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

SEP 19 2014

B.K. Grant
Deputy Project Director
Antarctic Support Contract
7400 South Tucson Way
Centennial, Colorado 80112-3938

Dear Mr. Grant:

Enclosed is an Incidental Harassment Authorization (IHA) issued to the Antarctic Support Contract and National Science Foundation, under the authority of section 101(a)(5)(D) of the Marine Mammal Protection Act (16 U.S.C. 1361 *et seq.*), to harass small numbers of marine mammals, by Level B harassment, incidental to the RVIB *Nathaniel B. Palmer*'s low-energy marine geophysical (seismic) survey in the Scotia Sea and South Atlantic Ocean during September to October 2014.

You are required to comply with the conditions contained in the IHA. In addition, you must submit a report to the National Marine Fisheries Service's (NMFS) Office of Protected Resources within 90 days of the completion of the cruise. The IHA also requires monitoring of marine mammals by qualified individuals before, during, and after seismic operations and reporting of marine mammal observations, including species, numbers, and behavioral modifications potentially resulting from these activities.

If you have any questions concerning the IHA or its requirements, please contact Howard Goldstein, Jeannine Cody, or Jolie Harrison, Office of Protected Resources, NMFS, at 301-427-8401.

Sincerely,

Patrick Gallagher

for Donna S. Wieting
Director
Office of Protected Resources

Enclosures

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

Incidental Harassment Authorization

The National Marine Fisheries Service (NMFS) hereby authorizes the National Science Foundation (NSF), Division of Polar Programs, 4201 Wilson Boulevard, Arlington, Virginia 22230 and Antarctic Support Contract (ASC), 7400 South Tucson Way, Centennial, Colorado 80112, 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 a low-energy marine geophysical (seismic) survey conducted aboard the RVIB *Nathaniel B. Palmer* (*Palmer*) in the Scotia Sea and southern Atlantic Ocean, September through October 2014:

1. *Effective Dates*

This Authorization is valid from September 20, 2014 through December 1, 2014.

2. *Specified Geographic Region*

This Authorization is valid only for NSF and ASC's activities associated with low-energy seismic survey, bathymetric profile, Global Positioning System (GPS) installation, and dredge sampling operations conducted aboard the *Palmer* that shall occur in the following specified geographic area:

(a) In selected regions of the Scotia Sea (located northeast of the Antarctic Peninsula) and southern Atlantic Ocean, with a focus on two areas: (1) between the central rise of the Scotia Sea and the East Scotia Sea, and (2) the far South Atlantic Ocean immediately northeast of South Georgia toward the Northeast Georgia Rise (both encompassing the region between 53 and 58° South, and between 33 and 40° West. Water depths in the survey area are expected to be deeper than 1,000 meters (m) (3,280.8 ft). The low-energy seismic survey will be conducted in the Exclusive Economic Zone for the South Georgia and South Sandwich Islands and International Waters (i.e., high seas), as specified in the NSF and ASC Incidental Harassment Authorization application and the associated NSF and ASC Initial Environmental Evaluation/Environmental Assessment (IEE/EA).

3. *Species Authorized and Level of Takes*

(a) The incidental taking of marine mammals, by Level B harassment only, is limited to the following species in the waters of the Scotia Sea and southern Atlantic Ocean:

(i) Mysticetes – see Table 2 (attached) for authorized species and take numbers.

(ii) Odontocetes – see Table 2 (attached) for authorized species and take numbers.

(iii) Pinnipeds – see Table 2 (attached) for authorized species and take numbers.

(iv) If any marine mammal species are encountered during seismic activities that are not listed in Table 2 (attached) and are likely to be exposed to sound pressure levels (SPLs) greater than or equal to 160 dB re 1 μPa (rms), then NSF and ASC must alter speed or course or shut-down the airguns to prevent take.

(b) The taking by injury (Level A harassment), serious injury, or death of any of the species listed in Condition 3(a) above 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.

4. The methods authorized for taking by Level B harassment are limited to the following acoustic sources, without an amendment to this Authorization:

(a) A two Generator Injector (GI) airgun array (each with a discharge volume of 105 cubic inches [in^3]) with a total volume of 210 in^3 (or smaller).

5. *Prohibited Take*

The taking of any marine mammal in a manner prohibited under this Authorization must be reported immediately to the Office of Protected Resources, National Marine Fisheries Service (NMFS), at 301-427-8401.

6. *Mitigation and Monitoring Requirements*

NSF and ASC are 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:

Protected Species Observers and Visual Monitoring

(a) Utilize at least one, NMFS-qualified, vessel-based Protected Species Observer (PSO) to visually watch for and monitor marine mammals near the seismic source vessel during daytime airgun operations (from nautical twilight-dawn to nautical twilight-dusk) and before and during ramp-ups of airguns day or night. Three PSOs shall be based onboard the vessel.

(i) The *Palmer*'s vessel crew shall also assist in detecting marine mammals, when practicable.

(ii) PSO(s) shall have access to reticle binoculars (7 x 50 Fujinon) equipped with a built in daylight compass and range reticles.

(iii) PSO(s) shifts shall last no longer than 4 hours at a time.

