

Reporting Requirements

1. Before beginning seismic exploration activities, the operator would provide a map to the BLM showing all known avoidance areas such as bear den sites, cultural sites and Native allotments, spring-fed open water areas, and augeis.
2. The applicant/operator would provide the BLM Arctic District Office with a weekly activities summary report including information regarding any lake water use (location and amount). The operator would provide a map to the BLM every week during operations showing the camp/seismic activity locations, snow trails, snow cover, hazards, willow avoidance areas, stream crossings, ungrounded ice with ice/waterborne attenuation buffer, augeis, potential cultural sites, and any other avoidance areas.
3. Take offs and landings locations and track logs in a GPS format (BLM would provide information on type of information required) would be kept for all aircraft operating in the project area during summer and winter operations.

Seismic Operations

4. Only low ground-pressure winter tundra approved vehicles would be allowed for on the ground activities. Non low ground-pressure vehicles would only be allowed on a snow packed trail. Low ground pressure vehicles would be selected and operated in a manner that would eliminate direct impacts to the tundra by shearing, scraping, or excessively compacting the tundra mat.
5. Bulldozing of the tundra mat and vegetation, trails, or seismic lines would be prohibited. On existing trails, seismic lines or camps, clearing or grooming of snow or drifted snow would be allowed to the extent that the tundra mat is not disturbed.
6. To reduce the possibility of ruts, vehicles would avoid using the same trails for multiple trips unless necessitated by serious safety or superseding environmental concern. This provision would not apply to hardened snow trails for use by low ground pressure vehicles such as Rolligons.
7. Ground operations would only be allowed when frost and snow cover are at sufficient depth, density and structure to protect the tundra. Soils should be frozen to at least 23 degrees Fahrenheit at least 12 inches below the lowest surface height (e.g. intertussock space). Snow depth and snow density should amount to no less than a Snow Water Equivalent (SWE) of 3 inches over the highest vegetated surface (e.g. top of tussock) in the Coastal area and 4.5 inches in the Foothills.

Table 2. Snow Depth x Density to achieve SWE

| Snow Specific Gravity | Coastal 3 inches SWE Needed Snow Depth (inches) | Foothills 4.5 inches SWE Needed Snow Depth (inches) |
|-----------------------|---|---|
| 0.1 | 30 | 45 |
| 0.2 | 15 | 22.5 |

| | | |
|------|----|----|
| 0.3 | 10 | 15 |
| 0.35 | 9 | 13 |
| 0.4 | 8 | 11 |
| 0.45 | 7 | 10 |
| 0.5 | 6 | 9 |

8. The applicant/operator would develop and provide the BLM a detailed Snow Monitoring Plan that outlines how and when snow depth and density would be measured. The Plan would describe how adequate snow depth and density would be determined using ROP 7 for the protection of vegetation, soils and permafrost.
9. In the spring, when snow depth and density no longer meet the criteria outlined in ROP 7, the AO would order ground operations to cease.
10. Seismic operations and winter overland travel could be monitored by agency representative(s) identified by the AO and operators would be required to accommodate the agency representative(s) during operations.

Wildlife (Non-Aircraft Related)

11. The applicant would cooperate with the FWS and other Federal, State, or local agencies designated to represent the FWS to monitor impacts of project activities on polar bears.
12. All field crews would follow a Wildlife Interaction Plan prepared by the applicant detailing how crews would manage wildlife attractants (food and non-food materials) and respond to human-polar bear interactions. This interaction plan would include all guidelines for safely and non-lethally deterring polar bears from damaging property and endangering the public as found in the Final Rule of the Marine Mammal Protection Act Deterrence Guidelines (Appendix P **will be attached to permit**). Other methods of deterring polar bears would require authorization by the FWS's Marine Mammals Management (MMM) office.
13. If a polar bear interaction escalates into a life threatening situation, section 101(c) of the MMPA allows, without specific authorization, persons to take (including lethal take) a polar bear.
14. The operator and all crew members would be required to review educational materials (available from the BLM) that describe: (1) Characteristics of polar bear dens so immediate mitigation measures could be implemented should crews find one; (2) Suitable polar bear denning habitat so crews could avoid potentially disturbing polar bears in unseen dens and/or altering denning habitat; (3) If field crews discover a new den, they would cease activities within one mile of it and contact MMM to report the den as soon as possible and seek guidance before proceeding with activities. The FWS would evaluate these instances on a case-by-case basis to determine the appropriate action.
15. FLIR, thermal imaging surveys, to locate polar bear dens in the project area would be conducted at the direction of the FWS prior to beginning winter work.

