



Incidental Harassment Authorization

TGS-NOPEC Geophysical Company ASA (TGS), 2500 City West Boulevard, Suite 2000, Houston, Texas 77042, is hereby authorized under section 101(a)(5)(D) of the Marine Mammal Protection Act (16 U.S.C. 1371(a)(5)(D)) and 50 CFR 216.107 to take, by Level B harassment only, small numbers of marine mammals incidental to conducting open-water 2D seismic surveys in the Chukchi Sea, contingent upon the following conditions:

1. This Authorization is valid from August 14 through October 31, 2013.
2. This Authorization is valid only for activities associated with open-water 2D seismic surveys and related activities in the Chukchi Sea. The specific areas where TGS' surveys will be conducted are within the Chukchi Sea, Alaska, as shown in Figure 1 of TGS' IHA application.
3. (a) The species authorized for incidental harassment takings, Level B harassment only, are: beluga whales (*Delphinapterus leucas*); harbor porpoises (*Phocoena phocoena*); killer whales (*Orcinus orca*); bowhead whales (*Balaena mysticetus*); gray whales (*Eschrichtius robustus*); humpback whales (*Megaptera novaeangliae*); fin whales (*Balaenoptera physalus*); minke whales (*B. acutorostrata*); bearded seals (*Erignathus barbatus*); spotted seals (*Phoca largha*); ringed seals (*P. hispida*); and ribbon seals (*P. fasciata*).

The authorization for taking by harassment is limited to the following acoustic sources and from the following activities:

- (i) 3,280 in³ airgun arrays and other acoustic sources for 2D open-water seismic surveys; and
- (ii) Vessel activities related to open-water seismic surveys listed in (i).

(c) The taking of any marine mammal in a manner prohibited under this Authorization must be reported within 24 hours of the taking to the Alaska Regional Administrator (907-586-7221) or his designee in Anchorage (907-271-3023), National Marine Fisheries Service (NMFS) and the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at (301) 427-8401, or his designee (301-427-8418).

4. The holder of this Authorization must notify the Chief of the Permits and Conservation Division, Office of Protected Resources, at least 48 hours prior to the start of collecting seismic data (unless constrained by the date of issuance of this Authorization in which case notification shall be made as soon as possible).

5. Prohibitions



(a) The taking, by incidental harassment only, is limited to the species listed under condition 3(a) above and by the numbers listed in Table 1 (attached). The taking by Level A harassment, injury or death of these species or the taking by harassment, injury or death of any other species of marine mammal is prohibited and may result in the modification, suspension, or revocation of this Authorization.

(b) The taking of any marine mammal is prohibited whenever the required source vessel protected species observers (PSOs), required by condition 7(a)(i), are not onboard in conformance with condition 7(a)(i) of this Authorization.

6. Mitigation

(a) Establishing Exclusion and Disturbance Zones:

(i) Establish, and monitor with trained PSOs, preliminary exclusion zones for cetaceans surrounding the airgun array on the source vessel where the received level would be 180 dB (rms) re 1 μ Pa. For purposes of the field verification test, described in condition 7(e)(i), these radii are estimated to be 2,200, 2,500, and 2,400 m from the seismic source for the 3,280 in³ airgun array in water depths of 17-40, 40-100, and >100 m, respectively. The 180-dB radius from the single 60 in³ airgun is estimated to be at 68 m from the source, regardless of water depth.

(ii) Establish, and monitor with trained PSOs, preliminary exclusion zones for pinnipeds surrounding the airgun array on the source vessel where the received level would be 190 dB (rms) re 1 μ Pa. For purposes of the field verification test, described in condition 7(e)(i), these radii are estimated to be 930, 920, and 430 m from the seismic source for the 3,280 in³ airgun array in water depths of 17-40, 40-100, and >100 m, respectively. The 190-dB radius from the single 60 in³ airgun is estimated to be at 13 m from the source, regardless of water depth.

