



# United States Department of the Interior

## BUREAU OF OCEAN ENERGY MANAGEMENT

Alaska OCS Region

3801 Centerpoint Drive, Suite 500

Anchorage, Alaska 99503-5823

MAY 11 2015

Shell Gulf of Mexico Inc.

Attn: Susan Childs – Alaska Venture Support Integrator, Manager

3601 C Street, Suite 1000

Anchorage, AK 99503

Dear Ms. Childs:

The Bureau of Ocean Energy Management, Alaska Region (BOEM) has reviewed the Shell Gulf of Mexico Inc. (Shell) *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 (March 2015)*, herein referred to as the EP.

In accordance with 30 CFR 550.233, BOEM hereby approves the EP subject to the conditions below:

1. Shell must inform the Regional Supervisor, Office of Leasing and Plans (RSLP) before deviating from activities specified and procedures described under the EP.
2. In consideration of the distance to limited support infrastructure on the Chukchi Sea coast, worst case discharge estimates, the capacity and location of staged oil spill response equipment, relief drilling rig proximity, the estimated time required to drill a relief well in the unlikely event of a late season well control incident, and other considerations, BOEM requires that:

No exploratory drilling operations will be allowed below the last casing point set prior to penetrating a zone capable of flowing liquid hydrocarbons in measureable quantities within 34 days of a "trigger date" established each year by BOEM if both drill rigs are in close proximity to each other (i.e., both positioned on the Burger Prospect) or 38 days if one drill rig is in Dutch Harbor.

The trigger date is based upon the median date of first ice encroachment over the leases in the EP within any of the last 10 years. Consistent with adaptive management principles, the RSLP may revise the trigger date and/or the method for determining the trigger date based upon changes to best available technology, scientific information, or methodology (e.g., availability of a reliable ice forecasting system capable of predicting with a high degree of certainty when ice will likely encroach upon the drill site locations).

For 2015, based upon interpretation of satellite imagery for the period 2005 to 2014, BOEM has determined the median trigger date to be November 1. Accordingly, Shell must not conduct exploratory drilling operations below the casing shoe of the last string of casing set after September 28, 2015 if the drill rigs are in close proximity to each other or September 24, 2015 if

one drill rig is in Dutch Harbor. In all other aspects, Shell can continue to operate as conditions permit up to October 31, 2015.

The RSLP will establish a new trigger date, based upon the methodology describe above determining first ice encroachment, for each subsequent year that Shell conducts exploratory drilling operations under this EP.

3. Prior to commencing exploratory drilling operations, Shell must submit a copy of the Bureau of Safety and Environmental Enforcement (BSEE) approval advising that the Oil Spill Response Plan (OSRP) is in compliance with 30 CFR Part 254.
4. The EP describes a subsea well capping stack and a separate containment system with associated support equipment that will be deployed in response to a well control event. In accordance with NTL No. 2012-N06, Shell must receive approval from BSEE that the proposed procedures for deployment, installation, and operation of all available equipment, technologies, and practices addressing intervention and recovery specified in the OSRP under anticipated environmental conditions are capable of handling the projected worst case discharge conditions. Shell must submit a copy of BSEE's approval to the RSLP prior to commencement of exploratory drilling operations.

Shell is required, in coordination with BSEE, to demonstrate the ability to deploy the subsea well capping stack and containment system. Shell must confirm that it is in compliance with any agreement concerning well capping and containment reached with BSEE.

5. For any activity (e.g., setting anchors) occurring on an adjacent lease block or unleased lands on the Outer Continental Shelf (OCS), Shell must apply for and be granted by BOEM a right-of-use and easement as provided by 30 CFR 550.160 prior to commencing exploratory drilling operations at a well location requiring associated activity on an adjacent lease or unleased lands.
6. Prior to commencing exploratory drilling operations, Shell must post a Supplemental Bond in an amount acceptable to the BOEM Regional Director to ensure compliance with any decommissioning obligations incurred as a result of exploration activities conducted under the EP on Shell's leases or obtain BOEM's concurrence that no Supplemental Bond is required based upon Shell's financial strength as specified under 30 CFR 556.53.
7. Prior to commencing exploratory drilling operations on any of the six well sites in the EP, Shell must submit to the RSLP a copy of the relevant BSEE approval of each Application for Permit to Drill (APD) or Application for Permit to Modify (APM). Shell is advised that each APD or APM must comply with all applicable BSEE regulations and Notices to Lessees and Operators.
8. Prior to commencing exploratory drilling operations, Shell must confirm the final staging location and the schedule for mobilizing the designated relief well drilling rig to the drill site and the

