UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

INCIDENTAL HARASSMENT AUTHORIZATION

Spectrum Geo Inc. 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 marine mammals incidental to a geophysical survey in the Atlantic Ocean.

1. This incidental harassment authorization (IHA) is effective for one year upon written notification from the Holder of the Authorization ("Holder") to NMFS, but not beginning later than one year from the date of issuance or extending beyond two years from the date of issuance.

2. This IHA is valid only for marine geophysical survey activity, as specified in the Holder's IHA application (as modified by the Holder's letter to NMFS dated June 1, 2018 and subsequent maps and geospatial data files provided to NMFS on June 26, 2018) and using an array with characteristics specified in the application, in the Atlantic Ocean within the Bureau of Ocean Energy Management's Mid- and South Atlantic Outer Continental Shelf planning areas and adjacent waters out to 350 nautical miles.

3. General Conditions

   (a) A copy of this IHA must be in the possession of the Holder, the vessel operator and other relevant personnel, the lead protected species observer (PSO), and any other relevant designees of the Holder operating under the authority of this IHA.

   (b) The species authorized for taking are listed in Table 1. The taking, by Level A and Level B harassment only, is limited to the species and numbers listed in Table 1.

   (c) The taking by serious injury or death of any of the species listed in Table 1 or any taking of any other species of marine mammal is prohibited and may result in the modification, suspension, or revocation of this IHA. Any taking exceeding the authorized amounts listed in Table 1 is prohibited and may result in the modification, suspension, or revocation of this IHA.

   (d) During use of the acoustic source, if the source vessel encounters any marine mammal species that are not listed in Table 1 the acoustic source must be shut down.

   (e) The Holder must notify the National Marine Fisheries Service (NMFS) upon commencement of the specified activity. Commencement of the specified activity shall be defined as departure from port of an acoustic source vessel for purposes

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of data acquisition. The Holder shall notify NMFS of any subsequent port departure/arrival of any acoustic source vessel during the period of effectiveness.

(f) The Holder shall instruct relevant vessel personnel with regard to the authority of the PSO team, and shall ensure that relevant vessel personnel and PSO team participate in a joint onboard briefing led by the vessel operator and lead PSO to ensure that responsibilities, communication procedures, protected species monitoring protocols, operational procedures, and IHA requirements are clearly understood. This briefing shall occur prior to the start of survey activity and must be repeated when relevant new personnel join the survey operations.

(g) The acoustic source must be deactivated when not acquiring data or preparing to acquire data, except as necessary for testing. Unnecessary use of the acoustic source must be avoided. Notified operational capacity (i.e., total array volume) (not including redundant backup airguns) must not be exceeded during the survey, except where unavoidable for source testing and calibration purposes. All occasions where activated source volume exceeds notified operational capacity must be communicated to the PSO(s) on duty and fully documented. The lead PSO must be granted access to relevant instrumentation documenting acoustic source power and/or operational volume.

4. Mitigation Requirements

The Holder is required to implement the following mitigation measures:

(a) PSO Staffing and Qualifications

(i) The Holder must use independent, dedicated, trained visual and acoustic PSOs, meaning that the PSOs must be employed by a third-party observer provider, must not have tasks other than to conduct observational effort, collect data, and communicate with and instruct relevant vessel crew with regard to the presence of protected species and mitigation requirements (including brief alerts regarding maritime hazards), and must have successfully completed an approved PSO training course appropriate for their designated task (visual or acoustic). Individual PSOs may perform acoustic and visual PSO duties (though not at the same time).

(ii) The Holder must submit PSO resumes for NMFS review and approval. Resumes shall be accompanied by a relevant training course information packet that includes the name and qualifications (i.e., experience, training completed, or educational background) of the instructor(s), the course outline or syllabus, and course reference material as well as a document stating successful completion of the course. NMFS is allowed one week to approve PSOs from the time that the necessary information is received by NMFS, after which PSOs meeting the minimum requirements will automatically be considered approved.

