

issues may not be the subject of formal action during this meeting. Action will be restricted to those issues specifically listed in this notice and any issues arising after publication of this notice that require emergency action under section 305(c) of the Magnuson-Stevens Act, provided the public has been notified of the Council's intent to take final action to address the emergency.

Special Accommodations

This meeting is physically accessible to people with disabilities. Requests for sign language interpretation or other auxiliary aids should be directed to Paul J. Howard, Executive Director, at (978) 465-0492, at least 5 days prior to the meeting date.

Authority: 16 U.S.C. 1801 *et seq.*

Dated: June 27, 2011.

Tracey L. Thompson,

Acting Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. 2011-16536 Filed 6-30-11; 8:45 am]

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RIN: 0648-XA530]

New England Fishery Management Council; Public Meeting

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; public meeting.

SUMMARY: The New England Fishery Management Council (Council) is scheduling a public meeting of its Monkfish Advisory Panel, in July, 2011, to consider actions affecting New England fisheries in the exclusive economic zone (EEZ).

Recommendations from this group will be brought to the full Council for formal consideration and action, if appropriate.

DATES: The meeting will be held on Tuesday, July 19, 2011 at 9 a.m.

ADDRESSES: The meeting will be held at the Crowne Plaza, 50 Ferncroft Road, Danvers, MA 01923; telephone: (978) 777-2500; fax: (978) 750-7959.

Council address: New England Fishery Management Council, 50 Water Street, Mill 2, Newburyport, MA 01950.

FOR FURTHER INFORMATION CONTACT: Paul J. Howard, Executive Director, New England Fishery Management Council; telephone: (978) 465-0492.

SUPPLEMENTARY INFORMATION: The Monkfish Advisory Panel (AP) will meet

to develop a detailed problem statement based on the list of issues identified by the Advisory Panel and Monkfish Oversight Committee. The Oversight Committee has requested that the Advisory Panel provide details, specificity and examples of the issues in the list for the purpose of developing recommended goals and objectives for Amendment 6 to the Monkfish Fishery Management Plan. In Amendment 6, the New England and Mid-Atlantic Fishery Management Councils are considering adopting catch shares management programs in one or both monkfish management areas. The Advisory Panel detailed list of issues will be forwarded to the Oversight Committee for review at its next meeting.

Although non-emergency issues not contained in this agenda may come before this group for discussion, those issues may not be the subject of formal action during this meeting. Action will be restricted to those issues specifically listed in this notice and any issues arising after publication of this notice that require emergency action under section 305(c) of the Magnuson-Stevens Act, provided the public has been notified of the Council's intent to take final action to address the emergency.

Special Accommodations

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Authority: 16 U.S.C. 1801 *et seq.*

Dated: June 28, 2011.

Tracey L. Thompson,

Acting Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. 2011-16586 Filed 6-30-11; 8:45 am]

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RIN 0648-XA343]

Takes of Marine Mammals Incidental to Specified Activities; Marine Geophysical Survey in the Western Gulf of Alaska, June to August, 2011

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; issuance of an incidental take authorization (ITA).

SUMMARY: In accordance with the Marine Mammal Protection Act (MMPA) regulation, notification is hereby given that NMFS has issued an Incidental Harassment Authorization (IHA) to the Lamont-Doherty Earth Observatory of Columbia University (L-DEO) to take marine mammals, by Level B harassment, incidental to conducting a marine geophysical survey in the western Gulf of Alaska (GOA), June to August, 2011.

DATES: Effective June 28 to September 4, 2011.

ADDRESSES: A copy of the IHA and application are available by writing to P. Michael Payne, Chief, Permits, Conservation and Education Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910 or by telephoning the contacts listed here.

A copy of the application containing a list of the references used in this document may be obtained by writing to the above address, telephoning the contact listed here (see **FOR FURTHER INFORMATION CONTACT**) or visiting the Internet at: <http://www.nmfs.noaa.gov/pr/permits/incidental.htm#applications>. The following associated documents are also available at the same Internet address: "Environmental Assessment of a Marine Seismic Survey in the Gulf of Alaska July-August 2011" (EA) prepared by the National Science Foundation (NSF), and "Environmental Assessment of a Marine Geophysical Survey by the R/V *Marcus G. Langseth* in the western Gulf of Alaska, July-August 2011," prepared by LGL Ltd., Environmental Research Associates (LGL), on behalf of NSF and L-DEO. The NMFS Biological Opinion will be available online at: <http://www.nmfs.noaa.gov/pr/consultation/opinions.htm>. Documents cited in this notice may be viewed, by appointment, during regular business hours, at the aforementioned address.

FOR FURTHER INFORMATION CONTACT: Howard Goldstein or Jolie Harrison, Office of Protected Resources, NMFS, 301-427-8401.

SUPPLEMENTARY INFORMATION:

Background

Section 101(a)(5)(D) of the MMPA (16 U.S.C. 1371 (a)(5)(D)) directs the Secretary of Commerce (Secretary) to authorize, upon request, the incidental, but not intentional, taking of small numbers of marine mammals of a species or population stock, by United States citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if

certain findings are made and, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

Authorization for the incidental taking of small numbers of marine mammals shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), and will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant). The authorization must set forth the permissible methods of taking, other means of effecting the least practicable adverse impact on the species or stock and its habitat, and requirements pertaining to the mitigation, monitoring and reporting of such takings. NMFS has defined "negligible impact" in 50 CFR 216.103 as " * * * an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival."

Section 101(a)(5)(D) of the MMPA established an expedited process by which citizens of the United States can apply for an authorization to incidentally take small numbers of marine mammals by harassment. Section 101(a)(5)(D) of the MMPA establishes a 45-day time limit for NMFS's review of an application followed by a 30-day public notice and comment period on any proposed authorizations for the incidental harassment of small numbers of marine mammals. Within 45 days of the close of the public comment period, NMFS must either issue or deny the authorization.

Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as:

any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment].

16 U.S.C. 1362(18).

Summary of Request

NMFS received an application on April 1, 2010, from L-DEO for the taking by harassment, of marine mammals, incidental to conducting a marine geophysical survey in the western GOA within the U.S. Exclusive Economic Zone (EEZ) in depths from approximately 25 meters (m) (82 feet [ft]) to greater than 6,000 m (19,685 ft).

The cruise was postponed in 2010 and rescheduled for 2011. NMFS received a revised application on March 4, 2011 from L-DEO. L-DEO plans to conduct the survey from approximately June 28 to August 4, 2011. On May 6, 2011, NMFS published a notice in the **Federal Register** (76 FR 26255) disclosing the effects on marine mammals, making preliminary determinations and including a proposed IHA. The notice initiated a 30 day public comment period.

L-DEO plans to use one source vessel, the R/V *Marcus G. Langseth* (*Langseth*) and a seismic airgun array to collect seismic reflection and refraction profiles from the Shumagin Islands to east of Kodiak Island in the GOA. In addition to the operations of the seismic airgun array, L-DEO intends to operate a multibeam echosounder (MBES) and a sub-bottom profiler (SBP) continuously throughout the survey.

Acoustic stimuli (*i.e.*, increased underwater sound) generated during the operation of the seismic airgun array may have the potential to cause a short-term behavioral disturbance for marine mammals in the survey area. This is the principal means of marine mammal taking associated with these activities and L-DEO has requested an authorization to take 16 species of marine mammals by Level B harassment. Take is not expected to result from the use of the MBES or SBP, for reasons discussed in this notice; nor is take expected to result from collision with the vessel because it is a single vessel moving at a relatively slow speed during seismic acquisition within the survey, for a relatively short period of time (approximately 38 days). It is likely that any marine mammal would be able to avoid the vessel.

Description of the Specified Activity

L-DEO's planned seismic survey in the western GOA, from the Shumagin Islands to east of Kodiak Island, will take place during June to August, 2011, in the area 52.5° to 59° North, 147.5° to 161° West (see Figure 1 of the IHA application). The seismic survey will take place in water depths ranging from 25 m (82 ft) to greater than 6,000 m (82 to 19,685 ft) and consists of approximately 2,553 kilometers (km) (1,378.5 nautical miles [nmi]) of transect lines in the study area. The project is scheduled to occur from approximately June 28 to August 4, 2011. Some minor deviation from these dates is possible, depending on logistics and weather.

The seismic survey will collect seismic reflection and refraction data to characterize the subduction zone off southern Alaska, which produces large

and destructive earthquakes. The data from this study will be used to: (1) Estimate the size of the seismogenic zone, the portion of the fault that controls the magnitude of earthquakes, and (2) provide critical information on how the properties of the seismogenic zone change along the subduction zone such that some areas produce large earthquakes and others do not. The study focuses on the Semidi segment, whose earthquake recurrence interval is 50 to 75 years and which last ruptured in 1938.

The survey will involve one source vessel, the *Langseth*. The *Langseth* will deploy an array of 36 airguns as an energy source at a tow depth of 12 m (39.4 ft). The receiving system will consist of two 8 km (4.3 nmi) long hydrophone streamers and/or 21 ocean bottom seismometers (OBSs). As the airguns are towed along the survey lines, the hydrophone streamers will receive the returning acoustic signals and transfer the data to the on-board processing system. The OBSs record the returning acoustic signals internally for later analysis.

The planned seismic survey (*e.g.*, equipment testing, startup, line changes, repeat coverage of any areas, and equipment recovery) will consist of approximately 2,553 km of transect lines in the western GOA survey area (see Figure 1 of the IHA application). Just over half of the survey (1,363 km [736 nmi]) will take place in water deeper than 1,000 m; 30% or 754 km (407.1 nmi) will be surveyed in intermediate depth (100 to 1,000 m) water; and 17% (463 km [250 nmi]) will take place in water less than 100 m deep. Approximately 30 km (16.2 nmi) of seismic surveying will occur in water less than 40 m deep. A refraction survey using OBSs will take place along two lines (lines 3 and 5). Following the refraction survey, a multichannel (MCS) survey using two hydrophone streamers will take place along all of the transect lines. Thus, lines three and five will be surveyed twice. In addition to the operations of the airgun array, a Kongsberg EM 122 MBES and Knudsen 320B SBP will also be operated from the *Langseth* continuously throughout the cruise. There will be additional seismic operations associated with equipment testing, start-up, and possible line changes or repeat coverage of any areas where initial data quality is sub-standard. In L-DEO's calculations, 25% has been added for those additional operations.

All planned geophysical data acquisition activities will be conducted by L-DEO, the *Langseth's* operator, with on-board assistance by the scientists

who have planned the study. The Principal Investigators are Drs. Donna Shillington, Spahr Webb, and Mladen Nedimovic, all of L-DEO. The vessel will be self-contained, and the crew will live aboard the vessel for the entire cruise.

Description of the Dates, Duration, and Specified Geographic Region

The survey will occur in the western GOA in the area 52.5° to 59° North, 147.5 to 161° West. The seismic survey will take place in water depths of 25 m to greater than 6,000 m. The *Langseth* will depart from Kodiak, Alaska on approximately June 28, 2011. The program will start with a refraction survey using OBSs. Approximately 21 OBSs will be deployed along one line; the OBSs will then be retrieved and re-deployed along the next refraction line. OBS deployment will take approximately three days and recovery will take approximately five days; there will be a total of approximately three days of refraction shooting. Following the refraction survey, the MCS survey will take place using the two streamers. MCS and airgun deployment will take approximately three days, and there will be approximately 13 days of MCS operations. Upon completion of seismic operations, all gear will be picked up and the vessel will travel to Dutch Harbor, for arrival on approximately August 4, 2011. Seismic operations in the study area will be carried out for approximately 16 days. Some minor deviation from this schedule is possible, depending on logistics and weather (*i.e.*, the cruise may depart earlier or be extended due to poor weather; there could be an additional three days of seismic operations if collected data are deemed to be of substandard quality).