response times for commencement and completion of a relief well. Shell must submit a document of confirmation to the RSLP prior to commencing exploratory drilling.

Shell must demonstrate that the relief well drilling rig meets the requirements of 30 CFR 250.417 and confirm that BSEE has approved the relief well drilling rig for use in the Chukchi Sea. Shell must present a copy of BSEE's approval to the RSLP prior to commencing exploratory drilling.

9. Shell must adhere to all mitigation measures included in Appendix C of the BOEM Environmental Assessment (copy attached).
10. To reduce disturbance to Pacific walrus, Shell must maintain a minimum distance of at least 7 km (4.3 mi) from any observed walrus that are hauled out on ice and any support vessels preparing to allow a helicopter to land or takeoff from its flight deck. A waiver to this condition may be allowed if Shell consults with U.S. Fish and Wildlife Service (USFWS) to determine an appropriate relocation distance or exclusion zone during helicopter takeoff and landing events that may be closer to walrus hauled out on ice.
11. Shell must adhere to all the provisions, terms, and conditions of both the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) biological opinions (BO) and authorizations under the Endangered Species Act (ESA) and Marine Mammal Protection Act (MMPA) for activities described in the EP.

No exploratory drilling operations may be conducted until BOEM completes its ongoing Endangered Species Act (ESA) Section 7 consultation with USFWS and NMFS.

12. No exploratory drilling operations can be conducted until Shell has received an approved Marine Mammal Protection Act (MMPA) authorization from the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) for the specific activity, and the RSLP has received a corresponding Endangered Species Act Incidental Take Statement (ITS) for threatened, endangered and protected species. Shell must submit a copy of the approved IHA or LOA to the RSLP prior to commencing operations.
13. Shell has developed a Plan of Cooperation (POC) designed to prevent unreasonable conflicts with subsistence activities in compliance with Lease Stipulation No. 5 (*Conflict Avoidance Mechanisms to Protect Subsistence Whaling and Other Marine Mammal Subsistence-Harvesting Activities*). Lease Stipulation No. 5 applies to support activities, such as vessel and aircraft traffic, that traverse the blocks listed in Lease Stipulation 5 or Federal waters landward of the Lease Sale 193 area during periods of subsistence use regardless of lease location.

No support activities may be conducted during periods of subsistence use related to bowhead whales, beluga whales, ice seals, walrus, and polar bears on the blocks listed in Lease Stipulation No. 5 or on Federal waters landward of the Lease Sale 193 area until Shell has documented to the

satisfaction of the RSLP that the monitoring and mitigating measures detailed in the POC to prevent unreasonable conflicts with subsistence activities for the Chukchi Sea program are in place and operational. Shell must meet this requirement prior to mobilization each drilling season.

The RSLP retains the authority to restrict lease-related use if it is determined that it is necessary to prevent unreasonable conflicts with local subsistence hunting activities. Shell must provide this office with daily summaries on POC activities and daily monitoring results including but not limited to Protected Species Observers' and local Subsistence Advisors' reports and notifications and Shell's responses to each incident. Shell must also include the BOEM contact number (907) 334-5200 in the Subsistence Advisors Handbook with specific instructions for the Subsistence Advisors to call BOEM if they are unable to contact Shell and/or if any subsistence use conflict has not been resolved. A copy of the handbook must be submitted to this office prior to commencement of exploratory drilling operations.

The POC states that Shell plans to have continuing engagement with local subsistence users to discuss and possibly further supplement the POC. Shell must inform the RSLP promptly of any deviation from or alteration of the POC that Shell intends to take as a result of these ongoing community meetings.