(iii) At least one visual and two acoustic PSOs aboard each acoustic source vessel must have a minimum of 90 days at-sea experience working in those roles, respectively, during a deep penetration seismic survey, with no more than 18 months elapsed since the conclusion of the at-sea experience. One visual PSO with such experience must be designated as the lead for the entire PSO team. The lead must coordinate duty schedules and roles for the PSO team and serve as primary point of contact for the vessel operator. (Note that the responsibility of coordinating duty schedules and roles may instead be assigned to a shore-based, third-party monitoring coordinator.) To the maximum extent practicable, the lead PSO must devise the duty schedule such that experienced PSOs are on duty with those PSOs with appropriate training but who have not yet gained relevant experience.

(b) Visual Observation

(i) During survey operations (i.e., any day on which use of the acoustic source is planned to occur, and whenever the acoustic source is in the water, whether activated or not), a minimum of two PSOs must be on duty and conducting visual observations at all times during daylight hours (i.e., from 30 minutes prior to sunrise through 30 minutes following sunset) and 30 minutes prior to and during nighttime ramp-ups of the airgun array.

(ii) Visual monitoring must not begin less than 30 minutes prior to ramp-up and must continue until one hour after use of the acoustic source ceases or until 30 minutes past sunset.

(iii) Visual PSOs must coordinate to ensure 360° visual coverage around the vessel from the most appropriate observation posts, and must conduct visual observations using binoculars and the naked eye while free from distractions and in a consistent, systematic, and diligent manner.

(iv) Visual PSOs must immediately communicate all observations to acoustic PSOs, including any determination by the PSO regarding species identification, distance, and bearing and the degree of confidence in the determination.

(v) Visual PSOs may be on watch for a maximum of two consecutive hours, which must be followed by a break of at least one hour between watches, and may conduct a maximum of 12 hours of observation per 24-hour period. Combined observational duties (visual and acoustic) must not exceed 12 hours per 24-hour period for any individual PSO.

(vi) Any observations of marine mammals by crew members aboard any vessel associated with the survey must be relayed to the PSO team.

(vii) During good conditions (e.g., daylight hours; Beaufort sea state (BSS) 3 or less), visual PSOs must conduct observations when the acoustic source is not operating for comparison of sighting rates and behavior with and without use of the acoustic source and between acquisition periods, to the maximum extent practicable.

(c) Acoustic Observation

(i) The source vessel must use a towed passive acoustic monitoring (PAM) system, which must be monitored beginning at least 30 minutes prior to ramp-up and at all times during use of the acoustic source. "PAM system" refers to calibrated hydrophone arrays with full system redundancy to detect, identify, and estimate distance and bearing to vocalizing cetaceans. The PAM system shall have at least one calibrated hydrophone (per each deployed hydrophone type and/or set) sufficient for determining whether background noise levels on the towed PAM system are sufficiently low to meet performance expectations, and shall incorporate appropriate hydrophone elements (1 Hz to 180 kHz range) and sound data acquisition card technology for sampling relevant frequencies (i.e., to 360 kHz).

(ii) Acoustic PSOs must immediately communicate all detections to visual PSOs, when visual PSOs are on duty, including any determination by the PSO regarding species identification, distance, and bearing and the degree of confidence in the determination.

(iii) Acoustic PSOs may be on watch for a maximum of four consecutive hours, which must be followed by a break of at least two hours between watches, and may conduct a maximum of 12 hours of observation per 24-hour period. Combined observational duties (visual and acoustic) must not exceed 12 hours per 24-hour period for any individual PSO.

(iv) Survey activity may continue for 30 minutes when the PAM system malfunctions or is damaged, while the acoustic PSO (i.e., PAM operator) diagnoses the issue. If the diagnosis indicates that the PAM system must be repaired to solve the problem, operations may continue for an additional two hours without acoustic monitoring during daylight hours only under the following conditions:

A. Sea state is less than or equal to BSS 4;

B. No marine mammals (excluding delphinids) detected solely by PAM in the applicable exclusion zone in the previous two hours;

C. NMFS is notified via email as soon as practicable with the time and location in which operations began without an active PAM system; and

D. Operations with an active acoustic source, but without an operating PAM system, do not exceed a cumulative total of four hours in any 24-hour period.