(iii) Establish a zone of influence (ZOIs) for cetaceans and pinnipeds surrounding the airgun array on the source vessel where the received level would be 160 dB (rms) re 1 μ Pa. For purposes of the field verification test described in condition 7(e)(i), these radii are estimated to be 8,500, 9,900, and 15,000 m from the seismic source for the 3,280 in³ airgun array in water depths of 17-40, 40-100, and > 100 m, respectively. The 160-dB radius from the single 60 in³ airgun is estimated to be at 1,500 m from the source.

(iv) Immediately upon completion of data analysis of the field verification measurements required under condition 7(e)(i) below, the new 160-dB, 180-dB, and 190-dB marine mammal ZOIs and exclusion zones shall be established based on the sound source verification.

(b) Vessel and Helicopter Movement Mitigation:

(i) All vessels under the direction of TGS shall avoid concentrations or groups of whales (2 or more individuals). Operators of support vessels shall, at all times, conduct their activities at the maximum distance possible from such concentrations of whales.

(ii) Vessels in transit shall be operated at speeds necessary to ensure no physical contact with whales occurs. If any vessel approaches within 1.6 km (1 mi) of observed bowhead whales, except when providing emergency assistance to whalers or in other emergency situations, the vessel operator will take reasonable precautions to avoid potential interaction with the bowhead whales by taking one or more of the following actions, as appropriate:

(A) Reducing vessel speed to less than 5 knots within 300 yards (900 feet or 274 m) of the whale(s);

(B) Steering around the whale(s) if possible;

(C) Operating the vessel(s) in such a way as to avoid separating members of a group of whales from other members of the group;

(D) Operating the vessel(s) to avoid causing a whale to make multiple changes in direction; and

(E) Checking the waters immediately adjacent to the vessel(s) to ensure that no whales will be injured when the propellers are engaged.

(iii) Reduce vessel speed to 5 knots when weather conditions require, such as when visibility drops, to avoid the likelihood of injury to whales.

(c) Mitigation Measures for Airgun Operations

(i) Ramp-up:

(A) A ramp up, starting from a cold start or following a complete shutdown of 10 minutes or more, can be applied if the exclusion zone has been free of marine mammals for a consecutive 30-minute period. The entire exclusion zone must have been visible during these 30 minutes. If the entire exclusion zone is not visible, then ramp up from a cold start cannot begin.

(B) If a marine mammal(s) is sighted within the exclusion zone during the 30-minute watch prior to ramp up, ramp up will be delayed until the marine mammal(s) is sighted outside of the exclusion zone or the animal(s) is not sighted for at least 15-30 minutes: 15 minutes for small odontocetes (harbor porpoise) and pinnipeds, or 30 minutes for

baleen whales and large odontocetes (including beluga and killer whales and narwhal).

- (C) If, for any reason, electrical power to the airgun array has been discontinued for a period of 10 minutes or more, ramp-up procedures shall be implemented when restarting. Only if the PSO watch has been suspended, a 30-minute clearance of the exclusion zone is required prior to commencing ramp-up. Discontinuation of airgun activity for less than 10 minutes does not require a ramp-up.
- (D) The seismic operator and PSOs shall maintain records of the times when ramp-ups start and when the airgun arrays reach full power.

(ii) Power-down/Shutdown:

- (A) The airgun array shall be immediately powered down whenever a marine mammal is sighted approaching close to or within the applicable exclusion zone of the full array, but is outside the applicable exclusion zone of the single mitigation airgun.
- (B) If a marine mammal is already within the exclusion zone when first detected, the airguns shall be powered down immediately.
- (C) Following a power-down, firing of the full airgun array shall not resume until the marine mammal has cleared the exclusion zone. The animal will be considered to have cleared the exclusion zone if it is visually observed to have left the exclusion zone of the full array, or has not been seen within the zone for 15 minutes (pinnipeds or small toothed whales) or 30 minutes (baleen whales or large toothed whales).
- (D) If a marine mammal is sighted within or about to enter the 190 or 180 dB (rms) applicable exclusion zone of the single mitigation airgun, the airgun array shall be shutdown.
- (E) Firing of the full airgun array or the mitigation gun shall not resume until the marine mammal has cleared the exclusion zone of the full array or mitigation gun, respectively. The animal will be considered to have cleared the exclusion zone as described above under ramp up procedures.