(iv) PSO(s) shall also make observations during daytime periods when the seismic airguns are not operating, when feasible, for comparison of animal abundance and behavior.

(v) PSO(s) shall conduct monitoring while the airgun array and streamer(s) are being deployed or recovered from the water.

(b) PSO(s) shall 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; and

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

(iii) The data listed under Condition 6(b)(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.

Buffer and Exclusion Zones

(c) Establish a 160 dB re 1 μPa (rms) buffer zone as well as 180 dB re 1 μPa (rms) exclusion zone for cetaceans and 190 dB re 1 μPa (rms) exclusion zone for pinnipeds before the two GI airgun array (210 in^3 total volume) is in operation. See Table 2 (attached) for distances and exclusion zones.

Visual Monitoring at the Start of the Airgun Operations

(d) Visually observe the entire extent of the exclusion zones (180 dB re 1 μPa [rms] for cetaceans and 190 dB re 1 μPa [rms] for pinnipeds; see Table 2 [attached] for distances) using two NMFS-qualified PSOs, for at least 30 minutes prior to starting the airgun array (day or night).

(i) If the PSO(s) sees a marine mammal within the exclusion zone, NSF and ASC must delay the seismic survey until the marine mammal(s) has left the area.

If the PSO(s) sees a marine mammal that surfaces, then dives below the surface, the PSO(s) shall wait 30 minutes, and if the PSO(s) sees no marine mammals during that time, the PSO should assume that the animal has moved beyond the exclusion zone.

(ii) If for any reason the entire radius cannot be seen for the entire 30 minutes (i.e., rough seas, fog, darkness), or if marine mammals are near, approaching, or in the exclusion zone, the airguns may not be ramped-up. If one airgun is already running at a source level of at least 180 dB re 1 μPa (rms), NSF and ASC may start the second airgun without observing the entire exclusion zone for 30 minutes prior, provided no marine mammals are known to be near the exclusion zone (in accordance with Condition 6[f] below).

Ramp-up Procedures

(e) Implement a "ramp-up" procedure, which means starting with a single GI airgun and adding a second GI airgun after five minutes, when starting up at the beginning of seismic operations or anytime after the entire array has been shut-down for more than 15 minutes. During ramp-up, the two PSOs shall monitor the exclusion zone, and if marine mammals are sighted, a shut-down shall be implemented as though the full array (both GI airguns) were operational. Therefore, initiation of ramp-up procedures from shut-down requires that the two PSOs be able to view the full exclusion zone as described in Condition 6(d) (above).

Shut-down Procedures

(f) Shut-down the airgun(s) if a marine mammal is detected within, approaches, or enters the relevant exclusion zone (as defined in Table 1, attached). A shut-down means all operating airguns are shut-down (i.e., turned off).

(g) Following a shut-down, the airgun activity shall not resume until the PSO(s) has visually observed the marine mammal(s) exiting the exclusion zone and is not likely to return, or has not been seen within the exclusion zone for 15 minutes for species with shorter dive durations (small odontocetes) or 30 minutes for species with longer dive durations (mysticetes and large odontocetes, including sperm, killer, and beaked whales).

(h) Following a shut-down and subsequent animal departure, airgun operations may resume following ramp-up procedures described in Condition 6(e).

Speed or Course Alteration

(i) Alter speed or course during seismic operations if a marine mammal, based on its position and relative motion, appears likely to enter the relevant exclusion zone. If speed or course alteration is not safe or practicable, or if after alteration the marine mammal

still appears likely to enter the exclusion zone, further mitigation measures, such as a shut-down, shall be taken.

Survey Operations at Night

(j) Marine seismic surveys may continue into night and low-light hours if such segment(s) of the survey is initiated when the entire relevant exclusion zones are visible and can be effectively monitored.

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

(l) To the maximum extent practicable, schedule seismic operations (i.e., shooting airguns) during daylight hours.

7. *Reporting Requirements*

NSF and ASC are required to:

(a) Submit a draft report on all activities and monitoring results to the Office of Protected Resources, NMFS, within 90 days of the completion of the *Palmer*'s Scotia Sea and southern Atlantic Ocean cruise. This report 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) Species, number, location, distance from the vessel, and behavior of any marine mammals, as well as associated seismic activity (e.g., number of shut-downs), observed throughout all monitoring activities.

(iii) An estimate of the number (by species) of marine mammals that: (A) are known to have been exposed to the seismic activity (based on visual observation) at received levels greater than or equal to 160 dB re 1 μPa (rms) (for seismic airgun operations), and/or 180 dB re 1 μPa (rms) for cetaceans and 190 dB re 1 μPa (rms) for pinnipeds with a discussion of any specific behaviors those individuals exhibited; and (B) may have been exposed (based on modeled values for the two GI airgun array) to the seismic activity at received levels greater than or equal to 160 dB re 1 μPa (rms) (for seismic airgun operations), and/or 180 dB re 1 μPa (rms) for cetaceans and 190 dB re 1 μPa (rms) for pinnipeds with a discussion of the nature of the probable consequences of that exposure on the individuals that have been exposed.