Shell will inform the RSLP of any presentation/meeting Shell intends to conduct under the POC to allow the RSLP to attend such engagement.

14. Prior to commencing exploratory drilling operations, to satisfy the requirements of Lease Stipulation No. 2 (*Orientation Program*) Shell will submit to the RSLP annually for approval the updated orientation program.
15. Prior to commencing exploratory drilling operations, Shell must provide the RSLP with a copy of its authorization under the National Pollutant Discharge Elimination System (NPDES) General Permit for Oil and Gas Exploration Facilities, General Permit (GP) AKG-28-8100, issued by the U.S. Environmental Protection Agency (EPA) for the marine discharges described in the EP.

Shell must conduct an Environmental Monitoring Program (EMP) that meets the objectives in GP AKG-28-8100.

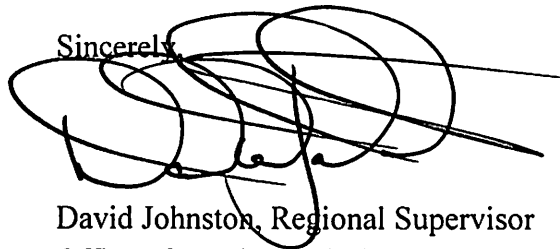
16. Prior to commencing exploratory drilling operations, Shell must provide the RSLP with evidence of BSEE's concurrence with Shell's classification of the Burger Prospect as "H<sub>2</sub>S absent" per 30 CFR 250.490. A classification of "H<sub>2</sub>S present" or "H<sub>2</sub>S unknown" will require Shell to provide the RSLP, pursuant to 30 CFR 550.215, an H<sub>2</sub>S contingency plan prepared under 30 CFR 250.490(f) or reference to an approved H<sub>2</sub>S contingency plan that covers the proposed exploration activities before commencing exploratory drilling operations.

17. In accordance with commitments Shell made under its Integrated Operations Plan (IOP), Shell must submit a copy of the SEMS Stage II third party audit report to the RSLP within 60 days of the audit completion date.
18. Within 60 days following the conclusion of each drilling season, Shell must provide the RSLP with information related to actual air emissions, pursuant to 30 CFR 550.303(k), from the project as follows:
- a. Records of fuel purchases showing volume, sulfur content, and date of fuel deliveries to each MODU;
  - b. Records of each fuel delivery to individual support vessels;
  - c. Hours of operations per month or fuel consumption per month for each emission unit identified in the EP for each drilling rig and each support vessel, and their cumulative time of operation per unit or fuel consumption per unit at the end of each season's operation;
  - d. Calculated actual emissions for each emission unit per month and cumulative for the duration of the season by unit and overall total emissions for all emission units on each drilling rig and support vessel based upon hours of operations or fuel consumption reported in item c.;
  - e. Verification that the respective emission units enumerated in Appendix K to the EP, Table 6 (Units with Emission Controls) and Table 17 (Particulate Matter Emission Controls) have had their respective air emission controls installed and operational.

As provided by 30 CFR 550.284, BOEM will annually conduct a review of the activities conducted under the approved EP and may require Shell to submit updated information or revise the approved EP.

If you have questions, please contact Bill Ingersoll, Chief of Plans Section at 907-334-5224 or by email at [william.ingersoll@boem.gov](mailto:william.ingersoll@boem.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "David Johnston", is written over the word "Sincerely,". The signature is somewhat stylized and overlaps the text.