(iii) Poor Visibility Conditions:

- (A) If during foggy conditions, heavy snow or rain, or darkness, the full 180 dB exclusion zone is not visible, the airguns cannot commence a ramp-up procedure from a full shut-down.

(B) If one or more airguns have been operational before nightfall or before the onset of poor visibility conditions, they can remain operational throughout the night or poor visibility conditions. In this case ramp-up procedures can be initiated, even though the exclusion zone may not be visible.

(iv) Use of a Small-Volume Airgun during Turns and Transits

(A) Throughout the seismic survey, particularly during turning movements, and short transits, TGS will employ the use of a small-volume airgun (i.e., 60 in³ “mitigation airgun”). 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 sail line. The mitigation gun must still be operated at approximately one shot per minute.

(B) During turns or brief transits (e.g., less than three hours) between seismic tracklines, one mitigation airgun will continue operating. The ramp-up procedure will still be followed when increasing the source levels from one airgun to the full airgun array. However, keeping one airgun firing will avoid the prohibition of a “cold start” during darkness or other periods of poor visibility. Through the use of this approach, seismic surveys using the full array may resume without the 30 minute observation period of the full exclusion zone required for a “cold start”. PSOs will be on duty whenever the airguns are firing during daylight, during the 30 minute periods prior to ramp-ups.

(d) Mitigation Measures for Subsistence Activities:

(i) TGS shall fully implement the following provisions, as described fully in the 2013 Conflict Avoidance Agreement (CAA) signed between TGS and the AEWC and its representing whaling communities of the Chukchi and Beaufort Seas:

(A) Section 202(a) and (c): Com-Center General Communication Scheme;

(B) Section 204: Standardized Log Books;

(C) Section 302: Barge and Transit Vessel Operations;

(D) Section 402: Sound Signature Tests;

(E) Section 501: General provisions for Avoiding Interference with Bowhead Whales or Subsistence Whale Hunting Activities;

(F) Section 502(b): Limitations on Geophysical Activity in the Chukchi Sea;

(G) Section 505: Termination of Operations and Transit Through the Bering Strait; and

(H) Title VI, Sections 601 and 602: Late Season Seismic Operations.

7. Monitoring:

(a) Vessel-based Visual Monitoring:

(i) Vessel-based visual monitoring for marine mammals shall be conducted by NMFS-approved protected species observers (PSOs) throughout the period of survey activities, and extends to 30 minutes after the survey is completed.

(ii) PSOs shall be stationed aboard the seismic survey vessel and supporting vessel through the duration of the surveys.

(iii) A sufficient number of PSOs shall be onboard the survey vessel to meet the following criteria:

(A) 100% monitoring coverage during all periods of survey operations in daylight;

(B) maximum of 4 consecutive hours on watch per PSO; and

(C) maximum of 12 hours of watch time per day per PSO.

(iv) The vessel-based marine mammal monitoring shall provide the basis for real-time mitigation measures as described in (6)(c) above.

(v) Results of the vessel-based marine mammal monitoring shall be used to calculate the estimation of the number of “takes” from the marine surveys.

(b) Protected Species Observers and Training

(i) PSO teams shall consist of Inupiat observers and NMFS-approved field biologists.

(ii) Experienced field crew leaders shall supervise the PSO teams in the field. New PSOs shall be paired with experienced observers to avoid situations where lack of experience impairs the quality of observations.

(iii) Crew leaders and most other biologists serving as observers in 2013 shall be individuals with experience as observers during recent seismic or shallow hazards monitoring projects in Alaska, the Canadian Beaufort, or other offshore areas in recent years.

