



IN REPLY REFER TO:

United States Department of the Interior

U.S. FISH AND WILDLIFE SERVICE
1011 East Tudor Road
Anchorage, Alaska 99503-6199



AFES/RD

LETTER OF AUTHORIZATION Incidental Take (15-CS-02)

EFFECTIVE: July 1, 2015
EXPIRES: November 1, 2015

In accordance with regulations published at 78 FR 35364, dated June 12, 2013, Shell Gulf of Mexico Inc. (Shell) is hereby authorized to take small numbers of polar bears (*Ursus maritimus*) and Pacific walrus (*Odobenus rosmarus divergens*) incidental to activities occurring during Shell's Outer Continental Shelf (OCS) 2015 exploration drilling program in the Chukchi Sea, Alaska.

Shell proposes to conduct an exploration drilling program on leases in the Burger Prospect, Lease Sale 193 area, Chukchi Sea, Alaska, from approximately July 4, 2015 through October 31, 2015. Shell proposes to drill up to six wells using two drill rigs, with a fleet of support vessels and aircraft. These activities are a continuation of an exploration drilling program Shell began in 2012 and will likely continue in future years. A detailed description of the proposed activities is provided in Shell's *Draft Revised Outer Continental Shelf Lease Exploration Plan, Chukchi Sea, Alaska, Burger Prospect: Posey Area Blocks 6714, 6762, 6764, 6812, 6912, 6915, Chukchi Sea Lease Sale 193* (Revision 2, August 2014).

This Letter of Authorization (LOA) and the required conditions below apply to all Shell employees, contractors and personnel performing Shell-approved work under the scope of operations to be conducted. This authorization is subject to the following conditions.

1. This LOA authorizes incidental take only. Intentional take is not authorized.
2. Shell Operations Managers, or designates, must be fully aware, understand, and capable of implementing the conditions of this authorization.
3. Shell's *Polar Bear, Pacific Walrus, and Grizzly Bear Avoidance and Human Encounter/Interaction Plan, Exploration Drilling Program Chukchi Sea, Alaska* (September 2014) and *Marine Mammal Monitoring and Mitigation Plan, Exploration Drilling of Selected Lease Areas in the Alaskan Chukchi Sea* (August 2014) are approved and incorporated by reference into this LOA. All provisions therein must be complied with unless specifically noted otherwise in this LOA.
4. A copy of this LOA and the approved interaction plans listed above must be posted and available for all personnel and in the possession of the operators of all vessels and aircraft engaging in the activities that could cause incidental take under the authority of this LOA.

5. Shell must comply with mitigation, monitoring and reporting requirements of 50 CFR §18.118. Holders of a LOA must use methods and conduct activities in a manner that minimizes to the greatest extent practicable adverse impacts on Pacific walruses and polar bears, their habitat, and on the availability of these marine mammals for subsistence uses. Dynamic management approaches, such as temporal or spatial limitations in response to the presence of marine mammals in a particular place or time or the occurrence of marine mammals engaged in a particularly sensitive activity (such as feeding), must be used to avoid or minimize interactions with polar bears, Pacific walruses, and subsistence users of these resources.
6. At a minimum, mitigation requirements include the following:
 - a) General mitigation measures for all applicants:
 - (i) The U.S. Fish & Wildlife Service (Service) requires holders of LOAs to cooperate with us and other designated Federal, State, and local agencies to monitor the impacts of oil and gas exploration activities on polar bears and Pacific walruses.
 - (ii) Holders of a LOA must designate a qualified individual or individuals to observe, record, and report on the effects of their activities on polar bears and Pacific walruses.
 - b) Operating conditions for operational and support vessels.
 - (i) Operational and support vessels must be staffed with dedicated marine mammal observers to alert crew of the presence of walruses and polar bears and initiate adaptive mitigation responses.
 - (ii) At all times, vessels must maintain the maximum distance possible from concentrations of walruses or polar bears. Under no circumstances, other than an emergency, may any vessel approach within an 805-m (0.5-mi) radius of walruses or polar bears observed on ice. Under no circumstances, other than an emergency, may any vessel approach within 1,610 m (1 mi) of groups of walruses observed on land or within an 805-m (0.5-mi) radius of polar bears observed on land.
 - (iii) Vessel operators must take every precaution to avoid harassment of concentrations of feeding walruses when a vessel is operating near these animals. Vessels shall reduce speed and maintain a minimum 805-m (0.5-mi) operational exclusion zone around groups of 12 or more walruses encountered in the water. Vessels may not be operated in such a way as to separate members of a group of walruses from other members of the group. When weather conditions require, such as when visibility drops, vessels shall adjust speed accordingly to avoid the likelihood of injury to walruses.
 - (iv) The transit of operational and support vessels through the specified geographic region is not authorized prior to July 1. This operating condition is intended to allow walruses the opportunity to disperse from the confines of the spring lead system and minimize interactions with subsistence walrus hunters. Exemption waivers to this operating condition may be issued by the Service on a case-by-case basis, based upon a review of seasonal ice conditions and available information on walrus and polar bear distributions in the area of interest.
 - (v) All vessels must avoid areas of active or anticipated subsistence hunting for walrus or polar bear as determined through community consultations.
 - (vi) We shall require a monitor on the site of the activity or on board drillships, drill rigs, aircraft, icebreakers, or other support vessels or vehicles to monitor the impacts of Industry's activity on polar bear and Pacific walruses.
 - (vii) Shell's Exploration Plan includes installation of four permanent moorings in Good