David Johnston, Regional Supervisor  
Office of Leasing and Plans

Enclosure: BOEM Environmental Assessment, Appendix C: Marine Mammal Mitigation Measures

cc: State of Alaska – Governor Walker  
Senator Murkowski  
Senator Sullivan  
Congressman Don Young  
U.S. Fish and Wildlife Service Region 7, Regional Director, Att. Geoff Haskett  
U.S. National Marine Fisheries Service - Alaska Region, Att: James W. Balsiger  
--continued next page--

U.S. Environmental Protection Agency Region X Alaska, Att: Diane Soderland  
U.S. Coast Guard Alaska Region, Att: Commander Hector Cintron  
Mayor of Northwest Arctic Borough, Att: Reggie Joule  
Mayor of North Slope Borough, Att: Charlotte Brower  
Mayor of Barrow, Att: Robert Harcharek  
Mayor of Wainwright, Att: John Hopson, Jr  
Mayor of Kotzebue, Att: Clement Richards Sr.  
Mayor of Point Hope, Att: Jack Schaefer  
Native Village of Wainwright, Att: Howard Patkotak, President  
Native Village of Point Lay, Att: Leo Feirria, President  
Native Village of Point Hope, Att: Jack Schaefer, President  
Native Village of Kaktovik, Att: Matthew Rexford, President  
Inupiat Community of the Arctic Slope, Att: Doreen Lampe  
Alaska Eskimo Whaling Commission, Att: Harry Brower

**Marine Mammal Mitigation Measures**

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## Appendix C. Marine Mammal Mitigations

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### C-1. Marine Mammal Mitigations

In analyzing potential impacts to marine mammals from Shell's proposed Chukchi Sea exploratory drilling program, BOEM assumed implementation of the mitigation measures described below. These mitigation measures are typically required by MMPA authorizations and by lease sale stipulations.

#### C-1.1. General Offshore Exploration Activities

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 marine mammal distributions in the area of interest.

#### C-1.2. General Onshore Exploration Support Activities

All personnel and activities will comply with Shell's *Polar Bear, Pacific Walrus, and Grizzly Bear Avoidance and Human Encounter/Interaction Plan, Exploratory Drilling Program, Chukchi Sea, Alaska*, which details bear avoidance and encounter procedures and training; bear guard training; safety and communication procedures; Shell's Food Waste Management Plan, and reporting.

#### C-1.3. Vessel Traffic

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 marine mammals the opportunity to disperse from the confines of the spring lead system and minimize interactions with subsistence hunters. Exemption waivers to this operating condition may be issued by NMFS and USFWS on a case-by-case basis, based upon a review of seasonal ice conditions and available information on marine mammal distributions in the area of interest.

The transit route for the drilling units and drilling support vessels will avoid known fragile ecosystems and the LBCHU, and will include coordination through Communication Centers as described in Shell's Marine Mammal Mitigation and Monitoring Plan (hereafter "2015 Shell 4MP").

All vessels shall reduce speed to a maximum of 5 knots when within 900 ft (300 yards/274 m) of whales. Those vessels capable of steering around such groups should do so.

Vessels may not be operated in such a way as to separate members of a group of marine mammals from other members of the group.

Avoid multiple changes in direction and speed when within 900 ft (300 yards/274 m) of whales.

Vessels should take all reasonable precautions (i.e., reduce speed, change course heading) to maintain a minimum operational exclusion zone of 0.5 mi (0.8 km) around groups of 12 or more walrus in the water.

When weather conditions require, such as when visibility drops, support vessels must reduce speed and change direction, as necessary (and as operationally practicable), to avoid the likelihood of injury to marine mammals.

Except in an emergency, vessels will not approach within 0.5 mi. (0.8 km) of walrus or polar bears when observed on ice. BOEM also recommends that vessels not approach within 0.5 mi of ice seals (i.e., ringed seals, bearded seals, ribbon seals, and spotted seals) when observed on ice.

Except in an emergency, vessels will not approach within 1.0 mi. (1.6 km) of groups of walrus or 0.5 mi. (0.8 km) of polar bears when observed on land.

PSOs will be aboard the drilling units and all transiting support vessels.

Shell will communicate and coordinate with the Communication Centers regarding all vessel transits.

#### **C-1.4. Ice Management**

Shell has developed and will implement an Adaptive Approach to Ice Management in Areas Occupied by Pacific Walrus (Shell, 2015a, Appendix J). This plan includes:

- Use of real time ice and weather forecasting from the Shell Ice and Weather Advisory Center and USGS tagged animals, and NMFS aerial survey flights (ASAMM) to generate daily assessments of the potential need to manage ice and the potential for such activities to interact with walrus;
- Daily communication of risk assessment to USFWS via email;
- Maintenance of a 24-hour duty phone by both Shell and USFWS for the purpose of consultation.

