

DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE

Incidental Harassment Authorization

SAExploration Inc. (SAE), 8240 Sandlewood Place, Anchorage, Alaska 99507, is hereby authorized under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1371(a)(5)(D)), to harass small numbers of marine mammals incidental to specified activities associated with a marine geophysical (seismic) survey in Cook Inlet, Alaska, contingent upon the following conditions:

1. This Authorization is valid from May 13, 2015, through May 12, 2016.
2. This Authorization is valid only for SAE's activities associated with seismic survey operations that shall occur within the areas denoted as Zone 1 and Zone 2 as depicted in the attached Figures 1 and 2 of SAE's January 2015 application to the National Marine Fisheries Service.

3. Species Authorized and Level of Take

(a) The incidental taking of marine mammals, by Level B harassment only, is limited to the following species in the waters of Cook Inlet:

(i) Odontocetes: see Table 1 (attached) for authorized species and take numbers.

(ii) Pinnipeds: see Table 1 (attached) for authorized species and take numbers.

(iii) If any marine mammal species are encountered during seismic activities that are not listed in Table 1 (attached) for authorized taking and are likely to be exposed to sound pressure levels (SPLs) greater than or equal to 160 dB re 1 μ Pa (rms), then the Holder of this Authorization must alter speed or course, power down or shut-down the sound source to avoid take.

(b) The taking by injury (Level A harassment) serious injury, or death of any of the species listed in Table 1 or the taking of any kind of any other species of marine mammal is prohibited and may result in the modification, suspension or revocation of this Authorization.

(c) If the number of detected takes of any marine mammal species listed in Table 1 is met or exceeded, SAE shall immediately cease survey operations involving the use of active sound sources (e.g., airguns and pingers) and notify NMFS.

4. The authorization for taking by harassment is limited to the following acoustic sources (or sources with comparable frequency and intensity) absent an amendment to this Authorization:

- (a) Two airgun arrays, each with a capacity of 880 in³;
- (b) A 440 in³ airgun array;
- (c) A 10 in³ airgun;

- (d) A Scott Ultra-Short Baseline (USBL) transceiver; and
- (e) A Sonardyne TZ/OBC transponder.

5. The taking of any marine mammal in a manner prohibited under this Authorization must be reported immediately to the Chief, Permits and Conservation Division, Office of Protected Resources, NMFS or her designee at (301) 427-8401, as well as the AK PRD Field Office Supervisor at (907) 271-3023.

6. The holder of this Authorization must notify the Chief of the Permits and Conservation Division, Office of Protected Resources, or her designee at least 48 hours prior to the start of seismic survey activities (unless constrained by the date of issuance of this Authorization in which case notification shall be made as soon as possible) at 301-427-8484 or to Sara.Young@noaa.gov or Barbara.Mahoney@noaa.gov.

7. Mitigation and Monitoring Requirements: The Holder of this Authorization is required to implement the following mitigation and monitoring requirements when conducting the specified activities to achieve the least practicable impact on affected marine mammal species or stocks:

(a) Utilize a sufficient number of NMFS-qualified, vessel-based Protected Species Visual Observers (PSVOs) (except during meal times and restroom breaks, when at least one PSVO shall be on watch) to visually watch for and monitor marine mammals near the seismic source vessels during daytime operations (from nautical twilight-dawn to nautical twilight-dusk) and before and during start-ups of sound sources day or night. Two PSVOs will be on each source vessel, and three PSVOs will be on the support vessel to observe the exclusion and disturbance zones, with at least one PSO on duty on each vessel at all times. The third PSO aboard the support vessel will operate the hydrophone when it is in use. PSVOs shall have access to reticle binoculars (7x50) and long-range binoculars (40x80). PSVO shifts shall last no longer than 4 hours at a time. PSVOs shall also make observations during daytime periods when the sound sources are not operating for comparison of animal abundance and behavior, when feasible. When practicable, as an additional means of visual observation, SAE's vessel crew may also assist in detecting marine mammals.

(b) In addition to the vessel-based PSVOs, utilize a shore-based station to visually monitor for marine mammals. The shore-based station will follow all safety procedures, including bear safety. The location of the shore-based station will need to be sufficiently high to observe marine mammals; the PSOs would be equipped with reticle binoculars (7x50) and long-range binoculars (40x80). The shore-based PSOs would scan the area prior to, during, and after the survey operations involving the use of sound sources, and would be in contact with the vessel-based PSOs via radio to communicate sightings of marine mammals approaching or within the project area.