(iv) Resumes for PSO candidates shall be provided to NMFS for review and acceptance of their qualifications. Inupiat observers shall be experienced in the region and familiar with the marine mammals of the area.

(v) All observers shall complete a NMFS-approved observer training course designed to familiarize individuals with monitoring and data collection procedures. The training course shall be completed before the anticipated start of the 2013 open-water season. The training session(s) shall be conducted by qualified marine mammalogists with extensive crew-leader experience during previous vessel-based monitoring programs.

(vi) Training for both Alaska native PSOs and biologist PSOs shall be conducted at the same time in the same room. There shall not be separate training courses for the different PSOs.

(vii) Crew members shall not be used as primary PSOs because they have other duties and generally do not have the same level of expertise, experience, or training as PSOs, but they could be stationed on the fantail of the vessel to observe the near field, especially the area around the airgun array and implement a power down or shutdown if a marine mammal enters the safety zone (or exclusion zone).

(viii) If crew members meet the PSO qualifications and are to be used as PSOs, they shall go through some basic training consistent with the functions they will be asked to perform. The best approach would be for crew members and PSOs to go through the same training together.

(ix) 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.

(x) TGS shall train its PSOs to follow a scanning schedule that consistently distributes scanning effort according to the purpose and need for observations. All PSOs should follow the same schedule to ensure consistency in their scanning efforts.

(xi) PSOs shall be trained in documenting the behaviors of marine mammals. PSOs should simply record the primary behavioral state (i.e., traveling, socializing, feeding, resting, approaching or moving away from vessels) and relative location of the observed marine mammals.

(c) Marine Mammal Observation Protocol

- (i) PSOs shall watch for marine mammals from the best available vantage point on the survey vessels, typically the bridge.
- (ii) Observations by the PSOs on marine mammal presence and activity shall begin a minimum of 30 minutes prior to the estimated time that the seismic source is to be turned on and/or ramped-up.
- (iii) PSOs shall scan systematically with the unaided eye and 7 x 50 reticle binoculars, supplemented with 20 x 60 image-stabilized Zeiss Binoculars or Fujinon 25 x 150 "Big-eye" binoculars, and night-vision equipment when needed.
- (iv) Personnel on the bridge shall assist the marine mammal observer(s) in watching for marine mammals.
- (v) PSOs aboard the marine survey vessel shall give particular attention to the areas within the marine mammal exclusion zones around the source vessel, as noted in (6)(a)(i) and (ii). They shall avoid the tendency to spend too much time evaluating animal behavior or entering data on forms, both of which detract from their primary purpose of monitoring the exclusion zone.
- (vi) Monitoring shall consist of recording of the following information:
 - (A) the species, group size, age/size/sex categories (if determinable), the general behavioral activity, heading (if consistent), bearing and distance from seismic vessel, sighting cue, behavioral pace, and apparent reaction of all marine mammals seen near the seismic vessel and/or its airgun array (e.g., none, avoidance, approach, paralleling, etc);
 - (B) the time, location, heading, speed, and activity of the vessel (shooting or not), along with sea state, visibility, cloud cover and sun glare at (I) any time a marine mammal is sighted (including pinnipeds hauled out on barrier islands), (II) at the start and end of each watch, and (III) during a watch (whenever there is a change in one or more variable);
 - (C) the identification of all vessels that are visible within 5 km of the seismic vessel whenever a marine mammal is sighted and the time observed;
 - (D) any identifiable marine mammal behavioral response (sighting data should be collected in a manner that will not detract from the PSO's ability to detect marine mammals);

- (E) any adjustments made to operating procedures; and
- (F) visibility during observation periods so that total estimates of take can be corrected accordingly.

(vii) Distances to nearby marine mammals will be estimated with binoculars (Fujinon 7 x 50 binoculars) containing a reticle to measure the vertical angle of the line of sight to the animal relative to the horizon. Observers may use a laser rangefinder to test and improve their abilities for visually estimating distances to objects in the water.