If ice management is needed and walrus have the potential to be present, Shell will notify USFWS via email and provide phone or in-person updates as needed during normal business hours. Ice management can proceed with care if the entire ice floe and surrounding area can be visualized and no walrus are hauled out on the ice.

If walrus are present and hauled out on ice which poses an imminent threat to vessels and/or drilling operations and ice management is needed:

1. The on duty compliance representative for Shell will notify a designated USFWS representative by calling a duty phone to engage in real-time consultation.
2. The Shell drilling supervisor will be engaged to evaluate the status of drilling operations and the potential for implementation of ice avoidance measures that may include cessation of drilling activities and moving off hole in extreme cases. If such alternatives are available and can be implemented, these procedures will be implemented.
3. Real-time communications will be established with the lead PSO on the ice management vessel(s) to assess the proximity and status of walrus hauled out on ice floes that need to be managed. Descriptions of the situation will be shared with the consultation team.
4. If the team agrees that ice management can go forward, the vessel will approach the ice floe slowly in an effort to provide walrus an opportunity to react to the approaching vessel and choose to avoid most safely. Video cameras and still cameras will be used to document procedures and results to enhance the understanding of the risks posed by ice management activities.
5. Real time consultation will continue as long as ice management is required, or until the consultation team agrees that procedures are going forward successfully.
6. A post action report will be filed with USFWS within 24 hours. To the extent that communications will allow the transfer of still frame and video, photographic documentation will be included.
7. If real-time consultation cannot be established, and, if ice management cannot be avoided to protect vessels and critical drilling operations, Shell will proceed slowly, exercising all due care for walrus and monitoring and documenting any reactions to the ice management.

### **C-1.5. Aircraft Traffic**

Aircraft shall not fly within 1,000 ft (305 m) of marine mammals or below 1,500 ft (457 m) altitude (except during takeoffs, landings, marine mammal monitoring, or in emergency situations) while over land or sea, except as noted below.

Aircraft engaged in marine mammal monitoring shall not operate below 1,500 ft. (457 m) in areas of active whaling; such areas to be identified through communications with Communication Centers and Subsistence Advisors as described in the 2015 Shell 4MP.

Except in an emergency, aircraft will not operate at an altitude lower than 1,500 ft. (457 m) within 0.5 mi. (0.8 km) of polar bears when observed on land or ice.

Helicopters will not operate at an altitude lower than 3,000 ft. (914 m) within 1 mi. (1.6 km) of walrus groups observed on land, and fixed-wing aircraft will not, except in an emergency, operate at an altitude lower than 1,500 ft. (457 m) within 0.5 mi. (805 m) of walrus groups observed on ice, or within 1 mile (1,610 m) of walrus groups observed on land.

If aircraft must be operated below 1,500 ft. (457 m) because of weather, the operator will avoid areas of known walrus and polar bear concentrations and will take precautions to avoid flying directly over or within flying within 0.5 mi. (805 m) of these areas.

### **C-1.6. Protected Species Observers**

Designate trained Protected Species Observers (PSO) to be aboard both drilling units, ice management and anchor handler vessels and all ocean-going support vessels. The PSOs are required to monitor for marine mammals in order to implement the mitigation measures. Utilize two NMFS-approved, vessel-based PSOs (except during meal times and restroom breaks, when at least one PSO shall be on watch) to visually watch for and monitor marine mammals near the drilling units or support vessels (from nautical twilight-dawn to nautical twilight-dusk) and before and during start-ups of airguns day or night. The vessels' crew shall also assist in detecting marine mammals, when practicable.

PSOs shall have access to reticle binoculars (7x50), bigeye binoculars (25x150), and night vision devices. PSO shifts shall last no longer than 4 consecutive hours and shall not be on watch more than 12 hours in a 24-hour period. PSOs shall also make observations during daytime periods when active operations are not being conducted for comparison of animal abundance and behavior, when feasible.