(c) Record the following information when a marine mammal is sighted:

(i) Species, group size, age/size/sex categories (if determinable), behavior when first sighted and after initial sighting, heading (if consistent), bearing and distance from seismic vessel, sighting cue, apparent reaction to the airguns or vessel (e.g., none, avoidance, approach, paralleling, etc., and including responses to ramp-up), and behavioral pace;

(ii) Time, location, heading, speed, activity of the vessel (including number of airguns operating and whether in state of ramp-up or power-down), Beaufort sea state and wind force, visibility, and sun glare; and

(iii) The data listed under Condition 7(c)(ii) shall also be recorded at the start and end of each observation watch and during a watch whenever there is a change in one or more of the variables.

(d) Establish a 180 dB re 1 μ Pa (rms) and 190 dB re 1 μ Pa (rms) "exclusion zone" (EZ) for cetaceans and pinnipeds respectively before the full array (1760 in³) is in operation; and a 180 dB re 1 μ Pa (rms) and 190 dB re 1 μ Pa (rms) EZ before a single airgun (10 in³) is in operation, respectively.

(e) Visually observe the entire extent of the EZ (180 dB re 1 μ Pa [rms] for cetaceans and 190 dB re 1 μ Pa [rms] for pinnipeds) using NMFS-qualified PSVOs, for at least 30 minutes (min) prior to starting the airgun array (day or night) as well as 30 minutes after ceasing airgun operations. If the PSVO finds a marine mammal within the EZ, SAE must delay the seismic survey until the marine mammal(s) has left the area. If the PSVO sees a marine mammal that surfaces, then dives below the surface, the PSVO shall wait 30 min. If the PSVO sees no marine mammals during that time, they should assume that the animal has moved beyond the EZ. If for any reason the entire radius cannot be seen for the entire 30 min (i.e., rough seas, fog, darkness), or if marine mammals are near, approaching, or in the EZ, the airguns may not be ramped-up.

(f) Implement a "ramp-up" procedure when starting up at the beginning of seismic operations or any time after the entire array has been shut down for more than 10 min, which means start the smallest sound source first and add sound sources in a sequence such that the source level of the array shall increase in steps not exceeding approximately 6 dB per 5-min period. During ramp-up, the PSVOs shall monitor the EZ, and if marine mammals are sighted, a power-down, or shutdown shall be implemented as though the full array were operational. Therefore, initiation of ramp-up procedures from shutdown requires that the PSVOs be able to visually observe the full EZ as described in Condition 7(e) (above).

(g) This requirement will be in effect within 30 days of the initiation of SAE's seismic exploration activities in Cook Inlet. Following a power-down period that concludes between local sunset and sunrise, ramp up of airgun arrays must not be initiated until a properly trained PSO, using appropriate over-the-side passive acoustic detection equipment, has failed to detect beluga whales, humpback whales, or Steller sea lions for 30 minutes prior to ramp-up and throughout seismic operations that occur between local sunset and sunrise. The passive acoustic equipment should cover a frequency range of 0.1-160 kHz to allow detecting both social and echolocation signals, with a system sensitivity in the range -165 to -185 dB re 1 V/ μ Pa, and floor noise spectra similar to Beaufort Sea State 0. When bathymetry allows, the hydrophone depth must be at least twice the vessel draft, ideally at half the area's depth. The hydrophone must be suspended using a surface isolation buoy. As bathymetric and weather conditions allow, the support vessel deploying the passive acoustic equipment should focus its efforts on waters shoreward of seismic source vessels that are headed towards shore, and seaward of seismic source vessels that are headed away from shore. The support vessel must remain sufficiently distant from the seismic source vessel to ensure that beluga whales, if present and vocalizing, can

be detected. Passive acoustic monitoring must continue throughout seismic operations occurring between local sunset and sunrise.

(h) Alter speed or course during seismic operations if a marine mammal, based on its position and relative motion, appears likely to enter the relevant EZ. If speed or course alteration is not safe or practicable, or if after alteration the marine mammal still appears likely to enter the EZ, further mitigation measures, such as a power-down or shutdown, shall be taken.

(i) Power-down or shutdown the sound source(s) if a marine mammal is detected within, approaches, or enters the relevant EZ or disturbance zone. A shutdown means all operating sound sources are shut down (i.e., turned off). A power-down means reducing the number of operating sound sources to a single operating 10 in³ airgun, which reduces the EZ to the degree that the animal(s) is no longer in or about to enter it.