NMFS outlined the purpose of the program in a previous notice for the proposed IHA (76 FR 26255, May 6, 2011). The activities to be conducted have not changed between the proposed IHA notice and this final notice announcing the issuance of the IHA. For a more detailed description of the authorized action, including vessel and acoustic source specifications, the reader should refer to the proposed IHA notice (76 FR 26255, May 6, 2011), the IHA application, EA, and associated documents referenced above this section.

Comments and Responses

A notice of receipt of the L-DEO application and proposed IHA was published in the **Federal Register** on May 6, 2011 (76 FR 26255). During the 30-day public comment period, NMFS received comments from the Marine

Mammal Commission (Commission) only. The Commission's comments are online at: <http://www.nmfs.noaa.gov/pr/permits/incidental.htm>.

Following are their comments and NMFS's responses:

Comment 1: The Commission recommends that the NMFS require L-DEO to re-estimate the proposed exclusion (EZs) and buffer zones and associated takes of marine mammals using site-specific information.

Response: NMFS is satisfied that the data supplied are sufficient for NMFS to conduct its analysis and make any determinations and therefore no further effort is needed by the applicant. While exposures of marine mammals to acoustic stimuli are difficult to estimate, NMFS is confident that the levels of take provided by L-DEO in their IHA application and EA, and authorized herein are estimated based upon the best available scientific information and estimation methodology.

The alternative method of conducting site-specific attenuation measurements in the water depths that the survey is to be conducted is neither warranted nor practical for the applicant. Site signature measurements are normally conducted commercially by shooting a test pattern over an ocean bottom instrument in shallow water. This method is neither practical nor valid for this survey which will occur in water depths as great as 6,000 m (19,685 ft). The alternative method of conducting site-specific attenuation measurements would require a second vessel, which is impractical both logistically and financially. Sound propagation varies notably less between deep water sites than it would between shallow water sites (because of the reduced significance of bottom interaction), thus decreasing the importance of deep water site-specific estimates.

Should the applicant endeavor to undertake a sound source verification study, confidence in the results is necessary in order to ensure for conservation purposes that appropriate monitoring and mitigation measures are implemented; therefore inappropriate or poorly executed efforts should be avoided and discouraged.

Source signature modeling is preferable in this instance because:

- (1) The results can be reviewed and independently verified;
- (2) Site-specific measurements are subject to numerous sources of error; and
- (3) Reliable site-specific measurements require specialized equipment (calibrated hydrophones) and acoustic specialists to conduct the tests and interpret the results.

The 160 dB (*i.e.*, buffer) zone used to estimate exposure is appropriate and sufficient for purposes of supporting NMFS's analysis and determinations required under section 101(a)(5)(D) of the MMPA and its implementing regulations. See NMFS's responses to Comment 2 (below) for additional details.

Comment 2: The Commission recommends that NMFS require L-DEO, if the EZs and buffer zones and takes are not re-estimated, to provide a detailed justification (1) For basing the EZs and buffer zones for the proposed survey in the GOA on empirical data collected in the Gulf of Mexico (GOM) or on modeling that relies on measurements from the GOM and (2) that explains why simple ratios were used to adjust for tow depth and median values were applied to intermediate water depths rather than using empirical measurements.

Response: As stated earlier, NMFS is not requiring L-DEO to re-estimate the EZs and 160 dB zones for this survey. L-DEO provides a detailed description on how they estimated EZs, 160 dB zones, and take estimates in Appendix A of the EA, which includes information from the calibration study conducted on the *Langseth* in 2007 and 2008. Appendix A describes L-DEO's modeling process and compares the model results with empirical results of the 2007 and 2008 *Langseth* calibration experiment in shallow, intermediate, and deep water. The conclusions identified in Appendix A show that the model represents the actual produced levels, particularly within the first few kms, where the predicted EZs lie. At greater distances, local oceanographic variations begin to take effect, and the model tends to over predict sound attenuation. Further, since the modeling matches the observed measurement data, the authors have concluded that the models can continue to be used for defining EZs, including for predicting mitigation radii for various tow depths. The data results from the studies were peer reviewed and the calibration results, viewed as conservative, were used to determine the cruise-specific EZs. This information is now available in the final EA on NSF's Web site at <http://www.nsf.gov/geo/oce/envcomp/index.jsp>.

At present, the L-DEO model does not account for site-specific environmental conditions. The calibration study of the L-DEO model predicted that using site-specific information may actually provide less conservative EZs at greater distances. The "Draft Programmatic Environmental Impact Statement for Marine Seismic Research Funded by the National Science Foundation or

Conducted by the U.S. Geological Survey" (DPEIS) prepared pursuant to the National Environmental Policy Act (NEPA; 42 U.S.C. *et seq.*) did incorporate various site-specific environmental conditions in the modeling of the Detailed Analysis Areas. The NEPA process associated with the DPEIS is still ongoing and the USGS and NSF have not yet issued a Record of Decision. Once the NEPA process for the PEIS has concluded, NSF will look at upcoming cruises on a site-specific basis for any impacts not already considered in the DPEIS.

The IHA issued to L-DEO, under section 101(a)(5)(D) of the MMPA provides monitoring and mitigation requirements that will protect marine mammals from injury, serious injury, or mortality. L-DEO is required to comply with the IHA's requirements. These analyses are supported by extensive scientific research and data. NMFS is confident in the peer-reviewed results of the L-DEO seismic calibration studies which, although viewed as conservative, are used to determine cruise-specific EZs and which factor into exposure estimates. NMFS has determined that these reviews are the best scientific data available for review of the IHA application and to support the necessary analyses and determinations under the MMPA, Endangered Species Act (ESA; 16 U.S.C. 1531 *et seq.*) and NEPA.

Based on NMFS's analysis of the likely effects of the specified activity on marine mammals and their habitat, NMFS has determined that the EZs identified in the IHA are appropriate for the survey and that additional field measurement is not necessary at this time. While exposures of marine mammals to acoustic stimuli are difficult to estimate, NMFS is confident that the levels of take authorized herein are estimated based upon the best available scientific information and estimation methodology. The 160 dB zone used to estimate exposure are appropriate and sufficient for purposes of supporting NMFS's analysis and determinations required under section 101(a)(5)(D) of the MMPA and its implementing regulations.

Comment 3: The Commission recommends that NMFS require that L-DEO use species-specific maximum densities rather than best densities to re-estimate the anticipated number of takes.

Response: NMFS acknowledges the Commission's recommendation and is currently evaluating the recommendation to use species-specific maximum densities versus best densities to estimate the anticipated number of takes for marine mammals to

determine a standard approach. However, for purposes of this IHA, NMFS is using the best (*i.e.*, average or mean) densities to estimate the number of authorized takes for L-DEO's seismic survey in the western GOA as NMFS is confident in the assumptions and calculations used to estimate density for this survey area. NMFS Endangered Species Division generally uses the best estimate when analyzing the allowable take for Endangered Species Act-listed threatened and endangered marine mammals in Biological Opinion's (BiOp) and Incidental Take Statements (ITS) incidental to marine seismic surveys for scientific research purposes. Contrary to the Commission's comment (above), NMFS has used best densities to estimate the number of incidental takes in IHAs for several seismic surveys in the past. The results of the associated monitoring reports show that the use of the best estimates is appropriate for and does not refute NMFS's determinations.

Comment 4: The Commission recommends that if NMFS is planning to allow the applicant to resume full power after nine minutes (min) under certain circumstances, specify in the authorization in all conditions under which a nine min period could be followed by a full-power resumption of the airguns.

Response: During periods of active seismic operations, there are occasions when the airguns need to be temporarily shut-down (for example due to equipment failure, maintenance, or shut-down) or a power-down is necessary (for example when a marine mammal is seen to either enter or about to enter the EZ). In these instances, should the airguns be inactive or powered-down for more than nine min, then L-DEO would follow the ramp-up procedures identified in the Mitigation section (see below) where airguns will be re-started beginning with the smallest airgun in the array and increase in steps not to exceed 6 dB per 5 min over a total duration of approximately 30 min. NMFS and NSF believe that the nine min period in question is an appropriate minimum amount of time to pass after which a ramp-up process should be followed. In these instances, should it be possible for the airguns to be re-activated without exceeding the nine min period (for example equipment is fixed or a marine mammal is visually observed to have left the EZ for the full source level), then the airguns would be reactivated to the full operating source level identified for the survey (in this case, 6,600 in³) without need for initiating ramp-up procedures. In the event a marine mammal enters the EZ

and a power-down is initiated, and the marine mammal is not visually observed to have left the EZ, then L-DEO must wait 15 min (for species with shorter dive durations—small odontocetes and pinnipeds) or 30 min (for species with longer dive durations—mysticetes and large odontocetes) after the last sighting before ramp-up procedures can be initiated, or as otherwise directed by requirements in an IHA. However, ramp-up will not occur as long as a marine mammal is detected within the EZ, which provides more time for animals to leave the EZ, and accounts for the position, swim speed, and heading of marine mammals within the EZ.

Comment 5: The Commission recommends that NMFS extend the 30 min period following a marine mammal sighting in the EZ to cover the full dive times of all species likely to be encountered.

Response: NMFS recognizes that several species of deep-diving cetaceans are capable of remaining underwater for more than 30 min (*e.g.*, sperm whales, Cuvier's beaked whales, Baird's beaked whales, and Stejneger's beaked whales); however, for the following reasons NMFS believes that 30 min is an adequate length of the monitoring period prior to the ramp-up of airguns:

(1) Because the *Langseth* is required to monitor before ramp-up of the airgun array, the time of monitoring prior to the start-up of any but the smallest array is effectively longer than 30 min (ramp-up will begin with the smallest airgun in the array and airguns will be added in sequence such that the source level of the array will increase in steps not exceeding approximately 6 dB per 5 min period over a total duration of 20 to 30 min;

(2) In many cases PSVOs are observing during times when L-DEO is not operating the seismic airguns and would observe the area prior to the 30 min observation period;

(3) The majority of the species that may be exposed do not stay underwater more than 30 min; and

(4) All else being equal and if deep-diving individuals happened to be in the area in the short time immediately prior to the pre-ramp up monitoring, if an animal's maximum underwater dive time is 45 min, then there is only a one in three chance that the last random surfacing would occur prior to the beginning of the required 30 min monitoring period and that the animal would not be seen during that 30 min period.

Finally, seismic vessels are moving continuously (because of the long, towed array and streamer) and NMFS

believes that unless the animal submerges and follows at the speed of the vessel (highly unlikely, especially when considering that a significant part of their movement is vertical [deep-diving]), the vessel will be far beyond the length of the EZ within 30 min, and therefore it will be safe to start the airguns again.

The effectiveness of monitoring is science-based and the requirement that monitoring and mitigation measures be "practicable." NMFS believes that the framework for visual monitoring will: (1) Be effective at spotting almost all species for which take is requested; and (2) that imposing additional requirements, such as those suggested by the Commission, would not meaningfully increase the effectiveness of observing marine mammals approaching or entering the EZs and thus further minimize the potential for take.

Comment 6: The Commission recommends that NMFS, prior to granting the requested authorization, provide additional justification for its preliminary determination that the proposed monitoring program will be sufficient to detect, with a high level of confidence, all marine mammals within or entering the identified EZs and buffer zones, including

(1) Identifying those species that it believes can be detected with a high degree of confidence using visual monitoring only,

(2) Describing detection probability as a function of distance from the vessel,

(3) Describing changes in detection probability under various sea state and weather conditions and light levels, and

(4) Explaining how close to the vessel marine mammals must be for Protected Species Observers (PSOs) to achieve high nighttime detection rates.