(iv) A description of the implementation and effectiveness of the: (A) Terms and Conditions of the Biological Opinion's Incidental Take Statement (ITS) (attached); and (B) mitigation measures of the Incidental Harassment 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.

(b) Submit a final report to the Chief, Permits and Conservation Division, Office of Protected Resources, 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.

8. *Reporting Prohibited Take*

(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), NSF and ASC 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, at 301-427-8401 and/or by email to Jolie.Harrison@noaa.gov and Howard.Goldstein@noaa.gov. The report must include the following information:

(i) Time, date, and location (latitude/longitude) of the incident; the name and type of vessel involved; the vessel's speed during and leading up to the incident; description of the incident; status of all sound source use in the 24 hours preceding the incident; water depth; environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility); description of marine mammal observations in the 24 hours preceding the incident; species identification or description of the animal(s) involved; the fate of the animal(s); and 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 NSF and ASC to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. NSF and ASC may not resume their activities until notified by NMFS via letter, email, or telephone.

Reporting an Injured or Dead Marine Mammal with an Unknown Cause of Death

(b) In the event that NSF and ASC 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), NSF and ASC will immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401, and/or by email to Jolie.Harrison@noaa.gov and Howard.Goldstein@noaa.gov. The report must include the same information identified in Condition 7(a) above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with NSF and ASC to determine whether modifications in the activities are appropriate.

Reporting an Injured or Dead Marine Mammal Not Related to the Activities

(c) In the event that NSF and ASC 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), NSF and ASC shall report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401, and/or by email to Jolie.Harrison@noaa.gov and Howard.Goldstein@noaa.gov, within 24 hours of the discovery. NSF and ASC shall provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS. Activities may continue while NMFS reviews the circumstances of the incident.

9. *Endangered Species Act Biological Opinion and Incidental Take Statement*

(a) NSF and ASC are required to comply with the Terms and Conditions of the ITS corresponding to NMFS's Biological Opinion issued to both NSF/ASC, and NMFS's Office of Protected Resources (attached).

(b) A copy of this Authorization and the ITS must be in the possession of all contractors and PSO(s) operating under the authority of this Incidental Harassment Authorization.

SEP 19 2014

Perry Gayaldo

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

Date

Attachments

Attachment

Table 1. Authorized take numbers, by Level B harassment, for each marine mammal species during NSF and ASC's low-energy marine seismic survey in the Scotia Sea and southern Atlantic Ocean, September to October 2014.

Species	Authorized Take in the Scotia Sea and Southern Atlantic Ocean Study Area
Mysticetes	
Southern right whale (*Eubalaena australis*)	31
Humpback whale (*Megaptera novaeangliae*)	3
Antarctic minke whale (*Balaenoptera bonaerensis*)	616
Minke whale (*Balaenoptera acutorostrata*) *including dwarf minke whale sub-species*	616
Sei whale (*Balaenoptera borealis*)	25
Fin whale (*Balaenoptera physalus*)	72
Blue whale (*Balaenoptera musculus*) *including pygmy blue whale sub-species*	1
Odontocetes	
Sperm whale (*Physeter macrocephalus*)	8
Arnoux's beaked whale (*Berardius arnuxii*)	45
Cuvier's beaked whale (*Ziphius cavirostris*)	3
Gray's beaked whale (*Mesoplodon grayi*)	7
Shepherd's beaked whale (*Tasmacetus shepherdi*)	37
Strap-toothed beaked whale (*Mesoplodon layardii*)	3
Southern bottlenose whale (*Hyperoodon ampullatus*)	35
Killer whale (*Orcinus orca*)	61

Long-finned pilot whale (*Globicephala melas*)	848
Peale's dolphin (*Lagenorhynchus australis*)	10
Hourglass dolphin (*Lagenorhynchus cruciger*)	61
Southern right whale dolphin (*Lissodelphis peronii*)	24
Spectacled porpoise (*Phocoena dioptrica*)	6
Pinnipeds	
Crabeater seal (*Lobodon carcinophaga*)	73
Leopard seal (*Hydrurga leptonyx*)	46
Weddell seal (*Leptonychotes weddellii*)	20
Southern elephant seal (*Mirounga leonina*)	1
Antarctic fur seal (*Arctocephalus gazella*)	2,017
Subantarctic fur seal (*Arctocephalus tropicalis*)	2,017

Table 2. Modeled distances to which sound levels greater than or equal to 160, 180, and 190 dB could be received during the low-energy marine seismic survey in the Scotia Sea and southern Atlantic Ocean during September to October 2014. The buffer and exclusion zone radii are used for triggering mitigation. No airgun operations will occur in shallow water depths (<100 m).

Source and Volume	Tow Depth (m)	Water Depth (m)	Predicted RMS Radii Distances (m)		
			Shut-down Exclusion Zone for Pinnipeds 190 dB	Shut-down Exclusion Zone for Cetaceans 180 dB	Level B Harassment Zone 160 dB
Two 105 in^3 GI airguns (210 in^3 total)	3 to 4	Deep (>1,000)	100 (328.1 ft)	100 (328.1 ft)	670 (2,198.2 ft)