Hope Bay. The coordinates provided indicate that these proposed moorings would be located approximately 20 miles south of Cape Espenberg, which has been used sporadically as a haulout site by walrus in the fall. Condition 6(b)(ii) requires vessels to maintain a 1 mile separation distance from groups of walrus observed on land. Given that Cape Espenberg has been used in the past as a haulout by walrus, we request that in the fall (August 15 - October 15), vessel operations to and from these moorings maintain a 1 mile buffer while transiting past this potential haulout location, regardless of whether or not walrus are known to be hauled out at that time.

- c) Operating conditions for aircraft.
 - (i) Operators of support aircraft must, at all times, conduct their activities at the maximum distance possible from concentrations of walrus or polar bears.
 - (ii) Under no circumstances, other than an emergency, may fixed wing aircraft operate at an altitude lower than 457 m (1,500 ft) within 805 m (0.5 mi) of walrus groups observed on ice, or within 1,610 m (1 mi) of walrus groups observed on land. Under no circumstances, other than an emergency, may rotary winged aircraft (helicopters) operate at an altitude lower than 914 m (3,000 ft) within 1,610 m (1 mi) of walrus groups observed on land. Under no circumstances, other than an emergency, may aircraft operate at an altitude lower than 457 m (1,500 ft) within 805 m (0.5 mi) of polar bears observed on ice or land. Helicopters may not hover or circle above such areas or within 805 m (0.5 mile) of such areas. When weather conditions do not allow a 457-m (1,500-ft) flying altitude, such as during severe storms or when cloud cover is low, aircraft may be operated below the required altitudes stipulated above. However, when aircraft are operated at altitudes below 457 m (1,500 ft) because of weather conditions, the operator must avoid areas of known walrus and polar bear concentrations and must take precautions to avoid flying directly over or within 805 m (0.5 mile) of these areas.
 - (iii) Operators must plan all aircraft routes to minimize any potential conflict with active or anticipated walrus or polar bear hunting activity as determined through community consultations.
- d) Additional mitigation measures for offshore exploration activities.
 - (i) Offshore exploration activities will be authorized only during the open-water season, defined as the period July 1 to November 30. Exemption waivers to the specified open-water season may be issued by the Service on a case-by-case basis, based upon a review of seasonal ice conditions and available information on walrus and polar bear distributions in the area of interest.
 - (ii) To avoid significant synergistic or cumulative effects from multiple oil and gas exploration activities on foraging or migrating walrus, operators must maintain a minimum spacing of 24 km (15 mi) between all active seismic source vessels and/or drill rigs during exploration activities. This does not include support vessels for these operations. No more than two simultaneous seismic operations and three offshore exploratory drilling operations will be authorized in the Chukchi Sea region at any time.
 - (iii) No offshore exploration activities will be authorized within a 64-km (40-mi) radius of the communities of Barrow, Wainwright, Point Lay, or Point Hope, unless provided for in a Service-approved, site-specific Plan of Cooperation.
 - (iv) A monitoring program acceptable to the Service will be required to estimate the