16. Unless directed by the FWS, no human activities would be allowed to take place within one mile of known polar bears dens.
17. The applicant and operator would follow all Incidental Take Regulations (ITR) and Terms and Conditions. These Terms and Conditions may contain timing and geographic restrictions placed on operations during the winter or summer operations in the project area.
18. All Terms and Conditions resulting from the completed FWS Endangered Species Act consultation would be followed.
19. Feeding of wildlife would be prohibited.
20. Chasing wildlife with ground vehicles would be prohibited unless otherwise authorized by the relevant management agency. Particular attention would be given to avoid disturbing caribou.

Use of Aircraft (Included Wildlife Related ROPs)

21. The operator would submit an aircraft use plan. The plan would address strategies to minimize impacts to subsistence hunting and associated activities, including but not limited to the estimated number of flights, type of aircraft, and flight altitudes and routes, and would also include a plan to monitor flights. Adjustments, including possible suspension of all flights, could be required by the AO if resulting disturbance is determined to be unacceptable. The estimated number of takeoffs and landings to support exploration operations with necessary materials and supplies should be limited to the maximum extent possible.
22. Aircraft would maintain an altitude of at least 1,500 feet above ground level when within ½ mile of cliffs identified as raptor nesting sites from April 15 through August 15 and an altitude of at least 1,500 feet above ground level when within ½ mile of known gyrfalcon nest sites from March 15 to August 15, unless doing so would endanger human life or violate safe flying practices. The operator would obtain information from the BLM and FWS necessary to plan flight routes when routes could go near falcon nests.
23. Aircraft would maintain an altitude of at least 1,000 feet above ground level (except for takeoffs and landings) over caribou winter ranges (Appendix B Maps B-5 and B-6 **will be included with permit**) from December 1 through May 1, unless doing so would endanger human life or violate safe flying practices. Winter ranges would be determined yearly by BLM in collaboration with ADFG and the Arctic NWR staff.
24. Use of aircraft, especially rotary wing aircraft, near known subsistence camps and cabins or during sensitive subsistence hunting periods (spring goose hunting and fall caribou and moose hunting) would be kept to a minimum.

25. Hazing of wildlife by aircraft would be prohibited. Pursuit of running wildlife is hazing. If wildlife begins to run as an aircraft approaches, the aircraft is too close and would be required to break away.
26. Walrus are seldom observed on the coast of the Arctic Refuge, but occur on rare occasions. Fixed wing aircraft used along the coast would maintain minimum altitude of 2,000 feet when within a ½-mile of walrus haulouts, unless doing so would endanger human life or violate safe flying practices. Helicopters used along the coast would maintain minimum altitude of 3,000 feet and a 1-mile buffer from walrus haulouts, unless doing so would endanger human life or violate safe flying practices.
27. Aircraft used along the coast and shore fast ice zone would maintain minimum altitude of 3,000 feet when within 1 mile from seals, unless doing so would endanger human life or violate safe flying practices.
28. Lights on airstrips would be shut off when not actively needed for aircraft landings and take-offs.
29. Timing of helicopter use for summer cleanup activities would be determined each year after consultation with the AO and through consultation with the Village of Kaktovik and the Kaktovik Iñupiat Corporation to minimize impacts.

Invasive and Non-Native Vegetation

30. The operator would certify that all equipment and vehicles are weed-free prior to transporting them into the Coastal Plain. Prior to operations in the Coastal Plain, the operator would submit a plan for the BLM's approval, detailing the methods for cleaning equipment and vehicles, monitoring for weeds, and weed control.