Response: NMFS believes that the planned monitoring program will be sufficient to detect (using visual monitoring and passive acoustic monitoring [PAM]), with reasonable certainty, marine mammals within or entering identified EZs. This monitoring, along with the required mitigation measures, will result in the least practicable adverse impact on the affected species or stocks and will result in a negligible impact on the affected species or stocks of marine mammals. Also, NMFS expects some animals to avoid areas around the airgun array ensounded at the level of the EZ.

NMFS acknowledges that the detection probability for certain species of marine mammals varies depending on animal's size and behavior as well as sea state and weather conditions and light levels. The detectability of marine

mammals likely decreases in low light (*i.e.*, darkness), higher Beaufort sea states and wind conditions, and poor weather (*e.g.*, fog and/or rain). However, at present, NMFS views the combination of visual monitoring and PAM as the most effective monitoring and mitigation techniques available for detecting marine mammals within or entering the EZ. The final monitoring and mitigation measures are the most effective feasible measures and NMFS is not aware of any additional measures which could meaningfully increase the likelihood of detecting marine mammals in and around the EZ. Further, public comment has not revealed any additional monitoring or mitigation measures that could be feasibly implemented to increase the effectiveness of detection.

NSF and L-DEO are receptive to incorporating proven technologies and techniques to enhance the current monitoring and mitigation program. Until proven technological advances are made, nighttime mitigation measures during operations include combinations of the use of PSVOs for ramp-ups, PAM, night vision devices (NVDs), and continuous shooting of a mitigation airgun. Should the airgun array be powered-down, the operation of a single airgun would continue to serve as a sound source deterrent to marine mammals. In the event of a complete shut-down of the airgun array at night for mitigation or repairs, L-DEO suspends the data collection until one-half hour after nautical twilight-dawn (when PSVO's are able to clear the EZ). L-DEO will not activate the airguns until the entire EZ is visible for at least 30 min.

In cooperation with NMFS, L-DEO will be conducting efficacy experiments of NVDs during a future *Langseth* cruise. In addition, in response to a recommendation from NMFS, L-DEO is evaluating the use of handheld forward-looking thermal imaging cameras to supplement nighttime monitoring and mitigation practices. During other low power seismic and seafloor mapping surveys, L-DEO successfully used these devices while conducting nighttime seismic operations.

Comment 7: The Commission recommends that NMFS consult with the funding agency (*i.e.*, NSF) and individual applicants (*e.g.*, L-DEO and U.S. Geological Survey [USGS]) to develop, validate, and implement a monitoring program that provides a scientifically sound, reasonably accurate assessment of the types of marine mammal taking and number of marine mammals taken.

Response: Numerous studies have reported on the abundance and distribution of marine mammals inhabiting the GOA, which overlaps with the seismic survey area, and L-DEO has incorporated this data into their analyses used to predict marine mammal take in their application. NMFS believes that L-DEO's current approach for estimating abundance in the survey area (prior to the survey) is the best available approach.

There will be significant amounts of transit time during the cruise, and PSVOs will be on watch prior to and after the seismic portions of the survey, in addition to during the survey. The collection of this visual observational data by PSVOs may contribute to baseline data on marine mammals (presence/absence) and provide some generalized support for estimated take numbers, but it is unlikely that the information gathered from this single cruise along would result in any statistically robust conclusions for any particular species because of the small number of animals typically observed.

NMFS acknowledges the Commission's recommendations and is open to further coordination with the Commission, NSF (the vessel owner), and L-DEO (the ship operator on behalf of NSF), to develop, validate, and implement a monitoring program that will provide or contribute towards a more scientifically sound and reasonably accurate assessment of the types of marine mammal taking and the number of marine mammals taken. However, the cruise's primary focus is marine geophysical research and the survey may be operationally limited due to considerations such as location, time, fuel, services, and other resources.

Comment 8: The Commission recommends that NMFS require the applicant to

(1) Report on the number of marine mammals that were detected acoustically and for which a power-down or shut-down of the airguns was initiated;

(2) Specify if such animals also were detected visually; and

(3) Compare the results from the two monitoring methods (visual versus acoustic) to help identify their respective strengths and weaknesses.

Response: The IHA requires that PSAOs on the *Langseth* do and record the following when a marine mammal is detected by the PAM:

(i) Notify the on-duty PSVO(s) immediately of a vocalizing marine mammal so a power-down or shut-down can be initiated, if required;

(ii) Enter the information regarding the vocalization into a database. The

data to be entered include an acoustic encounter identification number, whether it was linked with a visual sighting, date, time when first and last heard and whenever any additional information was recorded, position, and water depth when first detected, bearing if determinable, species or species group (e.g., unidentified dolphin, sperm whale), types and nature of sounds heard (e.g., clicks, continuous, sporadic, whistles, creaks, burst pulses, strength of signal, etc.), and any other notable information.

L-DEO reports on the number of acoustic detections made by the PAM system within the post-cruise monitoring reports as required by the IHA. The report also includes a description of any acoustic detections that were concurrent with visual sightings, which allows for a comparison of acoustic and visual detection methods for each cruise.

The post-cruise monitoring reports also include the following information: the total operational effort in daylight (hrs), the total operational effort at night (hrs), the total number of hours of visual observations conducted, the total number of sightings, and the total number of hours of acoustic detections conducted.

LGL Ltd., Environmental Research Associates (LGL), a contractor for L-DEO, has processed sighting and density data, and their publications can be viewed online at: http://www.lgl.com/index.php?option=com_content&view=article&id=69&Itemid=162&lang=en. Post-cruise monitoring reports are currently available on the NMFS's MMPA Incidental Take Program Web site on the NSF Web site (<http://www.nsf.gov/geo/oce/envcomp/index.jsp>) should there be interest in further analysis of this data by the public.

Comment 9: The Commission recommends that NMFS condition the authorization to require the L-DEO to monitor, document, and report observations during all ramp-up procedures.

Response: The IHA requires that PSVOs on the *Langseth* make observations for 30 min prior to ramp-up, during all ramp-ups, and during all daytime seismic operations and 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 of 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 power-down), Beaufort wind force and sea state, visibility, and sun glare.

Comment 10: The Commission recommends that NMFS work with NSF to analyze these monitoring data to help determine the effectiveness of ramp-up procedures as a mitigation measure for geophysical surveys after the data are compiled and quality control measures have been completed.

Response: One of the primary purposes of monitoring is to result in "increased knowledge of the species" and the effectiveness of monitoring and mitigation measures; the effectiveness of ramp-up as a mitigation measure and marine mammal reaction to ramp-up would be useful information in this regard. NMFS has asked NSF and L-DEO to gather all data that could potentially provide information regarding the effectiveness of ramp-ups as a mitigation measure. However, considering the low numbers of marine mammal sightings and low numbers of ramp-ups, it is unlikely that the information will result in any statistically robust conclusions for this particular seismic survey. Over the long term, these requirements may provide information regarding the effectiveness of ramp-up as a mitigation measure, provided animals are detected during ramp-up.

Comment 11: The Commission recommends that NMFS condition the IHA to require L-DEO to (1) report immediately all injured or dead marine mammals to NMFS and (2) suspend the geophysical survey if a marine mammal is seriously injured or killed and the injury or death could have been caused by the survey (e.g., a fresh dead carcass); if additional measures are not likely to reduce the risk of additional serious injuries or deaths to a very low level, require L-DEO to obtain the necessary authorization for such takings under section 101(a)(5)(A) of the MMPA before allowing it to continue this survey or initiate additional surveys.

Response: As stipulated in the IHA, in the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHA, such as an injury (Level A harassment), serious injury or mortality (e.g., ship-strike, gear interaction, and/or entanglement), L-DEO will immediately cease the specified activities and immediately report the incident to the Chief of the Permits, Conservation, and Education

Division, Office of Protected Resources, NMFS at 301-427-8401 and/or by e-mail to Michael.Payne@noaa.gov and Howard.Goldstein@noaa.gov, and the Alaska Regional Stranding Coordinators (Aleria.Jensen@noaa.gov and Barbara.Mahoney@noaa.gov). The incident report must include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Name and type of vessel involved;
- 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 all marine mammal observations in the 24 hours preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s) (if equipment is available).

Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS shall work with L-DEO to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. L-DEO may not resume their activities until notified by NMFS via letter or e-mail, or telephone.

In the event that L-DEO 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), L-DEO will immediately report the incident to the Chief of the Permits, Conservation, and Education Division, Office of Protected Resources, NMFS, at 301-427-8401, and/or by e-mail to Michael.Payne@noaa.gov and Howard.Goldstein@noaa.gov, and the NMFS Alaska Stranding Hotline (1-877-925-7773) and/or by e-mail to the Alaska Regional Stranding Coordinators (Aleria.Jensen@noaa.gov and Barbara.Mahoney@noaa.gov). The report must include the same information identified in the paragraph above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with L-DEO to determine whether modifications in the activities are appropriate.

In the event that L-DEO discovers an injured or dead marine mammal, and the lead PSO determines that the injury or death is not associated with or related

TABLE 1—THE HABITAT, REGIONAL ABUNDANCE, AND CONSERVATION STATUS OF MARINE MAMMALS THAT MAY OCCUR IN OR NEAR THE SEISMIC SURVEY AREA IN THE WESTERN GOA—Continued
[See text and tables 2 to 4 in L-DEO's application and EA for further details.]

Species	Occurrence in/near survey area	Habitat	Abundance (Alaska)	Regional abundance	ESA ¹	MMPA ²	Density (#/1,000 km ²) shallow intermediate deep	
							Best ³	Max ⁴
Pacific white-sided dolphin (<i>Lagenorhynchus obliquidens</i>).	Common	Pelagic, shelf, coastal.	26,880 ²⁰	988,000 ²¹	NL	NC	2.08	4.76
							3.96	14.36
Risso's dolphin (<i>Grampus griseus</i>).	Rare	Pelagic, shelf, coastal.	N.A.	838,000 ²²	NL	NC	0	0
							0	0
Killer whale (<i>Orcinus orca</i>)	Common	Pelagic, shelf, coastal.	2,636 ²³	8,500 ²⁴	NL ³⁵	NC	7.26	41.80
							7.34	41.80
Short-finned pilot whale (<i>Globicephala macrorhynchus</i>).	Rare	Pelagic, shelf, coastal.	N.A.	53,000 ²²	NL	NC	3.79	13.53
							0	0
Harbor porpoise (<i>Phocoena phocoena</i>).	Uncommon	Coastal	11,146 ²⁵	168,387 ²⁷	NL	NC	3.67	46.71
			31,046 ²⁶				2.87	14.43
Dall's porpoise (<i>Phocoenoides dalli</i>).	Common	Pelagic, shelf	83,400 ²⁰	1,186,000 ²⁸	NL	NC	0	0
							13.57	21.77
Pinnipeds: Northern fur seal (<i>Callorhinus ursinus</i>).	Uncommon	Pelagic, breeds coastally.	653,171 ⁷	1.1 million ²⁹	NL	D	31.56	37.23
							25.69	62.50
Steller sea lion (<i>Eumetopias jubatus</i>).	Common	Coastal, off-shore.	58,334–	N.A.	T ³⁶	D	0	0
			72,223 ³⁰				EN ³⁶	3.29
California sea lion (<i>Zalophus c. californianus</i>).	Uncommon	Coastal	42,366 ³¹	238,000 ³³	NL	NC	2.91	4.20
			N.A.				9.80	14.70
Harbor seal (<i>Phoca vitulina richardsi</i>).	Uncommon	Coastal	45,975 ²⁶	180,017 ³²	NL	NC	N.A.	N.A.
							1.65	2.0
Northern elephant seal (<i>Mirounga angustirostris</i>).	Uncommon	Coastal, off-shore.	N.A.	124,000 ³³	NL	NC	14.03	20.28
							0	0
							0	0
							0	0
							0	0

N.A. Not available or not assessed.