(viii) PSOs shall understand the importance of classifying marine mammals as “unknown” or “unidentified” if they cannot identify the animals to species with confidence. In those cases, they shall note any information that might aid in the identification of the marine mammal sighted. For example, for an unidentified mysticete whale, the observers should record whether the animal had a dorsal fin.

(ix) Additional details about unidentified marine mammal sightings, such as “blow only”, mysticete with (or without) a dorsal fin, “seal splash”, etc., shall be recorded.

(x) When a marine mammal is seen approaching or within the exclusion zone applicable to that species, the marine survey crew shall be notified immediately so that mitigation measures described in (6) can be promptly implemented.

(xi) TGS shall use the best available technology to improve detection capability during periods of fog and other types of inclement weather. Such technology might include night-vision goggles or binoculars as well as other instruments that incorporate infrared technology.

(d) Field Data-Recording and Verification

(i) PSOs aboard the vessels shall maintain a digital log of seismic surveys, noting the date and time of all changes in seismic activity (ramp-up, power-down, changes in the active seismic source, shutdowns, etc.) and any corresponding changes in monitoring radii in a software spreadsheet.

(ii) PSOs shall utilize standardized format to record all marine mammal observations and mitigation actions (seismic source power-downs, shut-downs, and ramp-ups).

(iii) Information collected during marine mammal observations shall include the following:

- (A) Vessel speed, position, and activity

- (B) Date, time, and location of each marine mammal sighting
- (C) Number of marine mammals observed, and group size, sex, and age categories
- (D) Observer's name and contact information
- (E) Weather, visibility, and ice conditions at the time of observation
- (F) Estimated distance of marine mammals at closest approach
- (G) Activity at the time of observation, including possible attractants present
- (H) Animal behavior
- (I) Description of the encounter
- (J) Duration of encounter
- (K) Mitigation action taken

(iv) Data shall be recorded directly into handheld computers or as a back-up, transferred from hard-copy data sheets into an electronic database.

(v) A system for quality control and verification of data shall be facilitated by the pre-season training, supervision by the lead PSOs, in-season data checks, and shall be built into the software.

(vi) Computerized data validity checks shall also be conducted, and the data shall be managed in such a way that it is easily summarized during and after the field program and transferred into statistical, graphical, or other programs for further processing.

(e) Passive Acoustic Monitoring

(i) Sound Source Measurements: Using a hydrophone system, the holder of this Authorization is required to conduct sound source verification tests for seismic airgun array(s) that are involved in the open-water seismic surveys.

- (A) Sound source verification shall consist of distances where broadside and endfire directions at which broadband received levels reach 190, 180, 170, and 160 dB (rms) re 1 μ Pa for the airgun array(s). The configurations of airgun arrays shall include at least the full array

and the operation of a single source that will be used during power downs.

(B) The test results shall be reported to NMFS within 5 days of completing the test.

(ii) Real-time Passive Acoustic Monitoring (PAM)

(A) TGS shall conduct real-time passive acoustic monitoring by NMFS-approved passive acoustic monitor(s) using a towed hydrophone array from the support vessel throughout the open-water seismic surveys.

(B) Passive Acoustic Operator(s) and Monitor(s):

(I) Design and initial setup of PAM apparatus (including hardware and software) shall be done by experienced bioacoustician(s) with field experience in marine mammal passive acoustic monitoring and signal processing.

(II) Passive acoustic monitor(s) shall undergo basic training on PAM, and be able to operate independently once the PAM apparatus is set-up.

(III) Resumes for the bioacoustician(s) and passive acoustic monitor(s) candidates shall be provided to NMFS for review and acceptance of their qualifications.

