Thus, we are not providing an ITS and authorization of take for Pacific walruses under the ESA at this time.

Re-initiation Notice

This concludes formal consultation on effects to polar bears and Pacific walruses on the proposed Action. This BO fulfills section 7 requirements for deterrence LOAs issued until February 1, 2018. As provided in 50 CFR 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. In this case, if direct-contact projectiles from a firearm cause severe injury (defined by MMPA) or death of polar bears more than twice annually;
- (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.

Reporting Requirements

An annual report is due 1 February each year for LOAs issued the previous year. The report will include:

- The number of LOAs issued;
- Amount of take that occurred by method (e.g., approaching vehicle, beanbag, etc.);
- A description of any situations where severe injury or death occurred; and
- A description of any authorization violations.

Literature Cited

U.S. Fish and Wildlife Service. 2010. Marine Mammal Protection Act polar bear deterrence guidelines. Informal consultation between the Marine Mammals Management and Fairbanks Fish and Wildlife Field Offices. Finalized July 16, 2010.

United States Department of the Interior
Fish And Wildlife Service
1011 E. Tudor Road
Anchorage, Alaska 99503-6199

POLAR BEAR SIGHTING REPORT

Company: _____ **LOA #:** _____
Date: _____ **Observer Name:** _____
Time: _____ am / pm / 24 **Phone/Email:** _____

Location: _____

Latitude: _____ **Longitude:** _____ **Datum:** _____

Weather Conditions: Fog _____ Snow _____ Rain _____ Clear _____ Temperature _____ °F / °C

Wind Speed _____ mph / kts Wind Direction (from) _____ N NE E SE S SW W NW

Visibility: Poor _____ Fair _____ Good _____ Excellent _____

Number of Bears: (total number of bears & how many of each type) **Total # Bears** _____

	adult	sub-adult	2 year-old	yearling	cub of year
Male	_____	_____	_____	_____	_____
Female	_____	_____	_____	_____	_____
Unknown	_____	_____	_____	_____	_____

Closest Distance of Bear(s): from personnel _____ facility _____ m / yd / ft

Bear Behavior (Initial Contact): curious ignore aggressive walk run swim hunt feed rest
other _____

Bear Behavior (After Contact): curious ignore aggressive walk run swim hunt feed rest
other _____

Description of Encounter: _____

Duration of Encounter: _____ **Possible Attractants Present:** Y / N

Describe Attractants: _____

Deterrents Used & Distance: Y / N m / yd / ft

_____ Vehicle	_____ Crackershell
_____ Horn/Siren/Noise	_____ Rubber Bullet
_____ Spotlight/Headlight	_____ Bean Bag

Agency/Contacts:

USFWS Craig Perham (786-3810) (FAX: 786-3816) _____ Time _____ Date _____
ADF&G Dick Shideler (459-7283) (FAX: 459-7332) _____ Time _____ Date _____
Other _____ Time _____ Date _____

United States Department of the Interior

Fish And Wildlife Service

1011 E. Tudor Road

Anchorage, Alaska 99503-6199

POLAR BEAR SIGHTING REPORT (MARINE)

Company: _____

LOA #/ vessel name: _____

Date: _____

Observer Name: _____

Time: _____ am / pm / 24

Phone/Email: _____

Location & Activity: _____

Latitude: _____ **Longitude:** _____ **Datum:** _____

Weather Conditions: Fog _____ Snow _____ Rain _____ Clear _____ Temperature _____ °F / °C

Wind Speed _____ mph / kts Wind Direction (from) _____ N NE E SE S SW W NW

Visibility: Poor _____ Fair _____ Good _____ Excellent _____

Number of Bears: (total number of bears & how many of each type) **Total # Bears** _____

	adult	sub-adult	2 year-old	yearling	cub of year
Male	_____	_____	_____	_____	_____
Female	_____	_____	_____	_____	_____
Unknown	_____	_____	_____	_____	_____

Closest Distance of Bear(s): from vessel or location _____ m / yd / ft

Bear Behavior (Initial Contact): curious ignore aggressive walk run swim hunt feed rest other _____

Bear Behavior (After Contact): curious ignore aggressive walk run swim hunt feed rest other _____

Description of Encounter: _____

Duration of Encounter: _____ **Possible Attractants Present:** Y / N

Describe Attractants: _____

Agency/Contacts:

USFWS Craig Perham (786-3810) (FAX: 786-3816) _____ Time _____ Date _____

Other _____ Time _____ Date _____