Waste Prevention and Hazardous Materials

31. Areas of operation would be left clean of all debris.
32. The applicant would develop a comprehensive waste management plan in consultation with Federal, State, and North Slope Borough regulatory and resource agencies, as appropriate. The Plan would address: (1) prevention and reduction of waste, (2) recycling, (3) treatment, and (4) disposal. The plan would also identify:
 - a. Methods to avoid attracting wildlife to food and garbage.
 - b. Disposal of putrescible waste. Burial of garbage would be prohibited. All putrescible waste would be incinerated or backhauled. All solid waste, including incinerator ash, would be disposed of in an approved waste-disposal facility in accordance with EPA and Alaska Department of Environmental Conservation regulations and procedures. The burial of human waste would be prohibited.
 - c. The discharge or disposal of wastewater into bodies of fresh, estuarine, and marine water, including wetlands would be prohibited unless authorized by a National Pollutant Discharge Elimination System or State permit.

33. The applicant would develop and implement a hazardous materials handling plan that identifies the safe handling of fuels and other hazardous materials, including storage, transfer, and individual vehicle practices.
34. The applicant would develop a comprehensive spill prevention and response contingency plan. The plan would include procedures to ensure prompt response, notification (to the BLM and other appropriate agencies), and cleanup in the event of a hazardous substance spill. The plan would include a list of resources available for response (e.g., heavy-equipment operators, spill-cleanup materials or companies), and names and phone numbers of Federal, State, and North Slope Borough contacts. All appropriate staff would be instructed regarding these procedures.
35. Sufficient oil spill cleanup materials (absorbents, containment devices, etc.) would be stored at all fueling points and vehicle maintenance areas and would be carried by field crews on all overland moves, seismic work trains, and similar overland moves by heavy equipment.
36. Fuel and other petroleum products and other liquid chemicals would be stored in proper containers.
37. All fuel containers, including barrels and propane tanks, would be marked with the responsible party's name, product type, and year filled or purchased.
38. Any reportable spill would be reported to the AO as soon as possible but no later than 24 hours after the occurrence.
39. All oil pans (i.e. duck ponds) would be marked with the responsible party's name.
40. Storage of fuel or refueling equipment within 500 feet of any water body would be prohibited with the exception of refueling during seismic activities on grounded sea ice. Fuel storage would be at least 500 feet from any water body. (This is different from Alternative A which would allow for fuel storage and refueling of equipment to take place within 100 feet of active floodplains or water bodies).

Fish and Water Resources

41. Vibroseis surveys would not be allowed to be conducted over areas with fish overwintering potential (lagoons do not provide suitable fish habitat during winter).
42. No seismic activity (camps, vibroseis, or vehicle traffic) would be permitted within 500 feet of spring-fed open water areas along the Hulahula River, Sadlerochit River (including Sadlerochit Springs), and Okerokovik River which are all high-value unique hydrological resources, with the Hulahula and Sadlerochit Rivers also known to be used by overwintering fish. No seismic activity would be permitted within 100 feet of other spring-fed open water areas. See Appendix B Figure B-2 for the known high-value springs; however, not all springs in the area of the proposed action have been delineated.

43. Snow removal from fish-bearing lakes would only be permitted where lake depth $\leq 4'$ (ice plus liquid water), which would become grounded ice during the winter. An exception would be allowed for airstrips. Snow removal from streams and rivers would only be permitted from areas of grounded ice.
44. Withdrawal of unfrozen water from rivers and streams during winter would be prohibited.
45. Only 5,000 gallons of liquid water would be permitted for removal from any lake without prior approval. If additional water use permits are requested, the permits could be obtained without the need for fish species and bathymetry information by assuming that sensitive species are present and obtaining a physical measurement of maximum depth in the field to calculate volume using a modified cone method which tends to underestimate actual volume. If additional water from lakes is requested by the operator, the AO would concur with the State's permitting levels as long as allowable volumes do not exceed those guidelines outlined in BMP B-2 in the NPR-A IAP Record of Decision (USDOI BLM 2013).
46. Water intake hoses would be equipped with a screen approved by ADFG Habitat Division.
47. The AO would be notified within 24 hours of any observation of dead or injured fish on water source intake screens or in the hole being used for pumping. If dead or injured fish are observed, pumping from that water source would cease. Additional water from that source would only be permitted if the AO approves (on a case-by-case basis) additional preventative measures to avoid further impacts to fish (e.g., reducing the intake rate and/or moving the location of the hole).
48. Crossing of streams, rivers, and lakes would be made using a low-angle approach. These waterbodies would be crossed at areas of grounded ice unless it is demonstrated that there would be no additional impacts to overwintering fish habitat and approved by the AO. Snow ramps could be used but must be substantially free of soil and debris.
49. Travel up and down rivers and streams would be prohibited unless it is demonstrated that there would be no additional impacts to overwintering fish habitat and approved by the AO.
50. Prior to August 1 following the season of winter operations, spatial data of ungrounded ice areas encountered based on operationally necessary GPR and physical ice-checking (i.e. no additional data collection is required) would be submitted to the AO.