¹ U.S. Endangered Species Act: EN = Endangered, T = Threatened, NL = Not listed.

² U.S. Marine Mammal Protection Act: D = Depleted, NC = Not Classified.

³ Best density estimate as listed in Table 3 of the application.

⁴ Maximum density estimate as listed in Table 3 of the application.

⁵ Bering Sea and Aleutian Islands (Wade *et al.*, 2010).

⁶ Western population (Brownell *et al.*, 2001).

⁷ Eastern North Pacific (Allen and Angliss, 2010).

⁸ GOA (Calambokidis *et al.*, 2008).

⁹ North Pacific Ocean (Barlow *et al.*, 2009).

¹⁰ Western GOA and eastern Aleutians (Zerbini *et al.*, 2006).

¹¹ Northwest Pacific (Buckland *et al.*, 1992; IWC, 2009).

¹² North Pacific (Tillman, 1977).

¹³ North Pacific (Ohsumi and Wada, 1974).

¹⁴ Eastern North Pacific (NMFS, 1998).

¹⁵ Western GOA and eastern Aleutians (Zerbini *et al.*, 2004).

¹⁶ Eastern temperate North Pacific (Whitehead, 2002b).

¹⁷ Eastern Tropical Pacific (Wade and Gerrodette, 1993).

¹⁸ Western North Pacific (Reeves and Leatherwood, 1994; Kasuya, 2002).

¹⁹ Cook Inlet stock (Shelden *et al.*, 2010).

²⁰ Alaska stock (Allen and Angliss, 2010).

²¹ North Pacific Ocean (Miyashita, 1993b).

²² Western North Pacific Ocean (Miyashita, 1993a).

²³ Minimum abundance in Alaska, includes 2,084 resident and 552 GOA, Bering Sea, Aleutian Islands transients (Allen and Angliss, 2010).

²⁴ Eastern Tropical Pacific (Ford, 2002).

²⁵ Southeast Alaska stock (Allen and Angliss, 2010).

²⁶ GOA stock (Allen and Angliss, 2010).

²⁷ Eastern North Pacific (totals from Carretta *et al.*, 2009 and Allen and Angliss, 2010).

²⁸ North Pacific Ocean and Bering Sea (Houck and Jefferson, 1999).

²⁹ North Pacific (Gelatt and Lowry, 2008).

³⁰ Eastern U.S. Stock (Allen and Angliss, 2010).

³¹ Western U.S. Stock (Allen and Angliss, 2010).

³² Alaska statewide (Allen and Angliss, 2010).

³³ Carretta *et al.*, 2009.

³⁴ Cook Inlet DPS is listed as Endangered and Depleted; other stocks are not listed.

³⁵ Stocks in Alaska are not listed, but the southern resident DPS is listed as endangered. AT1 transient in Alaska is considered depleted and a strategic stock (NOAA, 2004a).

³⁶ Eastern stock is listed as threatened, and the western stock is listed as endangered.

Refer to Section III and IV of L-DEO's application for detailed information regarding the abundance and

distribution, population status, and life history and behavior of these species and their occurrence in the project area.

The application also presents how L-DEO calculated the estimated densities for the marine mammals in the survey

area. NMFS has reviewed these data and determined them to be the best available scientific information for the purposes of the IHA.

Potential Effects on Marine Mammals

Acoustic stimuli generated by the operation of the airguns, which introduce sound into the marine environment, may have the potential to cause Level B harassment of marine mammals in the survey area. The effects of sounds from airgun operations might include one or more of the following: Tolerance, masking of natural sounds, behavioral disturbance, temporary or permanent hearing impairment, or non-auditory physical or physiological effects (Richardson *et al.*, 1995; Gordon *et al.*, 2004; Nowacek *et al.*, 2007; Southall *et al.*, 2007).

Permanent hearing impairment, in the unlikely event that it occurred, would constitute injury, but temporary threshold shift (TTS) is not an injury (Southall *et al.*, 2007). Although the possibility cannot be entirely excluded, it is unlikely that the project would result in any cases of temporary or permanent hearing impairment, or any significant non-auditory physical or physiological effects. Based on the available data and studies described here, some behavioral disturbance is expected, but NMFS expects the disturbance to be localized and short-term.

The notice of the proposed IHA (76 FR 26255, May 6, 2011) included a discussion of the effects of sounds from airguns on mysticetes, odontocetes, and pinnipeds including tolerance, masking, behavioral disturbance, hearing impairment, and other non-auditory physical effects. NMFS refers the reader to L-DEO's application, and EA for additional information on the behavioral reactions (or lack thereof) by all types of marine mammals to seismic vessels.

Anticipated Effects on Marine Mammal Habitat, Fish, Fisheries, and Invertebrates

NMFS included a detailed discussion of the potential effects of this action on marine mammal habitat, including physiological and behavioral effects on marine fish, fisheries, and invertebrates in the notice of the proposed IHA (76 FR 26255, May 6, 2011). While NMFS anticipates that the specified activity may result in marine mammals avoiding certain areas due to temporary ensonification, this impact to habitat is temporary and reversible which NMFS considered in further detail in the notice of the proposed IHA (76 FR 25255, May 6, 2011) as behavioral modification. The

main impact associated with the activity would be temporarily elevated noise levels and the associated direct effects on marine mammals.

Recent work by Andre *et al.* (2011) purports to present the first morphological and ultrastructural evidence of massive acoustic trauma (*i.e.*, permanent and substantial alterations of statocyst sensory hair cells) in four cephalopod species subjected to low-frequency sound. The cephalopods, primarily cuttlefish, were exposed to continuous 40 to 400 Hz sinusoidal wave sweeps (100% duty cycle and 1 s sweep period) for two hours while captive in relatively small tanks (one 2,000 liter [L, 2 m³] and one 200 L [0.2 m³] tank). The received SPL was reported as 157±5 dB re 1 µPa, with peak levels at 175 dB re 1 µPa. As in the McCauley *et al.* (2003) paper on sensory hair cell damage in pink snapper as a result of exposure to seismic sound, the cephalopods were subjected to higher sound levels than they would be under natural conditions, and they were unable to swim away from the sound source.

Mitigation

In order to issue an ITA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable adverse impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and the availability of such species or stock for taking for certain subsistence uses.

L-DEO has based the mitigation measures described herein, to be implemented for the seismic survey, on the following:

- (1) Protocols used during previous L-DEO seismic research cruises as approved by NMFS;
- (2) Previous IHA applications and IHAs approved and authorized by NMFS; and
- (3) Recommended best practices in Richardson *et al.* (1995), Pierson *et al.* (1998), and Weir and Dolman (2007).

To reduce the potential for disturbance from acoustic stimuli associated with the activities, L-DEO and/or its designees will implement the following mitigation measures for marine mammals:

- (1) EZs;
- (2) Power-down procedures;
- (3) Shut-down procedures;
- (4) Ramp-up procedures; and
- (5) Special procedures for situations and species of concern.

Planning Phase—The PIs worked with L-DEO and NSF to identify potential time periods to carry out the survey taking into consideration key factors such as environmental conditions (*i.e.*, the seasonal presence of marine mammals, sea turtles, and sea birds), weather conditions, and equipment. The survey was previously scheduled for September, 2010; however after further consideration, it was viewed as not a viable operational option because of the strong possibility of not being able to carry out the science mission under potential weather conditions in the region at that time of year. Also, the late June to early August cruise avoids the peak in humpback abundance (late August to early September) and the peak of the marine mammal harvest (generally September to December, with a reduction in hunting effort in summer).

Reducing the size of the energy source was also considered, but it was decided that the 6,600 in³, 36 airgun array is necessary to penetrate through the seafloor to accurately delineate the geologic features and to achieve the primary scientific objectives of the program. A large source that is rich in relatively low-frequency seismic energy is required to penetrate to depths greater than 20 to 30 km (10.8 to 16.2 nmi) and image the deep fault that causes earthquakes off Alaska. By towing this source configuration at 12 m below the sea surface, the lower frequencies are enhanced. If a smaller source were used, it would inhibit the deep imaging of the fault zone, thus preventing the scientists' ability to carry out their research and meet their objectives. Similarly, the combination of OBSs and hydrophone streamers are needed to record seismic returns from deep in the earth and determine the depth and geometry of the fault zone, thus meeting the scientific objectives.

EZs—Received sound levels have been determined by corrected empirical measurements for the 36 airgun array, and a L-DEO model was used to predict the EZs for the single 1900LL 40 in³ airgun, which will be used during power-downs. Results were recently reported for propagation measurements of pulses from the 36 airgun array in two water depths (approximately 1,600 m and 50 m [5,249 to 164 ft]) in the GOM in 2007 to 2008 (Tolstoy *et al.*, 2009). It would be prudent to use the corrected empirical values that resulted to determine EZs for the airgun array. Results of the propagation measurements (Tolstoy *et al.*, 2009) showed that radii around the airguns for various received levels varied with water depth. As results for

measurements in intermediate depth water are still under analysis, values halfway between the deep and shallow-water measurements were used. In addition, propagation varies with array tow depth. The depth of the array was different in the GOM calibration study (6 m [19.7 ft]) than in the survey in the GOA (12 m); thus, correction factors have been applied to the distances reported by Tolstoy *et al.* (2009). The correction factors used were the ratios of the 160, 180, and 190 dB distances from the modeled results for the 6,600 in³ airgun array towed at 6 m versus 12 m.

Measurements were not reported for a single airgun, so model results will be used. The tow depth has minimal effect

on the maximum near-field output and the shape of the frequency spectrum for the single airgun; thus, the predicted EZ are essentially the same at different tow depths. The L-DEO model does not allow for bottom interactions, and thus is most directly applicable to deep water and to relatively short ranges; correction factors were used to estimate EZs in shallow and intermediate depth water as was done for previous L-DEO surveys from the *Langseth*. A detailed description of the modeling effort is predicted in Appendix A of the EA.

Based on the corrected propagation measurements (airgun array) and modeling (single airgun), the distances from the source where sound levels are

predicted to be 190, 180, and 160 dB re 1 μ Pa (rms) were determined (see Table 2 below). The 180 and 190 dB radii are shut-down criteria applicable to cetaceans and pinnipeds, respectively, as specified by NMFS (2000); these levels were used to establish the EZs. If the PSVO detects marine mammal(s) within or about to enter the appropriate EZ, the airguns will be powered-down (or shut-down, if necessary) immediately.

Table 2 summarizes the predicted distances at which sound levels (160, 180, and 190 dB [rms]) are expected to be received from the 36 airgun array and a single airgun operating in deep water depths.

TABLE 2—MEASURED (ARRAY) OR PREDICTED (SINGLE AIRGUN) DISTANCES TO WHICH SOUND LEVELS \geq 190, 180, AND 160 DB RE: 1 μ Pa (RMS) COULD BE RECEIVED IN VARIOUS WATER DEPTH CATEGORIES DURING THE SURVEY IN THE WESTERN GOA, JUNE TO AUGUST, 2011

Source and volume	Tow depth (m)	Water depth (m)	Predicted RMS radii distances (m)		
			190 dB	180 dB	160 dB
Single Bolt airgun (40 in ³).	6 to 12	Deep (>1,000)	12	40	385
		Intermediate (100 to 1,000)	18	60	578
4 Strings 36 airguns (6,600 in ³).	12	Shallow (<100)	150	296	1,050
		Deep (>1,000)	460	1,100	4,400
		Intermediate (100 to 1,000)	615	1,810	13,935
		Shallow (<100)	770	2,520	23,470

Power-down Procedures—A power-down involves decreasing the number of airguns in use to one airgun, such that the radius of the 180 dB (or 190 dB) zone is decreased to the extent that marine mammals are no longer in or about to enter the EZ. A power-down of the airgun array can also occur when the vessel is moving from one seismic line to another. During a power-down for mitigation, L-DEO will operate one airgun. The continued operation of one airgun is intended to alert marine mammals to the presence of the seismic vessel in the area. In contrast, a shut-down occurs when the *Langseth* suspends all airgun activity.