- number of walruses and polar bears in a proposed project area.
- (v) The Hanna Shoal Walrus Use Area (HSWUA) is a high use area for Pacific walruses. Due to the large numbers of walruses that could be encountered in the HSWUA from July through September, additional mitigation measures may be applied to activities within the HSWUA on a case-by-case basis. These mitigation measures include, but may not be limited to, seasonal restrictions, reduced vessel traffic, or rerouting of vessels. To the maximum extent practicable, aircraft supporting exploration activities shall avoid operating below 1,500 feet above sea level (ASL) over the HSWUA between July 1 and September 30.
- e) Any offshore exploration activity expected to include the production of pulsed underwater sounds with sound source levels ≥ 160 dB re 1 μ Pa will be required to establish and monitor acoustic exclusion and disturbance zones and implement adaptive mitigation measures as follows:
- (i) Monitor zones: Establish and monitor with trained marine mammal observers an acoustically verified exclusion zone for walruses surrounding seismic airgun arrays where the received level will be ≥ 180 dB re 1 μ Pa; an acoustically verified exclusion zone for polar bear surrounding seismic airgun arrays where the received level will be ≥ 190 dB re 1 μ Pa; and an acoustically verified walrus disturbance zone ahead of and perpendicular to the seismic vessel track where the received level will be ≥ 160 dB re 1 μ Pa.
 - (ii) Ramp-up procedures. For all seismic surveys, including airgun testing, use the following ramp-up procedures to allow marine mammals to depart the exclusion zone before seismic surveying begins:
 - A. Visually monitor the exclusion zone and adjacent waters for the absence of polar bears and walruses for at least 30 minutes before initiating ramp-up procedures. If no polar bears or walruses are detected, you may initiate ramp-up procedures. Do not initiate ramp-up procedures at night or when you cannot visually monitor the exclusion zone for marine mammals.
 - B. Initiate ramp-up procedures by firing a single airgun. The preferred airgun to begin with shall be the smallest airgun, in terms of energy output (dB) and volume (in^3).
 - C. Continue ramp-up by gradually activating additional airguns over a period of at least 20 minutes, but no longer than 40 minutes, until the desired operating level of the airgun array is obtained.
 - (iii) Power down and shutdown. Immediately power down or shut down the seismic airgun array and/or other acoustic sources whenever any walruses are sighted approaching close to or within the area delineated by the 180 dB re 1 μ Pa walrus exclusion zone, or polar bears are sighted approaching close to or within the area delineated by the 190 dB re 1 μ Pa polar bear exclusion zone. If the power down operation cannot reduce the received sound pressure level to 180 dB re 1 μ Pa (walrus) or 190 dB re 1 μ Pa (polar bear), the operator must immediately shut down the seismic airgun array and/or other acoustic sources.
 - (iv) Emergency shutdown. If observations are made or credible reports are received that one or more walruses and/or polar bears are within the area of the seismic survey and are in an injured or mortal state, or are indicating acute distress due to seismic noise, the seismic airgun array will be immediately shut down and the Service contacted.

The airgun array will not be restarted until review and approval has been given by the Service. The ramp-up procedures provided in of this section must be followed when restarting.

- (v) Adaptive response for walrus aggregations. Whenever an aggregation of 12 or more walruses are detected within an acoustically verified 160 dB re 1 μ Pa disturbance zone ahead of or perpendicular to the seismic vessel track, the holder of this Authorization must:
 - A. Immediately power down or shut down the seismic airgun array and/or other acoustic sources to ensure sound pressure levels at the shortest distance to the aggregation do not exceed 160-dB re 1 μ Pa; and
 - B. Not proceed with powering up the seismic airgun array until it can be established that there are no walrus aggregations within the 160 dB zone based upon ship course, direction, and distance from last sighting. If a shutdown was required, the ramp-up procedures provided in section must be followed when restarting.