Cultural

51. During trips for advance route scouting, the scouting crew would monitor for objects visible above the snow and route paths around them. The BLM and/or a professional archaeologist would provide further guidance on the types of objects that could be expected.

52. Upon finding any potential cultural or paleontological resources, the operator would notify the AO and suspend all operations within 500 feet of such discovery until written authorization to proceed is issued by the AO. If it is found that sites were adversely impacted, further mitigation measures including additional post use surveys could be required to avoid future disturbances.

Recreation/Visual Resources/Wilderness Values/ Wild & Scenic Rivers/Special Designations

53. The operator would provide a Plan that describes how impacts would be minimize through the proposed Hulahula River wild and scenic river corridor to reduce the appearance of trails and to maintain recreation and cultural outstanding and remarkable values.
54. The use of outside lights at worker camps would be minimized.
55. Orient lights in a downward direction to reduce light escapement and glow.
56. Minimize use of steel cleated tracks that would rip or shred vegetation during skid turns.
57. Avoid placing seismic lines through areas of willows that would result in the creation of trails through crushed vegetation.

Subsistence Consultation for Permitted Activities

58. The applicant would consult directly with affected subsistence communities to discuss the siting, timing, and methods of their proposed operations to help discover local traditional and scientific knowledge, resulting in measures that minimize impacts to subsistence uses. Through this consultation, the applicant would make every reasonable effort, including such mechanisms as conflict avoidance agreements and mitigating measures, to ensure that proposed activities would not result in unreasonable interference with subsistence activities. In the event that no agreement is reached between the parties, the AO would consult with the directly involved parties and determine which activities would occur, including the timeframes.
59. The applicant would submit the proposed plan of operations to the appropriate village tribal government, village Alaska Native Claims Settlement Act (ANCSA) corporation, city council in Kaktovik, for review and comment. The applicant should provide all relevant material electronically to the appropriate entities by email and would send a courtesy copy to the BLM.
60. On any emailed announcements of meetings, the applicant would courtesy copy and/or provide the AO copies of flyers or notices no later than one week before the meeting is scheduled to occur.
61. A plan would be developed that shows how the activity, in combination with other activities in the area, would be scheduled and located to prevent unreasonable conflicts

with subsistence activities. The plan would also describe methods used to monitor the effects of the activity on subsistence access and use. The plan would be provided to the BLM and to residents and entities in Kaktovik. The plan would address the following items: (1) A detailed description of the activities to take place (including the use of aircraft); (2) any potential impacts identified by the AO during the consultation process; (3) A detailed description of monitoring effort to take place, including process, procedures, personnel involved and points of contact both at the work site and in the local community. If subsistence representatives are to be engaged as part of the activity, the names and contact information of the subsistence representatives would be provided to the BLM and appropriate tribal government, village ANCSA corporation, and city government no later than one week before the activity commences; (4) Communication elements to provide information on how the applicant would keep potentially affected individuals and communities up-to-date on the progress of the activities and locations of possible, short-term conflicts (if any) with subsistence activities. Communication methods could include holding community meetings, open house meetings, workshops, newsletters, radio and television announcements, etc.; and (5) Procedures necessary to facilitate access by subsistence users to conduct their activities.