If the PSVO detects a marine mammal outside the EZ, but it is likely to enter the EZ, L-DEO will power-down the airguns before the animal is within the EZ. Likewise, if a mammal is already within the EZ, when first detected L-DEO will power-down the airguns immediately. During a power-down of the airgun array, L-DEO will also operate the 40 in³ airgun. If a marine mammal is detected within or near the smaller EZ around that single airgun (Table 1), L-DEO will shut-down the airgun (see next section).

Following a power-down, L-DEO will not resume airgun activity until the marine mammal has cleared the EZ. L-DEO will consider the animal to have cleared the EZ if:

- A PSVO has visually observed the animal leave the EZ, or
- A PSVO has not sighted the animal within the EZ for 15 min for species with shorter dive durations (*i.e.*, small odontocetes or pinnipeds), or 30 min for species with longer dive durations (*i.e.*, mysticetes and large odontocetes, including sperm, killer, and beaked whales).

During airgun operations following a power-down (or shut-down) whose duration has exceeded the time limits specified previously, L-DEO will ramp-up the airgun array gradually (see Shut-down and Ramp-up Procedures).

Shut-down Procedures—L-DEO will shut down the operating airgun(s) if a marine mammal is seen within or approaching the EZ for the single airgun. L-DEO will implement a shut-down:

- (1) If an animal enters the EZ of the single airgun after L-DEO has initiated a power-down; or
- (2) If an animal is initially seen within the EZ of the single airgun when more

than one airgun (typically the full airgun array) is operating.

L-DEO will not resume airgun activity until the marine mammal has cleared the EZ, or until the PSVO is confident that the animal has left the vicinity of the vessel. Criteria for judging that the animal has cleared the EZ will be as described in the preceding section.

Ramp-up Procedures—L-DEO will follow a ramp-up procedure when the airgun array begins operating after a specified period without airgun operations or when a power-down has exceeded that period. L-DEO proposes that, for the present cruise, this period would be approximately nine min. This period is based on the 180 dB radius (1,100 m) for the 36 airgun array towed at a depth of 12 m in relation to the minimum planned speed of the *Langseth* while shooting (7.4 km/hr). L-DEO has used similar periods (approximately 8 to 10 min) during previous surveys.

Ramp-up will begin with the smallest airgun in the array (40 in³). Airguns will be added in a sequence such that the source level of the array will increase in steps not exceeding approximately six dB per five min period over a total

duration of approximately 35 min. During ramp-up, the Protected Species Observers (PSOs) will monitor the EZ, and if marine mammals are sighted, L-DEO will implement a power-down or shut-down as though the full airgun array were operational.

If the complete EZ has not been visible for at least 30 min prior to the start of operations in either daylight or nighttime, L-DEO will not commence the ramp-up unless at least one airgun (40 in³ or similar) has been operating during the interruption of seismic survey operations. Given these provisions, it is likely that the airgun array will not be ramped-up from a complete shut-down at night or in thick fog, because the outer part of the EZ for that array will not be visible during those conditions. If one airgun has operated during a power-down period, ramp-up to full power will be permissible at night or in poor visibility, on the assumption that marine mammals will be alerted to the approaching seismic vessel by the sounds from the single airgun and could move away. L-DEO will not initiate a ramp-up of the airguns if a marine mammal is sighted within or near the applicable EZs during the day or close to the vessel at night.

Special Procedures for Situations and Species of Concern—L-DEO will implement special mitigation procedures as follows:

- The airguns will be shut down immediately if ESA-listed species for which no takes are being requested (*i.e.*, North Pacific right, sei, blue, and beluga whales) are sighted at any distance from the vessel. Ramp-up will only begin if the whale has not been seen for 30 min.
- Concentrations of humpback, fin, and/or killer whales will be avoided if possible, and the array will be powered down if necessary. For purposes of this survey, a concentration or group of whales will consist of three or more individuals visually sighted that do not appear to be traveling (*e.g.*, feeding, socializing, *etc.*).
- Seismic operations in Chignik Bay will be conducted from nearshore to offshore waters.
- Avoidance of areas where subsistence fishers are fishing, if requested (or viewed as necessary).

NMFS has carefully evaluated the applicant's mitigation measures and has considered a range of other measures in the context of ensuring that NMFS prescribes the means of effecting the least practicable adverse impact on the affected marine mammal species and stocks and their habitat. NMFS's evaluation of potential measures

included consideration of the following factors in relation to one another:

- (1) The manner in which, and the degree to which, the successful implementation of the measure is expected to minimize adverse impacts to marine mammals;
- (2) The proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and
- (3) The practicability of the measure for applicant implementation.

Based on NMFS's evaluation of the applicant's measures, as well as other measures considered by NMFS or recommended by the public, NMFS has determined that the mitigation measures provide the means of effecting the least practicable adverse impacts on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

In order to issue an ITA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth "requirements pertaining to the monitoring and reporting of such taking." The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for IHAs must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the action area.

Monitoring

L-DEO will sponsor marine mammal monitoring during the present project, in order to implement the mitigation measures that require real-time monitoring, and to satisfy the monitoring requirements of the IHA. L-DEO's Monitoring Plan is described below this section. The monitoring work described here has been planned as a self-contained project independent of any other related monitoring projects that may be occurring simultaneously in the same regions. L-DEO is prepared to discuss coordination of its monitoring program with any related work that might be done by other groups insofar as this is practical and desirable.

Vessel-Based Visual Monitoring

L-DEO's PSVOs will be based aboard the seismic source vessel and will watch for marine mammals near the vessel during daytime airgun operations and during any ramp-ups at night. PSVOs will also watch for marine mammals near the seismic vessel for at least 30

min prior to the start of airgun operations after an extended shut-down (*i.e.*, greater than approximately 9 min for this cruise). When feasible, PSVOs will conduct observations during daytime periods when the seismic system is not operating for comparison of sighting rates and behavior with and without airgun operations and between acquisition periods. Based on PSVO observations, the airguns will be powered down or shut down when marine mammals are observed within or about to enter a designated EZ. The EZ is a region in which a possibility exists of adverse effects on animal hearing or other physical effects.

During seismic operations in the western GOA, at least four PSOs (PSVO and/or PSAO) will be based aboard the *Langseth*. L-DEO will appoint the PSOs with NMFS's concurrence. Observations will take place during ongoing daytime operations and nighttime ramp-ups of the airguns. During the majority of seismic operations, two PSVOs will be on duty from the observation tower to monitor marine mammals near the seismic vessel. Use of two simultaneous PSVOs will increase the effectiveness of detecting animals near the source vessel. However, during meal times and bathroom breaks, it is sometimes difficult to have two PSVOs on effort, but at least one PSVO will be on duty. PSVO(s) will be on duty in shifts of duration no longer than 4 hrs.

Two PSVOs will also be on visual watch during all nighttime ramp-ups of the seismic airguns. A third PSAO will monitor the PAM equipment 24 hours a day to detect vocalizing marine mammals present in the action area. In summary, a typical daytime cruise would have scheduled two PSVOs on duty from the observation tower, and a third PSAO on PAM. Other crew will also be instructed to assist in detecting marine mammals and implementing mitigation requirements (if practical). Other crew will also be instructed to assist in detecting marine mammals and implementing mitigation requirements. Before the start of the seismic survey, the crew will be given additional instruction on how to do so.

The *Langseth* is a suitable platform for marine mammal observations. When stationed on the observation platform, the eye level will be approximately 21.5 m (70.5 ft) above sea level, and the PSVO will have a good view around the entire vessel. During daytime, the PSVOs will scan the area around the vessel systematically with reticle binoculars (*e.g.*, 7 x 50 Fujinon), Big-eye binoculars (25 x 150), and with the naked eye. During darkness, night vision devices (NVDs) will be available

(ITT F500 Series Generation 3 binocular-image intensifier or equivalent), when required. Laser range-finding binoculars (Leica LRF 1200 laser rangefinder or equivalent) will be available to assist with distance estimation. Those are useful in training observers to estimate distances visually, but are generally not useful in measuring distances to animals directly; that is done primarily with the reticles in the binoculars.

When marine mammals are detected within or about to enter the designated EZ, the airguns will immediately be powered-down or shut-down if necessary. The PSVO(s) will continue to maintain watch to determine when the animal(s) are outside the EZ by visual confirmation. Airgun operations will not resume until the animal is confirmed to have left the EZ, or if not observed after 15 min for species with shorter dive durations (small odontocetes and pinnipeds) or 30 min for species with longer dive durations (mysticetes and large odontocetes, including sperm, killer, and beaked whales).

Passive Acoustic Monitoring (PAM)

PAM will complement the visual monitoring program, when practicable. Visual monitoring typically is not effective during periods of poor visibility or at night, and even with good visibility, is unable to detect marine mammals when they are below the surface or beyond visual range. Acoustical monitoring can be used in addition to visual observations to improve detection, identification, and localization of cetaceans. The acoustic monitoring will serve to alert visual observers (if on duty) when vocalizing cetaceans are detected. It is only useful when marine mammals call, but it can be effective either by day or by night, and does not depend on good visibility. It will be monitored in real time so that the PSVOs can be advised when cetaceans are detected.

The PAM system consists of hardware (*i.e.*, hydrophones) and software. The "wet end" of the system consists of a towed hydrophone array that is connected to the vessel by a tow cable. The tow cable is 250 m (820.2 ft) long, and the hydrophones are fitted in the last 10 m (32.8 ft) of cable. A depth gauge is attached to the free end of the cable, and the cable is typically towed at depths less than 20 m (65.6 ft). The array will be deployed from a winch located on the back deck. A deck cable will connect from the winch to the main computer laboratory where the acoustic station, signal conditioning, and processing system will be located. The

acoustic signals received by the hydrophones are amplified, digitized, and then processed by the Panguard software. The system can detect marine mammal vocalizations at frequencies up to 250 kHz.

One Protected Species Acoustic Observer (PSAO, an expert bioacoustician in addition to the four PSVOs), with primary responsibility for PAM, will be onboard the *Langseth*. The towed hydrophones will ideally be monitored by the PSAO 24 hours per day while at the seismic survey area during airgun operations, and during most periods when the *Langseth* is under way while the airguns are not operating. However, PAM may not be possible if damage occurs to the array or back-up systems during operations. The primary PAM streamer on the *Langseth* is a digital hydrophone streamer. Should the digital streamer fail, back-up systems should include an analog spare streamer and a hull-mounted hydrophone. One PSAO will monitor the acoustic detection system by listening to the signals from two channels via headphones and/or speakers and watching the real-time spectrographic display for frequency ranges produced by cetaceans. The PSAO monitoring the acoustical data will be on shift for one to six hours at a time. All PSOs are expected to rotate through the PAM position, although the expert PSAO will be on PAM duty more frequently.

When a vocalization is detected while visual observations are in progress, the PSAO will contact the PSVO immediately, to alert him/her to the presence of cetaceans (if they have not already been seen), and to allow a power-down or shut-down to be initiated, if required. When bearings (primary and mirror-image) to calling cetacean(s) are determined, the bearings will be related to the PSVO(s) to help him/her sight the calling animal. The information regarding the call will be entered into a database. Data entry will include an acoustic encounter identification number, whether it was linked with a visual sighting, date, time when first and last heard and whenever any additional information was recorded, position and water depth when first detected, bearing if determinable, species or species group (*e.g.*, unidentified dolphin, sperm whale), types and nature of sounds heard (*e.g.*, clicks, continuous, sporadic, whistles, creaks, burst pulses, strength of signal, *etc.*), and any other notable information. The acoustic detection can also be recorded for further analysis.