7. Monitoring requirements.

- a) Maintain trained, Service-approved, on-site observers to carry out monitoring programs for polar bears and walruses necessary for initiating adaptive mitigation responses.
- b) Marine Mammal Observers (MMOs) will be required on board all operational and support vessels to alert crew of the presence of walruses and polar bears and initiate adaptive mitigation responses identified in paragraph (a) of this section, and to carry out specified monitoring activities identified in the marine mammal monitoring and mitigation plan necessary to evaluate the impact of authorized activities on walruses, polar bears, and the subsistence use of these subsistence resources. The MMOs must have completed a marine mammal observer training course approved by the Service.
- c) Cooperate with the Service and other designated Federal, State, and local agencies to monitor the impacts of oil and gas exploration activities in the Chukchi Sea on walruses or polar bears. Where insufficient information exists to evaluate the potential effects of Industry activities on walruses, polar bears, and the subsistence use of these resources, holders of a LOA may be requested to participate in monitoring and/or research efforts in order to help the Service address these information needs and ensure the least practicable impact to these resources. These monitoring and research efforts will employ rigorous study designs and sampling protocols in order to provide useful information. As an example, operators could test new technologies during their activities that will be beneficial in minimizing disturbance to animals. Information gaps and needs in the Chukchi Sea include, but are not limited to:
 - (i) Distribution, abundance, movements, and habitat use patterns of walruses and polar bears in offshore environments;
 - (ii) Patterns of subsistence hunting activities by the Native Villages of Kivalina, Point Hope, Point Lay, Wainwright, and Barrow for walruses and polar bears;
 - (iii) Immediate and longer term (when possible) behavioral and other responses of walruses and polar bears to seismic airguns, drilling operations, vessel traffic, and fixed wing aircraft and helicopters;
 - (iv) Contaminant levels in walruses, polar bears, and their prey;
 - (v) Cumulative effects of multiple simultaneous operations on walruses and polar bears; and
 - (vi) Oil spill risk assessment for the marine and shoreline environment of walruses, polar

- bears, their prey, and important habitat areas (e.g., coastal haulouts and den sites).
8. Reporting requirements. Holders of a LOA must report the results of specified monitoring activities to the Service's Marine Mammals Management (MMM) office reporting email at fw7_mmm_reports@fws.gov.
- a) In-season monitoring reports.
- (i) Activity progress reports. Operators must keep the Service informed on the progress of authorized activities by:
- A. Notifying the Service at least 48 hours prior to the onset of activities;
 - B. Providing weekly progress reports of authorized activities noting any significant changes in operating state and or location; and
 - C. Notifying the Service within 48 hours of ending activity.
- (ii) Walrus observation reports. The operator must report, on a weekly basis, all observations of walrus during any Industry operation. Information within the observation report will include, but is not limited to:
- A. Date, time, and location of each walrus sighting;
 - B. Number, sex, and age of walrus (if determinable);
 - C. Observer name, company name, vessel name or aircraft number, LOA number, and contact information;
 - D. Weather, visibility, and ice conditions at the time of observation;
 - E. Estimated distance from the animal or group when initially sighted, at closest approach, and end of the encounter;
 - F. Industry activity at time of sighting and throughout the encounter. If a seismic survey, record the estimated radius of the zone of ensonification;
 - G. Behavior of animals at initial sighting, any change in behavior during the observation period, and distance from the observers associated with those behavioral changes;
 - H. Detailed description of the encounter;
 - I. Duration of the encounter;
 - J. Duration of any behavioral response (e.g., time and distance of a flight response); and
 - K. Actions taken.
- (iii) Polar bear observation reports. The operator must report, within 24 hours, all observations of polar bears during any Industry operation. Information within the observation report will include, but is not limited to:
- A. Date, time, and location of observation;
 - B. Number, sex, and age of bears (if determinable);
 - C. Observer name, company name, vessel name, LOA number, and contact information;
 - D. Weather, visibility, and ice conditions at the time of observation;
 - E. Estimated closest point of approach for bears from personnel and/or vessel/facilities;
 - F. Industry activity at time of sighting, and possible attractants present;
 - G. Behavior of animals at initial sighting and after contact;
 - H. Description of the encounter;
 - I. Duration of the encounter; and
 - J. Actions taken.