62. The applicant would inform the public that their use of the land is not restricted by the applicant's operations and would notify all potentially affected subsistence-use allotment owners, cabin and campsite users. For the purpose of this standard, a potentially affected cabin/campsite is defined as any camp or campsite used for subsistence purposes and located within the project area boundary and/or within one mile of actual or planned travel routes used to supply the seismic operations while it is in operation. The official recognized list of subsistence-use cabin and campsite users is the North Slope Borough's most current inventory of cabins and campsites, which have been identified by the subsistence users' names. A copy of the notification, a map of the proposed exploration area, and the list of potentially affected users would also be provided to the office of the appropriate Native Tribal government.
63. Seismic related activities would be prohibited within 300 feet of any known subsistence-use native allotments, cabin or campsite unless an alternate agreement between the native allotment owner or cabin/campsite owner/user was reached through the consultation process and presented to the AO.
64. The applicant would notify the appropriate local search and rescue (e.g., Kaktovik Search and Rescue) of their current operational location on a weekly basis. This notification would include a map indicating the current extent of surface use and occupation and areas previously used/occupied during the course of the operation in progress.
65. All personnel involved in seismic related activities would be provided information concerning the ROPs and specific types of environmental, social, traditional, and cultural concerns that relate to the region. The applicant/operator would ensure that all personnel involved in permitted activities would attend an orientation program at least once a year. The proposed orientation program would: (1) Address the importance of not disturbing

archaeological and biological resources and habitats, including endangered species, fisheries, bird colonies, and marine mammals, and provide guidance on how to avoid disturbance; (2) Be designed to increase sensitivity and understanding of personnel to community values, customs, and lifestyles in areas in which personnel would be operating; (3) Include information concerning avoidance of conflicts with subsistence use; (4) Include information for aircraft personnel concerning subsistence activities and areas/seasons that are particularly sensitive to disturbance by low-flying aircraft. Of special concern is aircraft use near traditional subsistence cabins and campsites, flights during spring goose hunting and fall caribou and moose hunting seasons, and flights near North Slope communities; (5) Include on-site records of all personnel who attend the program for so long as the site is active; (6) Include a module discussing bear interaction plans to minimize conflicts between bears and humans; (7) Include training designed to ensure strict compliance with local and corporate drug and alcohol policies; (8) Include training developed to train employees on how to prevent transmission of communicable diseases, including sexually transmitted diseases, to the local communities.

66. Hunting and trapping by the operator's employees, agents, and contractors would be prohibited when persons are on "work status." Work status is defined as the period during which an individual is under the control and supervision of an employer. Work status is terminated when the individual's shift ends and he/she returns to a public airport or community (e.g., Fairbanks, Barrow, Nuiqsut, or Deadhorse). Use of operator's facilities, equipment, or transport for personal access or aid in hunting and trapping would be prohibited.

Marine Mammals: Ringed Seals

67. Prior to the start of seismic operations, the operator would conduct a sound source verification test to measure the distance of vibroseis sound levels through grounded ice to the 120dB threshold in open water. Once that distance has been determined, it would be shared with BLM and the National Marine Fisheries Service (NMFS). The distance would be used to buffer all vibroseis operations from any open water or ungrounded ice throughout the project area to minimize impacts to ringed seals. The operator would draft a formal study proposal that would be submitted to the BLM and NMFS for review and approval by Dec 1, 2018.
68. Maintain airborne sound levels of equipment below 100dB at 20 meters. If different equipment would be used than was original proposed, the applicant must inform the AO and share sound level and air and water attenuation information for the new equipment.
69. Operations after May 1 would employ a full time employee in seal observation on all vibroseis vehicles to ensure all basking seals would be avoided by vehicles by at least 500 feet. Any sightings of basking seals would require a 500-foot buffer be placed around the location and the location would be reported to the AO using a NMFS approved observation form.

70. On ungrounded ice, ice paths must not be greater than 12 feet wide. No driving beyond the edges of the ice path or off planned routes would be allowed unless necessary to avoid ungrounded ice or for other human or marine mammal safety reasons.
71. No unnecessary equipment or operations (e.g. camps) would be placed or used on ungrounded sea ice or within the buffer applied in ROP 69.
72. A NMFS and BLM approved training session for all staff would be held prior to workers entering the field. The training would cover seal identification, biology, and status; seal lair descriptions; and all applicable ROPs.

Protection of FWS Project Areas

73. The operator would avoid disturbing FWS project sites in the Coastal Plain as described in Appendix M (will be attached to permit).