PSVO Data and Documentation

PSVOs will record data to estimate the numbers of marine mammals exposed to various received sound levels and to document apparent disturbance reactions or lack thereof. Data will be used to estimate numbers of animals potentially "taken" by harassment (as defined in the MMPA). They will also provide information needed to order a power-down or shut-down of the airguns when a marine mammal is within or near the EZ. Observations will also be made during daytime periods when the *Langseth* is under way without seismic operations. In addition to transits to, from, and through the study area, there will also be opportunities to collect baseline biological data during the deployment and recovery of OBSs.

When a sighting is made, the following information about the sighting will be recorded:

1. 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 behavioral pace.

2. Time, location, heading, speed, activity of the vessel, sea state, visibility, and sun glare.

The data listed under (2) will 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.

All observations and power-downs or shut-downs will be recorded in a standardized format. Data will be entered into an electronic database. The accuracy of the data entry will be verified by computerized data validity checks as the data are entered and by subsequent manual checking of the database. These procedures will allow initial summaries of data to be prepared during and shortly after the field program, and will facilitate transfer of the data to statistical, graphical, and other programs for further processing and archiving.

Results from the vessel-based observations will provide:

1. The basis for real-time mitigation (airgun power-down or shut-down).

2. Information needed to estimate the number of marine mammals potentially taken by harassment, which must be reported to NMFS.

3. Data on the occurrence, distribution, and activities of marine mammals in the area where the seismic study is conducted.

4. Information to compare the distance and distribution of marine mammals relative to the source vessel at times with and without seismic activity.

5. Data on the behavior and movement patterns of marine mammals seen at times with and without seismic activity.

L-DEO will submit a report to NMFS and NSF within 90 days after the end of the cruise. The report will describe the operations that were conducted and sightings of marine mammals near the operations. The report will provide full documentation of methods, results, and interpretation pertaining to all monitoring. The 90-day report will summarize the dates and locations of seismic operations, and all marine mammal sightings (dates, times, locations, activities, associated seismic survey activities). The report will also include estimates of the number and nature of exposures that could result in "takes" of marine mammals by harassment or in other ways.

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by this IHA, such as an injury (Level A harassment), serious injury or mortality (e.g., ship-strike, gear interaction, and/or entanglement), L-DEO will immediately cease the specified activities and immediately report the incident to the Chief of the Permits, Conservation, and Education Division, Office of Protected Resources, NMFS at 301-427-8401 and/or by e-mail to Michael.Payne@noaa.gov and Howard.Goldstein@noaa.gov, and the Alaska Regional Stranding Coordinators (Aleria.Jensen@noaa.gov and Barbara.Mahoney@noaa.gov). The report must include the following information:

- Time, date, and location (latitude/longitude) of the incident;
 - Name and type of vessel involved;
 - 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 all marine mammal observations in the 24 hours preceding the incident;
 - Species identification or description of the animal(s) involved;
 - Fate of the animal(s); and
 - Photographs or video footage of the animal(s) (if equipment is available).
- Activities shall not resume until NMFS is able to review the circumstances of

the prohibited take. NMFS shall work with L-DEO to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. L-DEO may not resume their activities until notified by NMFS via letter or e-mail, or telephone.

In the event that L-DEO 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), L-DEO will immediately report the incident to the Chief of the Permits, Conservation, and Education Division, Office of Protected Resources, NMFS, at 301-427-8401, and/or by e-mail to Michael.Payne@noaa.gov and Howard.Goldstein@noaa.gov, and the NMFS Alaska Stranding Hotline (1-877-925-7773) and/or by e-mail to the Alaska Regional Stranding Coordinators (Aleria.Jensen@noaa.gov and Barbara.Mahoney@noaa.gov). The report must include the same information identified in the paragraph above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with L-DEO to determine whether modifications in the activities are appropriate.

In the event that L-DEO 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 the IHA (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), L-DEO will report the incident to the Chief of the Permits, Conservation, and Education Division, Office of Protected Resources, NMFS, at 301-427-8401, and/or by e-mail to Michael.Payne@noaa.gov and Howard.Goldstein@noaa.gov, and the NMFS Alaska Stranding Hotline (1-877-925-7773), and/or by e-mail to the Alaska Regional Stranding Coordinators (Aleria.Jensen@noaa.gov and Barbara.Mahoney@noaa.gov), within 24 hours of discovery. L-DEO will provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network.

Estimated Take by Incidental Harassment

Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as:

any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine

mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment].

Only take by Level B harassment is anticipated and authorized as a result of the marine seismic survey in the western GOA. Acoustic stimuli (i.e., increased underwater sound) generated during the operation of the seismic airgun array may have the potential to cause marine mammals in the survey area to be exposed to sounds at or greater than 160 dB or cause temporary, short-term changes in behavior. There is no evidence that the planned activities could result in injury, serious injury, or mortality within the specified geographic area for which NMFS has issued the IHA. Take by injury, serious injury, or mortality is thus neither anticipated nor authorized. NMFS has determined that the required mitigation and monitoring measures will minimize any potential risk for injury, serious injury, or mortality.

The following sections describe L-DEO's methods to estimate take by incidental harassment and present the applicant's estimates of the numbers of marine mammals that could be affected during the seismic program. The estimates are based on a consideration of the number of marine mammals that could be disturbed appreciably by operations with the 36 airgun array to be used during approximately 2,553 km of survey lines in the western GOA.

L-DEO assumes that, during simultaneous operations of the airgun array and the other sources, any marine mammals close enough to be affected by the MBES and SBP would already be affected by the airguns. However, whether or not the airguns are operating simultaneously with the other sources, marine mammals are expected to exhibit no more than short-term and inconsequential responses to the MBES and SBP given their characteristics (e.g., narrow, downward-directed beam) and other considerations described previously. Such reactions are not considered to constitute "taking" (NMFS, 2001). Therefore, L-DEO provides no additional allowance for animals that could be affected by sound sources other than airguns.

There are several sources of systematic data on the numbers and distributions of marine mammals in the coastal and nearshore areas of the GOA, but there are fewer data for offshore areas. Zerbini *et al.* (2003, 2006, 2007) conducted vessel-based surveys in the northern and western GOA from the Kenai Peninsula to the central Aleutian Islands during July to August 2001 to

2003. These surveys included all of the coastal and nearshore areas of the current study area. Killer whales were the principal target of the surveys, but the abundance and distribution of fin, humpback, and minke whales were also reported. Waite (2003) conducted vessel-based surveys in the northern and western GOA from Prince William Sound to approximately 160° West off the Alaska Peninsula during June 26 to July 15, 2003 (Waite, 2003); cetaceans recorded included small odontocetes, beaked whales, and mysticetes. The eastern part of the surveys by Zerbini *et al.* were confined to waters less than 1,000 m deep with most effort in depths less than 100 m, and all of Waite's survey was confined to waters less than 1,000 m deep with most effort in depths 100 to 1,000 m.

Dahlheim *et al.* (2000) conducted aerial surveys of the nearshore waters from Bristol Bay to Dixon Entrance and reported densities for harbor porpoises; the southern Alaska Peninsula and Kodiak Island were surveyed during July 6 to August 9, 1992. Dahlheim and Towell (1994) conducted vessel-based surveys of Pacific white-sided dolphins in the inland waterways of Southeast Alaska during April to May, June or July, and September to early October of 1991 to 1993. In a report on a seismic cruise in southeast Alaska from Dixon Entrance to Kodiak Island during August to September, 2004, MacLean and Koski (2005) included density estimates of cetaceans and pinnipeds for each of three depth ranges (<100 m, 100 to 1,000 m, and >1,000 m) during non-seismic periods. Hauser and Holst (2009) reported density estimates during non-seismic periods for all marine mammals sighted during a September to early October seismic cruise in southeast Alaska for each of the same three depth ranges as MacLean and Koski (2005). Rone *et al.* (2010) conducted surveys of the nearshore and offshore GOA during April, 2009 and provided estimates of densities of humpback and fin whales and provided maps with sightings of other species.

Most surveys for pinnipeds in Alaska waters have estimated the number of animals at haul-out sites, not in the water (*e.g.*, Loughlin, 1994; Sease *et al.*, 2001; Withrow and Cesarone, 2002; Sease and York, 2003). The Department of the Navy (DON, 2009) estimated monthly in-water densities of several species of pinnipeds in the offshore GOA based on shore counts and biological (mostly breeding) information. To our knowledge, the only direct information available on at-sea densities of pinnipeds in and near the survey area was provided by MacLean

and Koski (2005) and Hauser and Holst (2009).

Table 2 (Table 5 of the EA) gives the estimated average (best) and maximum densities in each of three depth ranges for each species of marine mammals expected to occur in the waters of the central and western GOA. L-DEO used the densities reported by MacLean and Koski (2005) and Hauser and Holst (2009), and those calculated from effort and sightings in Dahlheim and Towell (1994), Waite (2003), and Rone *et al.* (2010) have been corrected for both trackline detection probability and availability bias using correction factors from Dahlheim *et al.* (2000) and Barlow and Forney (2007). Trackline detection probability bias is associated with diminishing sightability with increasing lateral distance from the trackline ($f[0]$). Availability bias refers to the fact that there is less-than-100% probability of sighting an animal that is present along the survey trackline $f(0)$, and it is measured by $g(0)$.

Table 2 (Table 5 of the EA) incorporates the densities from the aforementioned studies plus those from the following surveys. L-DEO included the killer whale and mysticete densities from the easternmost blocks (1 to 10) surveyed by Zerbini *et al.* (2006, 2007), and the harbor porpoise densities for the Kodiak and Alaska Peninsula survey areas from Table 3 of Dahlheim *et al.*, (2000) and the Pacific white-sided dolphin data from only the June or July surveys of Dahlheim and Towell (1994). Maps of effort and sightings in Waite (2003) and effort in Zerbini *et al.* (2006, 2007) were used to roughly allocate effort and sightings or effort between water depths less than 100 m and 100 to 1,000 m. Offshore effort and maps of sightings in the offshore stratum of Rone *et al.* (2010) were used to calculate densities for water depths greater than 1,000 m. Densities of Steller sea lion, northern fur seals, and northern elephant seals in water depths greater than 1,000 m were taken from DON (2009; Appendix E, Table 5) for July, and those in water depths less than 1,000 m are from MacLean and Koski (2005) and Hauser and Holst (2009).

There is some uncertainty about the representativeness of the data and the assumptions used in the calculations below for three main reasons:

(1) The timing of most of the survey effort (17,806 km [9,614.5 nmi]) (*i.e.*, one of the surveys of Dahlheim and Towell [1994] and the surveys of Dahlheim *et al.* (2000), Waite [2003], MacLean and Koski (2005), and Zerbini *et al.* [2006, 2007]) overlaps the timing of the survey, but some survey effort (4,693 km [2,534 nmi])—(*i.e.*, two of the

surveys of Dahlheim and Towell [1994] and the surveys of Rone *et al.* [2010] and Hauser and Holst [2009]), was earlier (April or June) or later (September to October) than the July to August survey;

(2) Surveys by MacLean and Koski (2005), Hauser and Holst (2009), and Dahlheim and Towell (1994) were conducted primarily in southeast Alaska (east of the study area); and

(3) Only the MacLean and Koski (2005), Hauser and Holst (2009), and Rone *et al.* (2010) surveys included depths greater than 1,000 m, whereas approximately 53% of the line-km are in water depths greater than 1,000 m. However, the densities are based on a considerable survey effort (22,500 km [12,149 nmi], including 17,806 km in months that overlap the survey period), and the approach used here is believed to be the best available approach.

Also, to provide some allowance for these uncertainties, "maximum estimates" as well as "best estimates" of the densities present and numbers potentially affected have been derived. Best estimates of density are effort-weighted mean densities from all previous surveys, whereas maximum estimates of density come from the individual survey that provided the highest density. For pinnipeds in deep water where only one density was available (DON, 2009), that density was used as the best estimate and the maximum is 1.5 times the best estimate.