(d) Buffer Zone and Exclusion Zone – Except as provided below in 4(d)(i), the PSOs must establish and monitor a 500-m exclusion zone and additional 500-m buffer zone (total 1,000 m). The 1,000-m zone shall serve to focus observational effort but not limit such effort; observations of marine mammals beyond this distance shall also be recorded as described in 5(d) below and/or trigger shutdown as described in 4(f)(v) below, as appropriate. The exclusion zone encompasses the area at and below the sea surface out to a radius of 500 meters from the edges of the airgun array (rather than being based on the center of the array or around the vessel itself) (0–500 meters). The buffer zone encompasses the area at and below the sea surface from the edge of the exclusion zone, out to a radius of 1,000 meters from the edges of the airgun array (500–1,000 meters). During use of the acoustic source, occurrence of marine mammals within the buffer zone (but outside the exclusion zone) must be communicated to the operator to prepare for the potential shutdown of the acoustic source. PSOs must monitor the buffer zone for a minimum of 30 minutes prior to ramp-up (i.e., pre-clearance).

(i) An expanded 1,500-m exclusion zone must be in effect for the species/circumstances listed in 4(f)(v) below. No buffer zone is required.

(e) Pre-Clearance and Ramp-up – A ramp-up procedure, involving a step-wise increase in the number of airguns firing and total array volume until all operational airguns are activated and the full volume is achieved, is required at all times as part of the activation of the acoustic source. A 30-minute pre-clearance observation period must occur prior to the start of ramp-up. The Holder must adhere to the following pre-clearance and ramp-up requirements:

(i) The operator must notify a designated PSO of the planned start of ramp-up as agreed upon with the lead PSO; the notification time should not be less than 60 minutes prior to the planned ramp-up.

(ii) Ramp-ups must be scheduled so as to minimize the time spent with source activated prior to reaching the designated run-in.

(iii) A designated PSO must be notified again immediately prior to initiating ramp-up procedures and the operator must receive confirmation from the PSO to proceed.

(iv) Ramp-up must not be initiated if any marine mammal is within the exclusion zone or buffer zone (see 4(d)). If a marine mammal is observed within the exclusion zone or the buffer zone during the 30-minute pre-clearance period, ramp-up may not begin until the animal(s) has been observed exiting the zones or until an additional time period has elapsed

with no further sightings (15 minutes for small odontocetes and 30 minutes for all other species).

(v) Ramp-up must begin by activating a single airgun of the smallest volume in the array and shall continue in stages by doubling the number of active elements at the commencement of each stage, with each stage of approximately the same duration. Total duration shall not be less than 20 minutes. The operator must provide information to the PSO documenting that appropriate procedures were followed.

(vi) PSOs must monitor the exclusion and buffer zones during ramp-up, and ramp-up must cease and the source shut down upon observation of marine mammals within the applicable exclusion zone. Once ramp-up has begun, observations of marine mammals within the buffer zone do not require shutdown or power-down.

(vii) Ramp-up may occur at times of poor visibility, including nighttime, if appropriate acoustic monitoring has occurred with no detections (excluding delphinids) in the 30 minutes prior to beginning ramp-up. Acoustic source activation may only occur at times of poor visibility where operational planning cannot reasonably avoid such circumstances.

(viii) If the acoustic source is shut down for brief periods (i.e., less than 30 minutes) for reasons other than implementation of prescribed mitigation (e.g., mechanical difficulty), it may be activated again without ramp-up if PSOs have maintained constant visual and/or acoustic observation and no visual or acoustic detections of any marine mammal have occurred within the applicable exclusion zone. For any longer shutdown, pre-clearance observation and ramp-up are required. For any shutdown at night or in periods of poor visibility (e.g., BSS 4 or greater), ramp-up is required, but if the shutdown period was brief and constant observation maintained, pre-clearance watch is not required.

(ix) Testing of the acoustic source involving all elements requires ramp-up. Testing limited to individual source elements or strings does not require ramp-up but does require the pre-clearance observation period.

(f) Shutdown Requirements

(i) Any PSO on duty has the authority to delay the start of survey operations or to call for shutdown of the acoustic source.

(ii) The operator must establish and maintain clear lines of communication directly between PSOs on duty and crew controlling the acoustic source to ensure that shutdown commands are conveyed swiftly while allowing PSOs to maintain watch.

(iii) When both visual and acoustic PSOs are on duty, all detections must be immediately communicated to the remainder of the on-duty PSO team for potential verification of visual observations by the acoustic PSO or of acoustic detections by visual PSOs.