When a mammal sighting is made, the following information about the sighting will be recorded by the PSOs:

1. Species, group size, age/size/sex categories (if determinable), behavior when first sighted and after initial sighting, heading (if consistent), bearing and distance from the PSO, apparent reaction to activities (e.g., none, avoidance, approach, paralleling, etc.), closest point of approach, and behavioral pace
2. Time, location, speed, activity of the vessel, sea state, ice cover, visibility, and sun glare
3. The positions of other vessel(s) in the vicinity of the PSO location
4. The ship's position, speed of support vessels, and water temperature, water depth, sea state, ice cover, visibility, and sun glare will also be recorded at the start and end of each observation watch, every 30 minutes during a watch, and whenever there is a change in any of those variables

PSO teams shall consist of trained observers and experienced field biologists. An experienced field crew leader will supervise the PSO team onboard the survey vessel. New observers shall be paired with experienced observers to avoid situations where lack of experience impairs the quality of observations.

PSOs will complete a two or three day training session on marine mammal monitoring, to be conducted shortly before the anticipated start of the 2015 open-water season. The training session(s) will be conducted by qualified marine mammalogists with extensive crew-leader experience during previous vessel-based monitoring programs. A marine mammal observers' handbook, adapted for the specifics of the planned program, will be reviewed as part of the training PSO training that is conducted prior to the start of the survey activities shall be conducted with all PSOs being trained at the same time in the same room. There shall not be separate training courses for the different PSOs. PSOs shall be trained using visual aids (e.g., videos, photos), to help them identify the species that they are likely to encounter in the conditions under which the animals will likely be seen.

### ***Zero-offset Vertical Seismic Profile (ZVSP) Mitigation and Monitoring Measures***

1. PSOs shall conduct monitoring while the airgun array is being deployed or recovered from the water.
2. PSOs shall visually observe the entire extent of the exclusion zone (EZ) (180 dB re 1  $\mu$ Pa rms for cetaceans and walrus, and 190 dB re 1  $\mu$ Pa rms for pinnipeds and polar bears) using NMFS-qualified PSOs, for at least 30 minutes (min) prior to starting the airgun array (day or night). If the PSO finds a marine mammal within the EZ, Shell must delay the seismic survey until the marine mammal(s) has left the area. If the PSO sees a marine mammal that surfaces then dives below the surface, the PSO shall continue the watch for 30 min. If the PSO sees no marine mammals during that time, they may assume that the animal has moved beyond the EZ. If for any reason the entire radius cannot be seen for the entire 30 min period (i.e., rough seas, fog, darkness), or if marine mammals are near, approaching, or in the EZ, the airguns may not be ramped-up. If one airgun is already running at a source level of at least 180 dB re 1  $\mu$ Pa (rms), the operator may start the second airgun without observing the entire EZ for 30 min prior, provided no marine mammals are known to be near the EZ.
3. Establish and monitor a 180 dB re 1  $\mu$ Pa (rms) and a 190 dB re 1  $\mu$ Pa (rms) EZ for marine mammals before the airgun array is in operation. Before the field verification tests, described below, the 180 dB radius is temporarily designated to be 1.28 km and the 190 dB radius is temporarily designated to be 255 m.
4. Implement a "ramp-up" procedure when starting up at the beginning of seismic operations. During ramp-up, the PSOs shall monitor the EZ, and if marine mammals are sighted, a power-down, or shut-down shall be implemented as though the full array were operational. Therefore, initiation of ramp-up procedures from shut-down requires that the PSOs be able to view the full EZ;
5. Power-down or shutdown the airgun(s) if a marine mammal is detected within, approaches, or enters the relevant EZ. A shutdown means all operating airguns are shutdown (i.e., turned off). A power-down means reducing the number of operating airguns to a single operating airgun, which reduces the EZ to the degree that the animal(s) is no longer in or about to enter it.
6. Following a power-down, if the marine mammal approaches the smaller designated EZ, the airguns must then be completely shutdown. Airgun activity shall not resume until the PSO has visually observed the marine mammal(s) exiting the EZ and is not likely to return, or has not been seen within the EZ for 15 min for species with shorter dive durations (small odontocetes and pinnipeds) or 30 min for species with longer dive durations (mysticetes).
7. Following a power-down or shutdown and subsequent animal departure, airgun operations may resume following ramp-up procedures described above.
8. ZVSP surveys may continue into night and low-light hours if such segment(s) of the survey is initiated when the entire relevant EZs are visible and can be effectively monitored; and

9. No initiation of airgun array operations is permitted from a shutdown position at night or during low-light hours (such as in dense fog or heavy rain) when the entire relevant EZ cannot be effectively monitored by the PSO(s) on duty.