- (iv) Notification of incident report. Reports shall include all information specified under the species observation report, as well as a full written description of the encounter and actions taken by the operator. The operator must report to the Service within 24 hours:
 - A. Any incidental lethal take or injury of a polar bear or walrus; and
 - B. Observations of walruses or polar bears within prescribed mitigation monitoring zones.
 - b) After-action monitoring reports. The results of monitoring efforts identified in the marine mammal monitoring and mitigation plan must be submitted to the Service MMM for review within 90 days of completing the year's activities. Results must include, but are not limited to, the following information:
 - (i) A summary of monitoring effort including: Total hours, total distances, and distribution through study period of each vessel and aircraft;
 - (ii) Analysis of factors affecting the visibility and detectability of walruses and polar bears by specified monitoring;
 - (iii) Analysis of the distribution, abundance, and behavior of walrus and polar bear sightings in relation to date, location, ice conditions, and operational state;
 - (iv) Estimates of take based on the number of animals encountered/kilometer of vessel and aircraft operations by behavioral response (no response, moved away, dove, etc.), and animals encountered per day by behavioral response for stationary drilling operations; and
 - (v) Raw data in electronic format (i.e., Excel spreadsheet) as specified by the Service in consultation with Industry representatives.
 - c) A report on the Plan of Cooperation, including the notification of the affected communities, measures taken to ensure that exploratory activities did not interfere with subsistence activities, and follow-up notification after the season, shall be submitted to the Service MMM no later than 90 days after the expiration of this LOA. A copy of the report shall be sent to affected local subsistence communities, the Alaska Nanuq Commission, the Eskimo Walrus Commission, and the North Slope Borough Wildlife Department as well as to the Service MMM.
9. Additional mitigation measures for activities within the HSWUA.
- a) Within the HSWUA this LOA authorizes incidental take of Pacific walruses between July 1 and September 30 only for activities that are outside of the Pacific walrus monthly 50 percent utilization distribution areas¹ (UDs) during July, August, and September, respectively. After September 30 this mitigation measure no longer applies.
 - b) Shell must provide the Service MMM at least 48 hours notice prior to vessels entering into any area within the outer boundary of the HSWUA through September 30, 2015.
 - c) Shell must notify the Service MMM within 48 hours when vessels have departed the HSWUA.
 - d) Shell must increase observation for Pacific walruses to include a 360° observation radius around all vessels and report on the behavior of observable walruses within that radius with particular attention to behavior before, during and after a vessel moves past observed walruses.

¹ The 50 percent UD's are described in 78 FR 35364 (June 12, 2013) and based on Jay, C.V., A.S. Fischbach, and A.A. Kochnev. 2012. Walrus areas of use in the Chukchi Sea during sparse sea ice cover. *Marine Ecology Progress Series* Vol. 468: 1–13, 2012 (GIS files available at <https://erma.noaa.gov/arctic/erma.html>).

- e) Shell must notify the Service within 24 hours if walrus are observed within 1/4 mile (402 meters) of a vessel.
- f) Shell must notify the Service within 24 hours if 500 or more walrus are observed within 1 mi (1.6 kilometers) within a 24 hour period (each 24 hour period beginning at midnight of a calendar day) of a vessel.
- g) Activities within the HSWUA may proceed only when weather and visibility conditions allow full implementation of all required mitigation measures.
- h) If Shell does not implement a mitigation measure when required, the Service must be notified immediately (or as soon as possible) for each incident.
- i) Failure to implement required mitigation measures may result in the imposition of additional mitigation measures, the suspension or revocation of the HSWUA variance, and/or suspension or revocation of this LOA.

The Service has completed intra-Service consultation for polar bears, and conference for Pacific walrus, under the Endangered Species Act of 1973, as amended (ESA), and has determined that issuance of this LOA is not likely to jeopardize the continuing existence of polar bears and Pacific walrus. No additional authorization under the ESA is required.

Activities related to the monitoring described in this authorization do not require a separate scientific research permit issued under Section 104 of the Marine Mammal Protection Act.

If you have any questions, please contact Mr. Michael Hendrick or Mr. Christopher Putnam at (907) 786-3479 or (907) 786-3844, respectively.



Regional Director



Date