(iv) When the airgun array is active (i.e., anytime one or more airguns is active, including during ramp-up) and (1) a marine mammal appears within or enters the applicable exclusion zone and/or (2) a marine mammal is detected acoustically and localized within the applicable exclusion zone, the acoustic source must be shut down. When shutdown is called for by a PSO, the acoustic source must be immediately deactivated and any dispute resolved only following deactivation.

(v) The expanded 1,500-m exclusion zone described in 4(d)(i) above must be applied in the following situations:

A. Upon detection (visual or acoustic) of a North Atlantic right whale, beaked whale, or *Kogia* spp within the zone.

B. Upon visual observation of a whale (i.e., sperm whale or any baleen whale) with calf within the zone, with "calf" defined as an animal less than two-thirds the body size of an adult observed to be in close association with an adult.

C. Upon visual observation of an aggregation (i.e., six or more animals) of large whales (i.e., sperm whales or any baleen whale) within the zone.

(vi) The shutdown requirement is waived for small delphinids, i.e., the following genera: *Steno*, *Tursiops*, *Stenella*, *Delphinus*, *Lagenodelphis*, and *Lagenorhynchus*.

A. If a small delphinid (individual of the Family Delphinidae, which includes the aforementioned dolphin genera), is visually and/or acoustically detected and localized within the exclusion zone, no shutdown is required unless the acoustic PSO or a visual PSO confirms the individual to be of a genera other than those listed above, in which case a shutdown is required.

(vii) If there is uncertainty regarding identification, visual PSOs may use best professional judgment in making the decision to call for a shutdown.

(viii) Upon implementation of shutdown, the source may be reactivated after the marine mammal(s) has been observed exiting the applicable exclusion zone or following a 30-minute clearance period (15-minute clearance

period for harbor porpoise) with no further observation of the marine mammal(s).

(g) Time-area Restrictions

(i) From May 1 through October 31, use of the acoustic source must not occur within 30 km of the coast.

(ii) From November 1 through April 30, use of the acoustic source must not occur within 90 km of the coast, except as provided below in 4(g)(ii)(A).

A. Applicants may alternatively develop and submit a monitoring and mitigation plan for NMFS's approval that would be sufficient to achieve comparable protection for North Atlantic right whales. If approved, applicants would be required to maintain a minimum coastal standoff distance of 47 km from November through April while operating in adherence with the approved plan from 47 through 80 km offshore.

(iii) Use of the acoustic source must not occur within 10 km of any Dynamic Management Area (DMA) when in effect. See *www.fisheries.noaa.gov/national/endangered-species-conservation/reducing-ship-strikes-north-atlantic-right-whales* for more detail regarding DMAs.

(iv) Use of the acoustic source must not occur within the areas designated by coordinates in Table 2 during applicable time periods. Areas #1-3 are in effect year-round. Area #4 is in effect from January 1 through March 31.

(h) Vessel Strike Avoidance

(i) Vessel operators and crews must maintain a vigilant watch for all marine mammals and slow down, stop their vessel, or alter course, as appropriate and regardless of vessel size, to avoid striking any marine mammal. A visual observer aboard the vessel must monitor a vessel strike avoidance zone around the vessel (distances stated below). Visual observers monitoring the vessel strike avoidance zone may be third-party observers (i.e., PSOs) or crew members, but crew members responsible for these duties must be provided sufficient training to distinguish marine mammals from other phenomena and broadly to identify a marine mammal as a right whale, other whale (defined in this context as sperm whales or baleen whales other than right whales), or other marine mammal.

(ii) All vessels (e.g., source vessels, chase vessels, supply vessels), regardless of size, must observe a 10-knot speed restriction in specific areas designated by NMFS for the protection of North Atlantic right whales

from vessel strikes: any DMAs when in effect, the Mid-Atlantic Seasonal Management Areas (SMA) (from November 1 through April 30), and the Southeast SMA (from November 15 through April 15). See *www.fisheries.noaa.gov/national/endangered-species-conservation/reducing-ship-strikes-north-atlantic-right-whales* for specific detail regarding these areas.

(iii) Vessel speeds must also be reduced to 10 knots or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near a vessel.

(iv) All vessels must maintain a minimum separation distance of 500 m from right whales. If a whale is observed but cannot be confirmed as a species other than a right whale, the vessel operator must assume that it is a right whale and take appropriate action.