(C) Specific sensor design and noise filters shall be used to maximize the system's ability to detect low frequency bowhead whales. To ensure the effectiveness of real-time PAM with a towed hydrophone array, the following requirements for PAM design and procedures are required:

(I) Limit towing speeds to 4-6 knots. Reduce speed appropriately, or change direction if necessary, so that if bowhead whales are detected so that bearing can be obtained. If greater speeds are necessary, slow down every 20-30 minutes to listen for animal calls for at least 5-10 minutes.

(II) Maintain a separation distance of at least several hundred meters (preferable more) from the seismic survey vessel.

(D) Best efforts shall be made without compromising data collection to localize vocalizing marine mammals.

- (I) Use a signal conditioning system (i.e. filter and match signal gains) to allow software to effectively estimate bearings and/or localize.
- (II) Use software designed exclusively for monitoring, localizing and plotting marine mammal calls.
- (III) Design the sampling software to optimize overlap between monitoring the 180 and 160 dB isopleths.
- (IV) Allow the support vessel to deviate from designated track-lines by 25-30 degrees (for brief periods) so that left/right ambiguity can be resolved if needed.

8. Data Analysis and Presentation in Reports

- (a) Estimation of potential takes or exposures shall be improved for times with low visibility (such as during fog or darkness) through interpolation or possibly using a probability approach. Those data could be used to interpolate possible takes during periods of restricted visibility.
- (b) To better assess impacts to marine mammals, data analysis shall be separated into periods when a seismic airgun array (or a single mitigation airgun) is operating and when it is not. Final report to NMFS should summarize and plot:
 - (i) Data for periods when a seismic array is active and when it is not; and
 - (ii) The respective predicted received sound conditions over fairly large areas (tens of km) around operations.
- (c) To help evaluate the effectiveness of PSOs and more effectively estimate take, if appropriate data are available, TGS shall perform analysis of sightability curves (detection functions) for distance-based analyses.
- (d) The following data shall be obtained and provided electronically in the 90-day report:
 - (i) the location and time of each vessel-based sighting or acoustic detection;
 - (ii) position of the sighting or acoustic detection relative to ongoing operations (i.e., distance from sightings to seismic operation, etc.), if known;
 - (iii) the nature of activities at the time (e.g., seismic on/off);
 - (iv) any identifiable marine mammal behavioral response (sighting data should be collected in a manner that will not detract from the PSO of passive acoustic monitor's ability to detect marine mammals); and

- (v) adjustments made to operating procedures.
- (e) TGS shall provide useful summaries and interpretations of results of the various elements of the monitoring results, which shall include a clear timeline and spatial (map) representation/summary of operations and important observations. Any and all mitigation measures (e.g., vessel course deviations for animal avoidance, operational shut down) should be summarized. Additionally, an assessment of the efficacy of monitoring methods should be provided.
- (f) TGS shall collaborate with other organizations operating in the Chukchi Sea and share visual and acoustic data to improve understanding of impacts from single and multiple operations and efficacy of mitigation measures.

9 Reporting

- (a) Sound Source Verification Report: A report on the preliminary results of the sound source verification measurements, including the measured 190, 180, and 160 dB (rms) radii of the airgun sources and other acoustic survey equipment, shall be submitted within 14 days after collection of those measurements at the start of the field season. This report will specify the distances of the exclusion zones that were adopted for the survey.
- (b) Throughout the survey program, PSOs shall prepare a report each day or at such other intervals, summarizing the recent results of the monitoring program. The reports shall summarize the species and numbers of marine mammals sighted. These reports shall be provided to NMFS Alaska Regional Office (brad.smith@noaa.gov) and NMFS Office of Protected Resources (shane.guan@noaa.gov).
- (c) Seismic Vessel Monitoring Program: A draft report will be submitted to the Director, Office of Protected Resources, NMFS, within 90 days after the end of TGS' 2013 open-water seismic surveys in the Chukchi Sea. The report will describe in detail:
 - (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) data analysis that is separated into periods when an airgun array (or a single airgun) is operating and when it is not. Final and comprehensive reports to NMFS should summarize and plot:

(A) Data for periods when a seismic array is active and when it is not; and

(B) The respective predicted received sound conditions over fairly large areas (tens of km) around operations.