For one species, the Dall's porpoise, density estimates in the original reports are much higher than densities expected during the survey, because this porpoise is attracted to vessels. L-DEO estimates for Dall's porpoises are from vessel-based surveys without seismic activity; they are overestimates possibly by a factor of 5 times, given the tendency of this species to approach vessels (Turnock and Quinn, 1991). Noise from the airgun array during the survey is expected to at least reduce and possibly eliminate the tendency of this porpoise to approach the vessel. Dall's porpoises are tolerant of small airgun sources (MacLean and Koski, 2005) and tolerated higher sound levels than other species during a large-array survey (Bain and Williams, 2006); however, they did respond to that and another large airgun array by moving away (Calambokidis and Osmeck, 1998; Bain and Williams, 2006). Because of the probable overestimates, the best and maximum estimates for Dall's porpoises shown in Table 2 (Table 3 of the IHA application) are one-quarter of the reported densities. In fact, actual densities are probably slightly lower than that.

L-DEO's estimates of exposures to various sound levels assume that the

surveys will be fully completed including the contingency line; in fact, the ensonified areas calculated using the planned number of line-km have been increased by 25% to accommodate lines that may need to be repeated, equipment testing, *etc.* As is typical during offshore ship surveys, inclement weather and equipment malfunctions are likely to cause delays and may limit the number of useful line-kilometers of seismic operations that can be undertaken. Furthermore, any marine mammal sightings within or near the designated EZs will result in the power-down or shut-down of seismic operations as a mitigation measure. Thus, the following estimates of the numbers of marine mammals potentially exposed to sound levels of 160 dB re 1 μ Pa (rms) are precautionary and probably overestimate the actual numbers of marine mammals that might be involved. These estimates also assume that there will be no weather, equipment, or mitigation delays, which is highly unlikely.

L-DEO estimated the number of different individuals that may be exposed to airgun sounds with received levels greater than or equal to 160 dB re 1 μ Pa (rms) on one or more occasions by considering the total marine area that would be within the 160 dB radius around the operating airgun array on at least one occasion and the expected density of marine mammals. The number of possible exposures (including repeated exposures of the same individuals) can be estimated by considering the total marine area that would be within the 160 dB radius around the operating airguns, including areas of overlap. In the survey, the seismic lines are widely spaced in the survey area, so few individual marine mammals would be exposed more than once during the survey. The area including overlap is only 1.3 times the area excluding overlap. Thus, few individual marine mammals would be exposed more than once during the survey. Moreover, it is unlikely that a particular animal would stay in the area during the entire survey.

For each depth stratum, the number of different individuals potentially exposed to received levels greater than or equal to 160 re 1 μ Pa (rms) was calculated by multiplying:

(1) The expected species density, either “mean” (*i.e.*, best estimate) or “maximum”, times

(2) The anticipated area to be ensonified to that level during airgun operations excluding overlap.

The area expected to be ensonified was determined by entering the planned survey lines into a MapInfo Geographic Information System (GIS), using the GIS to identify the relevant areas by “drawing” the applicable 160 dB isopleth (see Table 1 of the IHA application) around each seismic line, and then calculating the total area within the isopleths. Areas of overlap (because of lines being closer together than the 160 dB radius) were limited and included only once when estimating the number of individuals exposed.

Applying the approach described above, approximately 49,679 km² (14,841.1 nmi²) (approximately 62,099 km² [18,105.2 nmi²] including the 25% contingency) would be within the 160 dB isopleth on one or more occasions during the survey. For less than 100 m depth, the areas would be 32,451 km² (9,487.4 nmi²) (40,564 km² [11,826.6 nmi²] including the 25% contingency). For 100 to 1,000 m, the areas would be 8,612 km² (2,510.9 nmi²) (10,765 km² [3,138.6 nmi²] including the 25% contingency). For greater than 1,000 m depth, the areas would be 8,616 km² (2,512 nmi²) (10,770 km² [3,140 nmi²] including the 25% contingency). Because this approach does not allow for turnover in the marine mammal populations in the study area during the course of the survey, the actual number of individuals exposed could be underestimated in some cases. However, the conservative (*i.e.*, probably overestimated) densities used to calculate the numbers exposed may offset this. In addition, the approach assumes that no cetaceans will move away from or toward the trackline as the *Langseth* approaches in response to increasing sound levels prior to the time the levels reach 160 dB, which will result in overestimates for those species known to avoid seismic vessels.

Table 3 (Table 4 of the IHA application) shows the best and maximum estimates of the number of different individual marine mammals that potentially could be exposed to greater than or equal to 160 dB re 1 μ Pa (rms) during the seismic survey if no animals moved away from the survey vessel. The requested take authorization, given in Table 3 (the far right column of Table 4 of the IHA application), is based on the best estimates rather than the maximum estimates of the numbers exposed, because there was little uncertainty associated with the method of estimating densities. For cetacean

species not listed under the ESA that could occur in the study area but were not sighted in the surveys from which density estimates were calculated—gray whale (<0.1%), Risso’s dolphin (<0.1%), short-finned pilot whale (NA), and Stejneger’s beaked whale (NA)—the average group size has been used to request take authorization. For ESA-listed cetacean species unlikely to be encountered during the study (North Pacific right, sei, blue, and beluga whales), the requested takes are zero.

The “best estimate” of the number of individual cetaceans that could be exposed to seismic sounds with received levels greater than or equal to 160 dB re 1 μ Pa (rms) during the survey is 4,392 (see Table 4 of the IHA application) for all three depth ranges combined. That total includes 1,824 humpback whales, 60 minke whales, 598 fin whales, 5 sperm whales, 12 Cuvier’s beaked whales, 4 Baird’s beaked whales, 127 Pacific white-sided dolphins, 415 killer whales, and 180 harbor porpoises which would represent 8.8%, 0.2%, 3.7%, 0.1%, 0.1%, 0.1%, 0.1%, 4.9%, and 0.1% of the regional populations, respectively. After humpback whales, Dall’s porpoises are expected to be the most common species in the study area; the best estimate of the number of Dall’s porpoises that could be exposed is 1,167 or about 0.1% of the regional population. This may be a slight overestimate because the estimated densities are slight overestimates. Estimates for other species are lower. The “maximum estimates” total 12,625 cetaceans for the three depth ranges combined.

“Best estimates” of 270 Steller sea lions and 218 harbor seals could be exposed to airgun sounds with received levels greater than or equal to 160 dB re 1 μ Pa (rms). These estimates represent 0.3% of the Steller sea lion regional population and less than 0.1% of the harbor seal regional population. The estimated numbers of pinnipeds that could be exposed to received levels greater than or equal to 160 dB re 1 μ Pa (rms) are probably overestimates of the actual numbers that will be affected. Northern fur seals and northern elephant seals are at their rookeries in August. No take has been requested for North Pacific right, sei, and blue whales, beluga whales, Northern elephant seals, Northern fur seals, or California sea lions because they are unlikely to be encountered in the study area.

TABLE 3—ESTIMATES OF THE POSSIBLE NUMBERS OF MARINE MAMMALS EXPOSED TO DIFFERENT SOUND LEVELS ≥160 DB DURING L-DEO'S SEISMIC SURVEY IN THE WESTERN GOA DURING JUNE TO AUGUST, 2011

Species	Estimated number of individuals exposed to sound levels ≥ 160 dB re 1 μPa (best ¹)	Estimated number of individuals exposed to sound levels ≥ 160 dB re 1 μPa (maximum ¹)	Take authorized	Approximate percent of regional population ² (best)
Mysticetes:				
North Pacific right whale	0	0	1	0.5
Gray whale	0	0	³ 6	<0.1
Humpback whale	1,824	3,458	1,824	8.8
Minke whale	60	308	60	0.2
Sei whale	0	0	1	<0.1
Fin whale	598	2,166	598	3.7
Blue whale	0	0	1	<0.1
Odontocetes:				
Sperm whale	5	21	5	<0.1
Cuvier's beaked whale	12	19	12	0.1
Baird's beaked whale	4	6	4	0.1
Stejneger's beaked whale	0	0	³ 15	NA
Beluga whale	0	0	0	0
Pacific white-sided dolphin	127	348	127	<0.1
Risso's dolphin	0	0	³ 33	<0.1
Killer whale	415	2,292	415	4.9
Short-finned pilot whale	0	0	³ 50	NA
Harbor porpoise	180	2,050	180	0.1
Dall's porpoise	1,167	1,957	1,167	0.1
Pinnipeds:				
Northern fur seal	0	0	0	0
Steller sea lion	270	365	270	0.3
California sea lion	NA	NA	0	NA
Harbor seal	218	299	218	0.1
Northern elephant seal	0	0	0	0

¹ Best and maximum estimates are based on densities from Table 1 (Table 4 of the IHA application) and ensonified areas (including 25% contingency) for 160 dB of 40,564 km², 10,765 km², and 10,770 km² for <100 m, 100 to 1,000 m, and >1,000 m depth ranges, respectively.

² Regional population size estimates are from Table 1 (see Table 2 of the IHA application); NA means not available.

³ Requested takes for species not sighted in surveys from which densities were derived are based on group size.

Encouraging and Coordinating Research

L-DEO and NSF will coordinate the planned marine mammal monitoring program associated with the seismic survey in the western GOA with other parties that may have an interest in the area and/or be conducting marine mammal studies in the same region during the seismic survey. L-DEO and NSF will coordinate with applicable U.S. Federal, State, and Borough agencies, and will comply with their requirements. Actions of this type that are underway include (but are not limited to) the following:

- Coordination with the Alaska Department of Fish and Game concerning fisheries issues in state waters.
- Contact Alaska Native Harbor Seal Commission, the Aleut Marine Mammal Commission, and the Alaska Sea Otter and Steller Sea Lion Commission with regard to potential concerns about interactions with fisheries and subsistence hunting.

- Contact USFWS regarding concerns about possible impacts on sea otters and critical habitat (for ESA).

- Contact USFWS avian biologists (Kathy Kuletz and Tim Bowman) regarding potential interaction with seabirds (for ESA).

- Contact Mike Holley, U.S. Army Corps of Engineers (ACOE), to confirm that no permits will be required by the ACOE for the survey.

- A Coastal Project Questionnaire and Certification statement will be submitted with a copy of the EA to the State of Alaska to confirm that the project is in compliance with state and local Coastal Management Programs.

- Contact the National Weather Service (NWS; Jack Endicott) about the survey with regard to the location of NWS buoys in the survey area and the tracklines.

- Contact the logistics coordinator of the local commercial fish processor, to ensure that there will be minimal interference with the local salmon fishery.

Negligible Impact and Small Numbers Analysis and Determination

NMFS has defined “negligible impact” in 50 CFR 216.103 as “* * * an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.” In making a negligible impact determination, NMFS evaluated factors such as:

- (1) The number of anticipated injuries, serious injuries, or mortalities;
- (2) The number, nature, intensity, and duration of Level B harassment (all relatively limited);
- (3) The context in which the takes occur (*i.e.*, impacts to areas of significance, impacts to local populations, and cumulative impacts when taking into account successive/contemporaneous actions when added to baseline data);
- (4) The status of stock or species of marine mammals (*i.e.*, depleted, not depleted, decreasing, increasing, stable,

and impact relative to the size of the population);

(5) Impacts on habitat affecting rates of recruitment or survival; and

(6) The effectiveness of monitoring and mitigation measures (*i.e.*, the manner and degree in which the measure is likely to reduce adverse impacts to marine mammals, the likely effectiveness of the measures, and the practicability of implementation).