(j) Following a power-down, if the marine mammal approaches the smaller designated EZ, the sound sources must then be completely shut down. Seismic survey activity shall not resume until the PSVO 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 (large odontocetes, including killer whales and beluga whales).

(k) Following a power-down or shutdown and subsequent animal departure, survey operations may resume following ramp-up procedures described in Condition 7(g).

(l) Marine geophysical surveys may continue into night and low-light hours if such segment(s) of the survey is initiated when the entire relevant EZs can be effectively monitored visually (i.e., PSVO(s) must be able to see the extent of the entire relevant EZ).

(m) No initiation of survey operations involving the use of sound sources is permitted from a shutdown position at night or during low-light hours (such as in dense fog or heavy rain).

(n) If a beluga whale, humpback whale, or Steller sea lion is visually sighted approaching or within the 160-dB disturbance zone, survey activity will not commence or the sound source(s) shall be powered down or shut down until the animals are no longer present within the 160-dB zone.

(o) If a beluga live strands within two times the distance of the 160 dB disturbance zone, SAE must cease operations immediately and notify the NMFS contacts listed above.

(p) Whenever aggregations or groups of killer whales and/or harbor porpoises are detected approaching or within the 160-dB disturbance zone, survey activity will not commence or the sound source(s) shall be shut-down or powered down until the animals are no longer present within the 160-dB zone. An aggregation or group of whales/porpoises shall consist of five or more individuals of any age/sex class.

(q) SAE must not operate airguns within 10 miles (16 km) of the mean higher high water (MHHW) line of the Susitna Delta (Beluga River to the Little Susitna River) between April 15 and October 15 (to avoid any effects to belugas in an important feeding and breeding area).

(r) The mitigation airgun will be operated at approximately one shot per minute and will not be operated for longer than three hours in duration during daylight hours and good visibility. In cases when the next start-up after the turn is expected to be during lowlight or low visibility, use of the mitigation airgun may be initiated 30 minutes before darkness or low visibility conditions occur and may be operated until the start of the next seismic acquisition line, but not for longer than three hours.

8. Reporting Requirements: The Holder of this Authorization is required to:

(a) Submit a weekly field report, no later than close of business (Alaska time) each Thursday during the weeks when in-water seismic survey activities take place to NMFS' Permits and Conservation Division as well as the Alaska Regional Office. The field reports will summarize species detected, in-water activity occurring at the time of the sighting, behavioral reactions to in-water activities, and the number of marine mammals taken.

(b) Submit a monthly report, no later than the 15th of each month, to NMFS' Permits and Conservation Division for all months during which in-water seismic survey activities occur. These reports must contain and summarize the following information:

(i) Dates, times, locations, heading, speed, weather, sea conditions (including Beaufort sea state and wind force), and associated activities during all seismic operations and marine mammal sightings;

(ii) For each marine mammal observation, species, number, location, distance from the vessel, and behavior of any marine mammals, as well as associated seismic activity (number of power-downs and shutdowns), observed throughout all monitoring activities;

(iii) An estimate of the number (by species) of: (A) pinnipeds that have been exposed to the seismic activity (based on visual observation) at received levels greater than or equal to 160 dB re 1 μ Pa (rms) and/or 190 dB re 1 μ Pa (rms) with a discussion of any specific behaviors those individuals exhibited; and (B) cetaceans that have been exposed to the seismic activity (based on visual observation) at received levels greater than or equal to 160 dB re 1 μ Pa (rms) and/or 180 dB re 1 μ Pa (rms) with a discussion of any specific behaviors those individuals exhibited.

(iv) A description of the implementation and effectiveness of the: (A) terms and conditions of the Biological Opinion's Incidental Take Statement (ITS); and (B) mitigation measures of this Authorization. For the Biological Opinion, the report shall confirm the implementation of each Term and Condition, as well as any conservation recommendations, and describe their effectiveness, for minimizing the adverse effects of the action on Endangered Species Act-listed marine mammals.

(c) Submit a draft Technical Report on all activities and monitoring results to NMFS' Permits and Conservation Division within 90 days of the completion of the seismic survey. The Technical Report will include the following information:

(i) 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);

(ii) Analyses of the effects of various factors influencing detectability of marine mammals (e.g., sea state, number of observers, and fog/glare);

(iii) 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;

(iv) Analyses of the effects of survey operations; and

(v) Sighting rates of marine mammals during periods with and without seismic survey activities (and other variables that could affect detectability), such as: (A) initial sighting distances versus survey activity state; (B) closest point of approach versus survey activity state; (C) observed behaviors and types of movements versus survey activity state; (D) numbers of sightings/individuals seen versus survey activity state; (E) distribution around the source vessels versus survey activity state; and (F) estimates of take by Level B harassment based on presence in the 160 dB harassment zone.