(v) sighting rates of marine mammals during periods with and without airgun activities (and other variables that could affect detectability), such as:

(A) initial sighting distances versus airgun activity state;

(B) closest point of approach versus airgun activity state;

(C) observed behaviors and types of movements versus airgun activity state;

(D) numbers of sightings/individuals seen versus airgun activity state;

(E) distribution around the survey vessel versus airgun activity state; and

(F) estimates of take by harassment.

(vi) reported results from all hypothesis tests, including estimates of the associated statistical power when practicable.

(vii) estimated uncertainty for all post-activity take estimates. Uncertainty could be expressed by the presentation of confidence limits, a minimum-maximum, posterior probability distribution, etc.; the exact approach would be selected based on the sampling method and data available.

(viii) The report should clearly compare authorized takes to the estimated takes based on actual levels of activity and marine mammal observations.

(d) The draft report shall 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 under this Authorization if NMFS has not provided comments and recommendations within 90 days of receipt of the draft report.

10 (a) In the unanticipated event that survey operations clearly cause 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), TGS shall immediately cease survey operations and immediately report the incident to the Supervisor of the Incidental Take Program, Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401 and/or by email to Jolie.Harrison@noaa.gov and Shane.Guan@noaa.gov and the Alaska Regional Stranding Coordinators (Aleria.Jensen@noaa.gov and 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 TGS to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. TGS may not resume their activities until notified by NMFS via letter, email, or telephone.

(b) In the event that TGS 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), TGS will immediately report the incident to the Supervisor of the Incidental Take Program, Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401, and/or by email to Jolie.Harrison@noaa.gov and Shane.Guan@noaa.gov and the NMFS Alaska Stranding Hotline (1-877-925-7773) and/or by email to the Alaska Regional Stranding Coordinators (Aleria.Jensen@noaa.gov and Barbara.Mahoney@noaa.gov). The report must include the same information

identified in Condition 10(a) above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with TGS to determine whether modifications in the activities are appropriate.

(c) In the event that TGS 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 3 of this Authorization (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), TGS shall report the incident to the Supervisor of the Incidental Take Program, Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401, and/or by email to Jolie.Harrison@noaa.gov and Shane.Guan@noaa.gov and the NMFS Alaska Stranding Hotline (1-877-925-7773) and/or by email to the Alaska Regional Stranding Coordinators (Aleria.Jensen@noaa.gov and Barbara.Mahoney@noaa.gov), within 24 hours of the discovery. TGS shall provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network. TGS can continue its operations under such a case.

11. 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.

12. The Plan of Cooperation outlining the steps that will be taken to cooperate and communicate with the native communities to ensure the availability of marine mammals for subsistence uses, must be implemented.

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.

14. A copy of this Authorization and the Incidental Take Statement must be in the possession of each seismic vessel operator taking marine mammals under the authority of this Incidental Harassment Authorization.

15. TGS is required to comply with the Terms and Conditions of the Incidental Take Statement corresponding to NMFS' Biological Opinion.



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

AUG 14 2013

Date

Table 1. Species/stocks and numbers of marine mammals allowed to be taken incidental to under this IHA.

Species / Stocks	Take Allowed
Bowhead whale / Bering-Chukchi-Beaufort Sea	794
Gray whale / Eastern North Pacific	1,363
Fin whale / Northeast Pacific	5
Humpback whale / Western North Pacific	5
Minke whale / Alaska	5
Beluga whale / Eastern Chukchi Sea	412
Killer whale / Aleutian Island and Bering Sea	5
Harbor porpoise / Bering Sea	36
Ringed seal / Alaska	30,000
Bearded seal / Alaska	6,000
Spotted seal / Alaska	500
Ribbon seal / Alaska	100