For reasons stated previously in this document, and in the proposed notice of an IHA (76 FR 26255, May 6, 2011), the specified activities associated with the marine seismic survey are not likely to cause PTS, or other non-auditory injury, serious injury, or death because:

(1) The likelihood that, given sufficient notice through relatively slow ship speed, marine mammals are expected to move away from a noise source that is annoying prior to its becoming potentially injurious;

(2) The potential for temporary or permanent hearing impairment is relatively low and would likely be avoided through the incorporation of the required monitoring and mitigation measures (described above);

(3) The fact that pinnipeds would have to closer than 460 m (1,509.2 ft) in deep water, 615 m (2,017.7 ft) in intermediate water, and 770 m (2,526.3 ft) in shallow water when the 36 airgun array and 12 m (39.4 ft) in deep water, 18 m (59.1 ft) in intermediate water, and 150 m (492.1 ft) in shallow water when the single airgun is in use at 6 to 12 m (19.7 to 39.4 ft) tow depth from the vessel to be exposed to levels of sound believed to have even a minimal chance of causing PTS;

(4) The fact that cetaceans would have to be closer than 1,100 m (3,608.9 ft) in deep water, 1,810 m (5,938.3 ft) in intermediate water, and 2,520 m (8,267.7 ft) in shallow water when the 36 airgun array is in use at 12 m tow depth, and 40 m (131.2 ft) in deep water, 60 m (196.9 ft) in intermediate water, and 296 m (971.1 ft) in shallow water when the single airgun is in use at 6 to 12 m tow depth from the vessel to be exposed to levels of sound believed to have even a minimal chance of causing PTS; and

(5) The likelihood that marine mammal detection ability by trained PSOs is high at close proximity to the vessel.

No injuries, serious injuries, or mortalities are anticipated to occur as a result of L-DEO's planned marine seismic survey, and none are authorized by NMFS. Only short-term, behavioral disturbance is anticipated to occur due to the brief and sporadic duration of the survey activities. Table 3 in this

document outlines the number of Level B harassment takes that are anticipated as a result of the activities. Due to the nature, degree, and context of Level B (behavioral) harassment anticipated and described (see Potential Effects on Marine Mammals section above) in this notice, the activity is not expected to impact rates of recruitment or survival for any affected species or stock.

Many animals perform vital functions, such as feeding, resting, traveling, and socializing, on a diel cycle (*i.e.*, 24 hr cycle). Behavioral reactions to noise exposure (such as disruption of critical life functions, displacement, or avoidance of important habitat) are more likely to be significant if they last more than one diel cycle or recur on subsequent days (Southall *et al.*, 2007). While seismic operations are anticipated to occur on consecutive days, the entire duration of the survey is not expected to last more than 37 days and the *Langseth* will be continuously moving along planned tracklines. Seismic operations in the study area will be carried out for approximately 16 days. Therefore, the seismic survey will be increasing sound levels in the marine environment surrounding the vessel for several weeks in the study area. Of the 23 marine mammal species under NMFS jurisdiction that are known to or likely to occur in the study area, eight are listed as threatened or endangered under the ESA: North Pacific right, humpback, sei, fin, blue, sperm, and Cook Inlet DPS beluga whales, and Steller sea lions. These species are also considered depleted under the MMPA. The affected humpback whale and Eastern stock of Steller sea lion populations have been increasing in recent years. There is generally insufficient data to determine population trends for the other depleted species in the study area. To protect these animals (and other marine mammals in the study area), L-DEO must cease or reduce airgun operations if animals enter designated zones. If a North Pacific right, sei, blue, and/or beluga whale is visually sighted, the airgun array will be shut-down regardless of the distance of the animal(s) to the sound source. The airgun array will not resume firing after the last documented whale visual sighting. Concentrations of humpback, fin, and/or killer whales will be avoided, if possible, and the array will be powered-down if necessary. For purposes of this IHA, a concentration or group of whales will consist of when three or more individuals are visually sighted that do not appear to be

traveling (*e.g.*, feeding, socializing, *etc.*). No injury, serious injury, or mortality is expected to occur and due to the nature, degree, and context of the Level B harassment anticipated, the activity is not expected to impact rates of recruitment or survival.

As mentioned previously, NMFS estimates that 19 species of marine mammals under its jurisdiction could be potentially affected by Level B harassment over the course of the IHA. For each species, these numbers are small (each, one percent or less, except for humpback [8.8%], fin [3.7%], and killer [4.9%] whales) relative to the regional population size. The population estimates for the marine mammal species that may be taken by harassment, were provided in Table 1 of this document.

NMFS's practice has been to apply the 160 dB re 1 μ Pa (rms) received level threshold for underwater impulse sound levels to determine whether take by Level B harassment occurs. Southall *et al.* (2007) provide a severity scale for ranking observed behavioral responses of both free-ranging marine mammals and laboratory subjects to various types of anthropogenic sound (see Table 4 in Southall *et al.* [2007]).

NMFS has determined, provided that the aforementioned mitigation and monitoring measures are implemented, that the impact of conducting a marine geophysical survey in the western GOA, June to August, 2011, may result, at worst, in a temporary modification in behavior and/or low-level physiological effects (Level B harassment) of small numbers of certain species of marine mammals. See Table 3 (above) for the authorized take numbers of cetaceans and pinnipeds.

While behavioral modifications, including temporarily vacating the area during the operation of the airgun(s), may be made by these species to avoid the resultant acoustic disturbance, the availability of alternate areas within these areas and the short and sporadic duration of the research activities, have led NMFS to determine that this action will have a negligible impact on the species in the specified geographic region.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the mitigation and monitoring measures, NMFS finds that L-DEO's planned research activities, will result in the incidental take of small numbers of marine mammals, by Level B harassment only, and that the total taking from the marine seismic survey

will have a negligible impact on the affected species or stocks of marine mammals; and that impacts to affected species or stocks of marine mammals have been mitigated to the lowest level practicable.

Impact on Availability of Affected Species or Stock for Taking for Subsistence Uses

Marine mammals are hunted legally in Alaska waters by coastal Alaska Natives. In the GOA, the marine mammals under NMFS jurisdiction that are hunted are Steller sea lions and harbor seals. In 2007, a total of 1,428 harbor seals were taken by Alaska Natives (Wolfe *et al.*, 2009); 654 were taken from the southeast Alaska stock, 686 were taken from the GOA stock, and 88 were taken from the Bering Sea stock (Allen and Angliss, 2010). In 2008, 1,462 harbor seals were taken by Alaska Natives (Wolfe *et al.*, 2009). Most harbor seals were taken by communities in southeast Alaska (594), the North Pacific rim (277), Kodiak Island (192), and the South Alaska Peninsula (125; Wolfe *et al.*, 2009). The seasonal distribution of harbor seal takes by Alaska Natives typically shows two distinct hunting peaks—one during spring and one during all and early winter; however, this pattern was hardly noticeable in 2008 (Wolfe *et al.*, 2009). In general the months of highest harvest are September through December, with a smaller peak in March. Harvests are traditionally low from May through August, when harbor seals are raising pups and molting.

In 2007, a total of 217 Steller sea lions were taken by Alaska Natives, excluding St. Paul Island (Wolfe *et al.*, 2009); 211 were from the western stock and 6 were from the eastern stock (Allen and Angliss, 2010). In 2008, 146 sea lions were taken by Alaska Natives (Wolfe *et al.*, 2009). Most sea lions were taken by communities in the Aleutian Islands (48) and the Pribilof Islands (36); 25 were taken in the North Pacific Rim, 19 in the Kodiak Island region, 10 in southeast Alaska, and 9 along the South Alaska Peninsula (Wolfe *et al.*, 2009).

The project could potentially impact the availability of marine mammals for harvest in a very small area immediately around the *Langseth*, and for a very short time period during seismic activities. Considering the limited time and locations for the planned seismic survey, the project is not expected to have any significant impacts to the availability of Steller sea lions and harbor seals for subsistence harvest.

Section 101(a)(5)(D) also requires NMFS to determine that the authorization will not have an unmitigable adverse effect on the

availability of marine mammal species or stocks for subsistence use. Based on the information above, subsistence uses of marine mammals in the study area (waters of the western GOA) that implicate MMPA section 101(a)(5)(D) are not expected to be impacted.

Endangered Species Act

Of the species of marine mammals that may occur in the survey area, several are listed as endangered under the ESA, including the North Pacific right, humpback, sei, fin, blue, and sperm whales, as well as the Cook Inlet DPS of beluga whales and the western stock of Steller sea lions. The eastern stock of Steller sea lions is listed as threatened. Critical habitat for the North Pacific right whale and Steller sea lion is also found within the GOA. Under section 7 of the ESA, NSF has initiated formal consultation with the NMFS, Office of Protected Resources, Endangered Species Division, on this seismic survey. NMFS's Office of Protected Resources, Permits, Conservation and Education Division, has initiated formal consultation under section 7 of the ESA with NMFS's Office of Protected Resources, Endangered Species Division, to obtain a Biological Opinion (BiOp) evaluating the effects of issuing the IHA on threatened and endangered marine mammals and, if appropriate, authorizing incidental take. In June 2011, NMFS issued a BiOp and concluded that the action and issuance of the IHA are not likely to jeopardize the continued existence of North Pacific right, humpback, sei, fin, blue, and sperm whales, Cook Inlet DPS of beluga whales, and Steller sea lions. The BiOp also concluded that designated critical habitat for these species would not be affected by the survey. NSF and L-DEO must comply with the Relevant Terms and Conditions of the Incidental Take Statement (ITS) corresponding to NMFS's BiOp issued to NSF, L-DEO, and NMFS's Office of Protected Resources. L-DEO must also comply with the mitigation and monitoring requirements included in the IHA in order to be exempt under the ITS in the BiOp from the prohibition on take of listed endangered marine mammal species otherwise prohibited by section 9 of the ESA.

National Environmental Policy Act (NEPA)

To meet NMFS's NEPA (42 U.S.C. 4321 *et seq.*) requirements for the issuance of an IHA to L-DEO, NSF prepared an "Environmental Assessment on a Marine Seismic Survey in the Gulf of Alaska, July–August 2011," which incorporated an

"Environmental Assessment of a Marine Geophysical Survey by the R/V *Marcus G. Langseth* in the western Gulf of Alaska, July–August 2011," prepared by LGL. NMFS conducted an independent review and evaluation of the document for sufficiency and compliance with the Council on Environmental Quality regulations and NOAA Administrative Order (NAO) 216–6 § 5.09(d) and determined that issuance of the IHA is not likely to result in significant impacts on the human environment. Consequently, NMFS has adopted NSF's EA and prepared a Finding of No Significant Impact (FONSI) for the issuance of the IHA. An Environmental Impact Statement is not required and will not be prepared for the action.

Authorization

NMFS has issued an IHA to L-DEO for the take, by Level B harassment, of small numbers of marine mammals incidental to conducting a marine geophysical survey in the western GOA, June to August, 2011, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: June 24, 2011.

James H. Lecky,

*Director, Office of Protected Resources,
National Marine Fisheries Service.*

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DEPARTMENT OF COMMERCE

National Telecommunications and Information Administration

Commerce Spectrum Management Advisory Committee Meeting

AGENCY: National Telecommunications and Information Administration, U.S. Department of Commerce.

ACTION: Notice of open meeting.

SUMMARY: This notice announces a public meeting of the Commerce Spectrum Management Advisory Committee (Committee). The Committee provides advice to the Assistant Secretary of Commerce for Communications and Information on spectrum management policy matters.

DATES: The meeting will be held on July 27, 2011, from 1 p.m. to 4 p.m., Mountain Daylight Savings Time.

ADDRESSES: The meeting will be held at the Institute for Telecommunication Sciences, Conference Room 1107, 325 Broadway, Boulder, Colorado. Public comments may be mailed to Commerce Spectrum Management Advisory Committee, National