(d) Submit a final report to the Chief, Permits and Conservation Division, Office of Protected Resources, as well as the AK PRD Field Office Supervisor, NMFS, within 30 days after receiving comments from NMFS on the draft report. If NMFS decides that the draft report needs no comments, the draft report shall be considered to be the final report.

(e) SAE must immediately report to NMFS Office of Protected Resources and Alaska Region if a sum of 25 belugas is detected within the 160dB re 1 μ Pa (rms) disturbance zone over the course of seismic survey operations to allow NMFS to consider making necessary adjustments to monitoring and mitigation.

9. (a) In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by this Authorization, such as an injury (Level A harassment), serious injury or mortality (e.g., ship-strike, gear interaction, and/or entanglement), SAE shall immediately cease the specified activities and immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, or her designees by phone or email (telephone: 301-427-8401 or Sara.Young@noaa.gov), the Alaska Regional Office (telephone: 907-271-1332 or Barbara.Mahoney@noaa.gov), and the Alaska Regional Stranding Coordinators (telephone: 907-586-7248 or Aleria.Jensen@noaa.gov or Barbara.Mahoney@noaa.gov). The report must include the following information:

(i) Time, date, and location (latitude/longitude) of the incident;

(ii) The name and type of vessel involved;

(iii) The vessel's speed during and leading up to the incident;

(iv) Description of the incident;

(v) Status of all sound source use in the 24 hours preceding the incident;

(vi) Water depth;

(vii) Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility);

(viii) Description of marine mammal observations in the 24 hours preceding the incident;

- (ix) Species identification or description of the animal(s) involved;
- (x) The fate of the animal(s); and
- (xi) 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 SAE to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. SAE may not resume their activities until notified by NMFS via letter or email, or telephone.

(b) In the event that SAE 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), SAE will immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, her designees, and the NMFS Alaska Stranding Hotline (see contact information in Condition 9(a)). The report must include the same information identified in the Condition 9(a) above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with SAE to determine whether modifications in the activities are appropriate.

(c) In the event that SAE 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 Condition 2 of this Authorization (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), SAE shall report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, her designees, the NMFS Alaska Stranding Hotline (1-877-925-7773), and the Alaska Regional Stranding Coordinators (telephone: 907-586-7248 or Aleria.Jensen@noaa.gov or Barbara.Mahoney@noaa.gov) within 24 hours of the discovery (see contact information in Condition 9(a)). SAE 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.

10. SAE is required to comply with the Reasonable and Prudent Measures and Terms and Conditions of the ITS corresponding to NMFS' Biological Opinion issued to both U.S. Army Corps of Engineers and NMFS' Office of Protected Resources.

11. A copy of this Authorization and the ITS must be in the possession of all contractors and PSOs operating under the authority of this Incidental Harassment Authorization.

12. Penalties and Permit Sanctions: Any person who violates any provision of this Incidental Harassment Authorization is subject to civil and criminal penalties, permit sanctions, and forfeiture as described in the MMPA.

13. This Authorization may be modified, suspended or withdrawn if the Holder fails to abide by the conditions prescribed herein or if the authorized taking is having more than a negligible impact on the species or stock of affected marine mammals, or if there is an unmitigable adverse impact on the availability of such species or stocks for subsistence uses.

Donna S. Wieting

Donna S. Wieting
Director, Office of Protected Resources
National Marine Fisheries Service

MAY 12 2015

Date

Attachment

Attachment**Table 1. Authorized Take Numbers for Each Marine Mammal Species in Cook Inlet.**

Species	Authorized Take in the Cook Inlet Action Area
Mysticetes	
Humpback whale <i>(Megaptera novaeangliae)</i>	5
Gray whale <i>(Eschrichtius robustus)</i>	7
Minke whale <i>(Balaenoptera acutorostra)</i>	1
Odontocetes	
Dall's porpoise <i>(Phocoenoides dalli)</i>	14
Beluga whale <i>(Delphinapterus leucas)</i>	30
Killer whale <i>(Orcinus orca)</i>	55
Harbor porpoise <i>(Phocoena phocoena)</i>	219
Pinnipeds	
Steller sea lion <i>(Eumetopias jubatus)</i>	25
Harbor seal (<i>Phoca vitulina richardsi</i>)	5,725