(v) All vessels must maintain a minimum separation distance of 100 m from sperm whales and all other baleen whales.

(vi) All vessels must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 50 m from all other marine mammals, with an exception made for those animals that approach the vessel.

(vii) When marine mammals are sighted while a vessel is underway, the vessel shall take action as necessary to avoid violating the relevant separation distance, e.g., attempt to remain parallel to the animal's course, avoid excessive speed or abrupt changes in direction until the animal has left the area. If marine mammals are sighted within the relevant separation distance, the vessel must reduce speed and shift the engine to neutral, not engaging the engines until animals are clear of the area. This does not apply to any vessel towing gear or any vessel that is navigationally constrained.

(viii) These requirements do not apply in any case where compliance would create an imminent and serious threat to a person or vessel or to the extent that a vessel is restricted in its ability to maneuver and, because of the restriction, cannot comply.

5. Monitoring Requirements

The Holder is required to conduct marine mammal monitoring during survey activity. Monitoring must be conducted in accordance with the following requirements:

(a) All vessels associated with survey activity must have a functioning Automatic Identification System (AIS) onboard and operating at all times, regardless of whether AIS would otherwise be required. Vessel names and call signs must be provided to NMFS, and applicants must notify NMFS when survey vessels are operating.

(b) PSO Qualifications

(i) PSOs must successfully complete relevant training, including completion of all required coursework and passing (80 percent or greater) a written and/or oral examination developed for the training program.

(ii) PSOs must have successfully attained a bachelor's degree from an accredited college or university with a major in one of the natural sciences, a minimum of 30 semester hours or equivalent in the biological sciences, and at least one undergraduate course in math or statistics. The educational requirements may be waived if the PSO has acquired the relevant skills through alternate experience. Requests for such a waiver shall be submitted to NMFS and must include written justification. Requests will be granted or denied (with justification) by NMFS within one week of receipt of submitted information. Alternate experience that may be considered includes, but is not limited to (1) secondary education and/or experience comparable to PSO duties; (2) previous work experience conducting academic, commercial, or government-sponsored marine mammal surveys; or (3) previous work experience as a PSO; the PSO should demonstrate good standing and consistently good performance of PSO duties.

(c) Equipment – The Holder is required to:

(i) Provide PSOs with bigeye binoculars (e.g., 25 x 150; 2.7 view angle; individual ocular focus; height control) of appropriate quality (e.g., Fujinon or equivalent) solely for PSO use. These shall be pedestal-mounted on the deck of the acoustic source vessel at the most appropriate vantage point that provides for optimal sea surface observation, PSO safety, and safe operation of the vessel.

(ii) Work with the selected third-party observer provider to ensure PSOs have all equipment (including backup equipment) needed to adequately perform necessary tasks, including accurate determination of distance and bearing to observed marine mammals. Such equipment, at a minimum, must include:

A. For each vessel requiring PAM, a PAM system that has been verified and tested by an experienced acoustic PSO that will be using it during the trip for which monitoring is required;

B. At least one night-vision device suited for the marine environment for use during nighttime pre-clearance and ramp-up that features automatic brightness and gain control, bright light protection, infrared illumination, and/or optics suited for low-light situations (e.g., Exelis PVS-7 night vision goggles; Night Optics D-300 night

vision monocular; FLIR M324XP thermal imaging camera or equivalents);

C. Reticle binoculars (e.g., 7 x 50) of appropriate quality (e.g., Fujinon or equivalent) (at least one per PSO, plus backups);

D. Global Positioning Units (GPS) (plus backup);

E. Digital single-lens reflex camera of appropriate quality to capture photographs and video (e.g., Canon or equivalent) (plus backup);

F. Compasses (plus backup);

G. Radios for communication among vessel crew and PSOs (at least one per PSO, plus backups); and

H. Any other tools necessary to adequately perform necessary PSO tasks.

Equipment specified in A. through H. above may be provided by an individual PSO, the third-party observer provider, or the Holder, but the Holder is responsible for ensuring PSOs have the proper equipment required to perform the duties specified herein.