### **C-1.7. Monitoring Measures**

**Aerial Survey Monitoring.** Shell must implement the aerial survey monitoring program detailed in the 2015 Shell 4MP.

**Acoustic Monitoring.** Field Source Verification: Shell is required to conduct sound source verification tests for the MODUs, support vessels, and the airgun array not measured in previous seasons. Sound source verification shall consist of distances where broadside and endfire directions at which broadband received levels reach 190, 180, 170, 160, and 120 dB re 1 mPa (rms) for all active acoustic sources that may be used during the activities. For the airgun array, the configurations shall include at least the full array and the operation of a single source that will be used during power downs. The test results for the airgun array shall be reported to NMFS within 5 days of completing the test. A report of the acoustic verification measurements of the ZVSP airgun array will be submitted within 120 hr after collection and analysis of those measurements once that part of the program is implemented. The ZVSP acoustic array report will specify the distances of the exclusion zones that were adopted for the ZVSP program. Prior to completion of these measurements, Shell will use the radii outlined in the ZVSP mitigation condition above.

**Acoustic “Net” Array.** Deploy acoustic recorders widely across the U.S. Chukchi Sea and on the prospect in order to gain information on the distribution of marine mammals in the region. This program must be implemented as detailed in the 2015 Shell 4MP.

### **C-1.8. Reporting Requirements**

BOEM expects that the following reports are required by NMFS and by USFWS. BOEM further requires that each report generated pursuant to this section be copied to BSEE-Alaska Region. Within 5 days of completing the sound source verification tests for the airguns, Shell shall submit a preliminary report of the results to NMFS and USFWS.

#### ***Reporting Requirements - NMFS***

1. Report on the results of the acoustic verification measurements of the MODUs and support vessels, not recorded in previous seasons, will be reported in the 90-day report. The report should report down to the 120-dB radius in 10-dB increments
2. Submit a draft report on all activities and monitoring results to NMFS within 90 days of the completion of the exploration drilling program. This report must contain and summarize the following information:
  - (a). Summaries of monitoring effort (e.g., total hours, total distances, and marine mammal distribution through the study period, accounting for sea state and other factors affecting visibility and detectability of marine mammals)
  - (b). Sound source verification results for MODUs and vessels recorded in 2015
  - (c). Analyses of the effects of various factors influencing detectability of marine mammals (e.g., sea state, number of observers, and fog/glare)
  - (d). Species composition, occurrence, and distribution of marine mammal sightings, including date, water depth, numbers, age/size/gender categories (if determinable), group sizes, and ice cover
  - (e). Sighting rates of marine mammals during periods with and without exploration drilling activities (and other variables that could affect detectability), such as:
    - 1) Initial sighting distances versus drilling state
    - 2) closest point of approach versus drilling state