(d) Data Collection – PSOs must use standardized data forms, whether hard copy or electronic. PSOs must record detailed information about any implementation of mitigation requirements, including the distance of animals to the acoustic source and description of specific actions that ensued, the behavior of the animal(s), any observed changes in behavior before and after implementation of mitigation, and if shutdown was implemented, the length of time before any subsequent ramp-up of the acoustic source. If required mitigation was not implemented, PSOs must record a description of the circumstances. At a minimum, the following information should be recorded:

(i) Vessel names (source vessel and other vessels associated with survey) and call signs;

(ii) PSO names and affiliations;

(iii) Dates of departures and returns to port with port name;

(iv) Date and participants of PSO briefings (as prescribed in 4(e) above);

(v) Dates and times (Greenwich Mean Time) of survey effort and times corresponding with PSO effort;

(vi) Vessel location (latitude/longitude) when survey effort begins and ends and vessel location at beginning and end of visual PSO duty shifts;

(vii) Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any line change;

(viii) Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions change significantly), including BSS and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon;

(ix) Factors that may have contributed to impaired observations during each PSO shift change or as needed as environmental conditions change (e.g., vessel traffic, equipment malfunctions);

(x) Survey activity information, such as acoustic source power output while in operation, number and volume of airguns operating in the array, tow depth of the array, and any other notes of significance (i.e., pre-clearance, ramp-up, shutdown, testing, shooting, ramp-up completion, end of operations, streamers, etc.); and

(xi) Upon visual observation of a marine mammal, the following information:

A. Watch status (sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);

B. PSO who sighted the animal;

C. Time of sighting;

D. Vessel location at time of sighting;

E. Water depth;

F. Direction of vessel's travel (compass direction);

G. Direction of animal's travel relative to the vessel;

H. Pace of the animal;

I. Estimated distance to the animal and its heading relative to vessel at initial sighting;

J. Identification of the animal (e.g., genus/species, lowest possible taxonomic level, or unidentified) and the composition of the group if there is a mix of species;

K. Estimated number of animals (high/low/best);

L. Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, etc.);

M. Description (as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal fin, shape of head, and blow characteristics);

N. Detailed behavior observations (e.g., number of blows/breaths, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior), including an assessment of behavioral responses to survey activity;

O. Animal's closest point of approach (CPA) and/or closest distance from any element of the acoustic source;

P. Platform activity at time of sighting (e.g., deploying, recovering, testing, shooting, data acquisition, other); and

Q. Description of any actions implemented in response to the sighting (e.g., delays, shutdown, ramp-up) and time and location of the action.

(xii) Upon acoustic detection of a marine mammal using the PAM system, the following information:

A. An acoustic encounter identification number, and whether the detection was linked with a visual sighting;

B. Time when first and last heard;

C. Types and nature of sounds heard (e.g., clicks, whistles, creaks, burst pulses, continuous, sporadic, strength of signal);

D. Any additional information recorded such as water depth of the hydrophone array, bearing of the animal to the vessel (if determinable), species or taxonomic group (if determinable), spectrogram screenshot, and any other notable information.

6. Reporting Requirements

(a) The Holder must submit a draft comprehensive report on all activities and

monitoring results within 90 days of the completion of the survey or expiration of the IHA, whichever comes sooner, and must include all information described above under 5(d). If a subsequent IHA request is planned, the report must be submitted a minimum of 75 days prior to the requested date of issuance for the subsequent IHA.

(b) The report must describe the operations conducted and sightings of marine mammals near the operations; provide full documentation of methods, results, and interpretation pertaining to all monitoring; summarize the dates and locations of survey operations, and all marine mammal sightings (dates, times, locations, activities, associated survey activities); and provide information regarding locations where the acoustic source was used. In addition to the report, all raw observational data must be made available to NMFS.

(c) The report must include a validation document concerning the use of PAM, which should include necessary noise validation diagrams and demonstrate whether background noise levels on the PAM deployment limited achievement of the planned detection goals.

(d) The Holder must provide geo-referenced time-stamped vessel tracklines for all time periods in which airguns (full array or single) were operating. Tracklines shall include points recording any change in airgun status (e.g., when the airguns began operating, when they were turned off, or when they changed from full array to single gun or vice versa). GIS files shall be provided in ESRI shapefile format and include the UTC date and time, latitude in decimal degrees, and longitude in decimal degrees. All coordinates shall be referenced to the WGS84 geographic coordinate system.