- 3) observed behaviors and types of movements versus drilling state
  - 4) numbers of sightings/individuals seen versus drilling state
  - 5) distribution around the survey vessel versus drilling state; and
  - 6) estimates of take
- (f). Reported results from all hypothesis tests should include estimates of the associated statistical power when practicable;
  - (g). Estimate and report uncertainty in all take estimates. Uncertainty could be expressed by the presentation of confidence limits, a minimum maximum, posterior probability distribution, etc.; the exact approach will be selected based on the sampling method and data available
  - (h). The report should clearly compare authorized takes to the level of actual estimated takes
  - (i). If, changes are made to the monitoring program after the independent monitoring plan peer review, those changes must be detailed in the report.
3. The draft report will be subject to review and comment by NMFS. Any recommendations made by NMFS must be addressed in the final report prior to acceptance by NMFS. The draft report will be considered the final report for this activity if NMFS has not provided comments and recommendations within 90 days of receipt of the draft report.
  4. A draft comprehensive report describing the aerial, acoustic, and vessel-based monitoring programs will be prepared and submitted within 240 days of the date of the NMFS IHA Authorization. The comprehensive report will describe the methods, results, conclusions and limitations of each of the individual data sets in detail. The report will also integrate (to the extent possible) the studies into a broad based assessment of all industry activities and their impacts on marine mammals in the Arctic Ocean during exploration.
  5. The draft comprehensive report will be subject to review and comment by NMFS, the Alaska Eskimo Whaling Commission, and the North Slope Borough Department of Wildlife Management. The draft comprehensive report will be accepted by NMFS as the final comprehensive report upon incorporation of comments and recommendations.

In the unanticipated event that the drilling program operation clearly causes the take of a marine mammal in a manner prohibited by the IHA, such as an injury (Level A harassment), serious injury or mortality (e.g., ship-strike, gear interaction, and/or entanglement), Shell shall cease operations as rapidly as safe operations permit and immediately report the incident by phone or email to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, by phone or email and the Alaska Regional Stranding Coordinators.

The report must include the following information:

- (a). Time, date, and location (latitude/longitude) of the incident
- (b). The name and type of vessel involved
- (c). The vessel's speed during and leading up to the incident
- (d). Description of the incident
- (e). Status of all sound source use in the 24 hours preceding the incident
- (f). Water depth
- (g). Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility)
- (h). Description of marine mammal observations in the 24 hours preceding the incident
- (i). Species identification or description of the animal(s) involved
- (j). The fate of the animal(s)
- (k). Photographs or video footage of the animal (if equipment is available)

Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS shall work with Shell to determine what is necessary to minimize the likelihood of further



prohibited take and ensure MMPA compliance. Shell may not resume their activities until notified by NMFS via letter, email, or telephone.

1. In the event that Shell discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (i.e., in less than a moderate state of decomposition as described in the next paragraph), Shell will immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, by phone or email and the NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinators. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with Shell to determine whether modifications in the activities are appropriate.
2. In the event that Shell discovers an injured or dead marine mammal, and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in the NMFS IHA (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), Shell shall report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, by phone or email and the NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinators, within 24 hours of the discovery. Shell shall provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network. Activities may continue while NMFS reviews the circumstances of the incident.

### **Reporting Requirements – USFWS**

Holders of Letters of Authorization must report the results of specified monitoring activities to the USFWS's Alaska Regional Director. In-season reports include activity progress reports, walrus observation reports, polar bear observation reports, and notification of incident reports. An after-action monitoring report must be provided to USFWS within 90-days of completing the year's activities.

**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

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

- (a). Date, time, and location of each walrus sighting
- (b). Number of walruses: sex and age
- (c). Observer name and contact information
- (d). Weather, visibility, and ice conditions at the time of observation
- (e). Estimated range at closest approach
- (f). Industry activity at time of sighting
- (g). Behavior of animals sighted
- (h). Description of the encounter
- (i). Duration of the encounter; and
- (j). Actions taken

**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:

- (k). Date, time, and location of observation
- (l). Number of bears: sex and age
- (m). Observer name and contact information
- (n). Weather, visibility, and ice conditions at the time of observation
- (o). Estimated closest point of approach for bears from personnel and facilities
- (p). (Industry activity at time of sighting, possible attractants present
- (q). Bear behavior
- (r). Description of the encounter
- (s). Duration of the encounter; and
- (t). Actions taken

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

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

- (a). A summary of monitoring effort including: total hours, total distances, and distribution through study period
- (b). Analysis of factors affecting the visibility and detectability of walruses and polar bears by specified monitoring
- (c). Analysis of the distribution, abundance, and behavior of walrus and polar bear sightings in relation to date, location, ice conditions, and operational state; and
- (d). Estimates of take based on density estimates derived from monitoring and survey efforts