(e) The draft report must be accompanied by a certification from the lead PSO as to the accuracy of the report, and the lead PSO may submit directly to NMFS a statement concerning implementation and effectiveness of the required mitigation and monitoring.

(f) A final report must be submitted within 30 days following resolution of any comments on the draft report.

(g) Reporting Injured or Dead Marine Mammals

(i) In the event that personnel involved in the survey activities discover an injured or dead marine mammal, the Holder must report the incident to the Office of Protected Resources (OPR), NMFS (301-427-8401) and to regional stranding networks (877-433-8299 and 866-755-6622) as soon as feasible. The report must include the following information:

A. Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);

B. Species identification (if known) or description of the animal(s) involved;

C. Condition of the animal(s) (including carcass condition if the animal is dead);

D. Observed behaviors of the animal(s), if alive;

E. If available, photographs or video footage of the animal(s); and

F. General circumstances under which the animal was discovered.

(ii) In the event of a ship strike of a marine mammal by any vessel involved in the survey activities, the Holder must report the incident to OPR, NMFS and to regional stranding networks as soon as feasible. The report must include the following information:

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

B. Species identification (if known) or description of the animal(s) involved;

C. Vessel's speed during and leading up to the incident;

D. Vessel's course/heading and what operations were being conducted (if applicable);

E. Status of all sound sources in use;

F. Description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike;

G. Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike;

H. Estimated size and length of animal that was struck;

I. Description of the behavior of the marine mammal immediately preceding and following the strike;

J. If available, description of the presence and behavior of any other marine mammals immediately preceding the strike;

K. Estimated fate of the animal (*e.g.*, dead, injured but alive, injured

and moving, blood or tissue observed in the water, status unknown, disappeared); and

L. To the extent practicable, photographs or video footage of the animal(s).

(iii) In the event of a live stranding (or near-shore atypical milling) event within 50 km of the survey operations, where the NMFS stranding network is engaged in herding or other interventions to return animals to the water, the Director of OPR, NMFS (or designee) will advise the Holder of the need to implement shutdown procedures for all active acoustic sources operating within 50 km of the stranding. Shutdown procedures for live stranding or milling marine mammals include the following:

A. If at any time, the marine mammal(s) die or are euthanized, or if herding/intervention efforts are stopped, the Director of OPR, NMFS (or designee) will advise the Holder that the shutdown around the animals' location is no longer needed.

B. Otherwise, shutdown procedures will remain in effect until the Director of OPR, NMFS (or designee) determines and advises the Holder that all live animals involved have left the area (either of their own volition or following an intervention).

C. If further observations of the marine mammals indicate the potential for re-stranding, additional coordination with the Holder will be required to determine what measures are necessary to minimize that likelihood (e.g., extending the shutdown or moving operations farther away) and to implement those measures as appropriate.

(iv) If NMFS determines that the circumstances of any marine mammal stranding found in the vicinity of the activity suggest investigation of the association with survey activities is warranted, and an investigation into the stranding is being pursued, NMFS will submit a written request to the Holder indicating that the following initial available information must be provided as soon as possible, but no later than 7 business days after the request for information.

A. Status of all sound source use in the 48 hours preceding the estimated time of stranding and within 50 km of the discovery/notification of the stranding by NMFS; and

B. If available, description of the behavior of any marine mammal(s) observed preceding (i.e., within 48 hours and 50 km) and

immediately after the discovery of the stranding.

In the event that the investigation is still inconclusive, the investigation of the association of the survey activities is still warranted, and the investigation is still being pursued, NMFS may provide additional information requests, in writing, regarding the nature and location of survey operations prior to the time period above.

7. This Authorization may be modified, suspended, or withdrawn if the Holder fails to abide by the conditions prescribed herein, or if NMFS determines the authorized taking is having more than a negligible impact on the species or stock of affected marine mammals.

8. The Holder may submit a suspension request if operations must cease for reasons outside the Holder's control, excluding weather events, equipment failures, known conflicts and mitigations. Such a request must be made in writing and explain the reason(s) for the request. NMFS is under no obligation to grant a suspension request. NMFS will consider the request and notify the Holder in writing of the decision. If suspension is granted under this paragraph, upon any reinstatement of effectiveness, the total effective period of the IHA, including the effective period preceding and following the suspension, may not exceed the equivalent of a one year period. NMFS must be notified immediately upon stoppage of operations for conditions beyond the Holder's control (excepting any excluded reasons specified above).

Donna S. Wieting

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

NOV 3 0 2018

Date

Table 1. Authorized Incidental Take.

Common name	Scientific name(s)	Level A harassment	Level B harassment
North Atlantic right whale	*Eubalaena glacialis*	0	2
Humpback whale	*Megaptera novaeangliae*	2	19
Minke whale	*Balaenoptera acutorostrata*	2	252
Bryde's whale	*B. edeni*	0	2
Sei whale	*B. borealis*	0	2
Fin whale	*B. physalus*	2	163
Blue whale	*B. musculus*	0	1
Sperm whale	*Physeter macrocephalus*	0	684
Kogia spp.	*K. breviceps/ K. sima*	3	125
Beaked whales	*Ziphius cavirostris/ Mesoplodon europaeus/ M. densirostris/ M. bidens/ M. mirus*	0	2,291
Northern bottlenose whale	*Hyperoodon ampullatus*	0	4
Rough-toothed dolphin	*Steno bredanensis*	0	117
Common bottlenose dolphin	*Tursiops truncatus*	0	14,938
Clymene dolphin	*Stenella clymene*	0	4,045
Atlantic spotted dolphin	*S. frontalis*	0	8,466
Pantropical spotted dolphin	*S. attenuata*	0	1,017
Spinner dolphin	*S. longirostris*	0	91
Striped dolphin	*S. coeruleoalba*	0	5,144
Common dolphin	*Delphinus delphis*	0	6,008
Fraser's dolphin	*Lagenodelphis hosei*	0	204
Atlantic white-sided dolphin	*Lagenorhynchus acutus*	0	48
Risso's dolphin	*Grampus griseus*	0	414
Melon-headed whale	*Peponocephala electra*	0	50
Pygmy killer whale	*Feresa attenuata*	0	6
False killer whale	*Pseudorca crassidens*	0	28
Killer whale	*Orcinus orca*	0	7
Pilot whales	*Globicephala macrorhynchus/ G. melas*	0	1,591
Harbor porpoise	*Phocoena phocoena*	8	355

Table 2. Boundaries of Time-Area Restrictions.

Area	Latitude	Longitude	Area	Latitude	Longitude
1	33° 31' 16" N	72° 52' 07" W	3	37° 43' 54" N	72° 00' 40" W
1	33° 10' 05" N	72° 59' 59" W	3	37° 09' 52" N	72° 04' 31" W
1	33° 11' 23" N	73° 19' 36" W	3	36° 52' 01" N	71° 24' 31" W
1	33° 43' 34" N	73° 17' 43" W	4	37° 08' 30" N	74° 01' 42" W
1	33° 59' 43" N	73° 10' 16" W	4	36° 15' 12" N	73° 48' 37" W
1	34° 15' 10" N	72° 55' 37" W	4	35° 53' 14" N	73° 49' 02" W
1	34° 14' 02" N	72° 36' 00" W	4	34° 23' 07" N	75° 21' 33" W
1	34° 03' 33" N	72° 37' 27" W	4	33° 47' 37" N	75° 27' 25" W
1	33° 53' 00" N	72° 44' 31" W	4	33° 48' 31" N	75° 52' 58" W
2	34° 13' 21" N	74° 07' 33" W	4	34° 23' 57" N	75° 52' 50" W
2	34° 00' 07" N	74° 26' 41" W	4	35° 22' 29" N	74° 51' 50" W
2	34° 38' 40" N	75° 05' 52" W	4	36° 32' 31" N	74° 49' 31" W
2	34° 53' 24" N	74° 51' 11" W	4	37° 05' 39" N	74° 45' 37" W
3	36° 41' 17" N	71° 25' 47" W	4	37° 27' 53" N	74° 32' 40" W
3	36° 43' 20" N	72° 13' 25" W	4	38° 23' 15" N	73° 45' 06" W
3	36° 55' 20" N	72° 26' 18" W	4	38° 11' 17" N	73° 06' 36" W
3	37° 52' 21" N	72° 22' 31" W			