FINDING OF NO SIGNIFICANT IMPACT FOR THE ISSUANCE OF AN INCIDENTAL HARASSMENT AUTHORIZATION TO LAMONT-DOHERTY EARTH OBSERVATORY TO TAKE MARINE MAMMALS INCIDENTAL TO CONDUCTING A MARINE GEOPHYSICAL SURVEY IN THE NORTHWEST PACIFIC OCEAN, MARCH - MAY, 2012

NATIONAL MARINE FISHERIES SERVICE

BACKGROUND

The National Marine Fisheries Service (NMFS) received an application from Lamont-Doherty Earth Observatory (L-DEO), with funding from the National Science Foundation (NSF), requesting an incidental harassment authorization (IHA) to take small numbers of marine mammals, by Level B harassment, incidental to its 2012 marine geophysical survey in the northwest Pacific Ocean. Pursuant to the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1631 *et seq*.), authorization for incidental taking shall be granted provided that NMFS: (1) determines that the action will have a negligible impact on the affected species or stocks of marine mammals; (2) finds the action will not have an unmitigable adverse impact on the availability of those species or stocks of marine mammals for taking for subsistence uses; and (3) sets forth the permissible methods of taking, other means of affecting the least practicable impact on affected species and stocks and their habitat, and requirements pertaining to the mitigation, monitoring, and reporting of such takes.

In accordance with the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq*.), NMFS has completed an Environmental Assessment (EA) titled "*Issuance of an Incidental Harassment Authorization to the Lamont-Doherty Earth Observatory to Take Marine Mammals by Harassment Incidental to a Marine Geophysical Survey in the Northwest Pacific Ocean, March through May, 2012*."

This EA incorporates NSF's Final National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq*.) Analysis Pursuant To Executive Order (E.O.) 12114 (NSF, 2012) (hereinafter, the NSF NEPA Analysis) and an associated report prepared by LGL Limited, environmental research associates (LGL) for NSF, titled "*Environmental Assessment of a Marine Geophysical Survey by the R/V Marcus G. Langseth on the Shatsky Rise in the Northwest Pacific Ocean, March–April 2012*," (LGL, 2012), (hereinafter, the NSF/L-DEO Report) by reference pursuant to 40 CFR 1502.21 and NOAA Administrative Order (NAO) 216-6 § 5.09(d).

NMFS has prepared this FONSI to evaluate the significance of the impacts of NMFS' action. It is specific to Alternative 2 in the EA, identified as the Preferred Alternative. Alternative 2 is entitled "Issuance of an IHA with Required Mitigation, Monitoring, and Reporting Measures." Based on NMFS' review of L-DEO's proposed activities and the measures contained in Alternative 2, NMFS has determined that no significant impacts to the human environment would occur from implementing the Preferred Alternative.

ANALYSIS

NAO 216-6 contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality (CEQ) regulations at 40 CFR § 1508.27 state that the significance of an action should be analyzed both in terms of "context" and "intensity." Each criterion listed below this section is relevant to making a finding of no significant impact (FONSI) and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the NAO 216-6 criteria and CEQ's context and intensity criteria. These include:

1) Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in Fishery Management Plans (FMP)?

Response: NMFS does not anticipate that either the proposed research activities or NMFS' action (*i.e.*, issuing an IHA to L-DEO) would cause substantial damage to ocean and coastal habitats. The proposed NMFS action would authorize Level B harassment of marine mammals, incidental to seismic surveys for a short period of time (approximately 7 days of seismic surveys during a research cruise occurring between March 24 through May 7, 2012) in international waters in the northwest Pacific Ocean.

NMFS believes that the proposed seismic survey conducted under the requirements of the IHA would have no more than minimal adverse impacts to fish or invertebrates and their habitats, and would have no potential for population-level impacts to any fish or invertebrate species. These temporary acoustic activities would not affect physical habitat features, such as substrates and water quality. The Magnuson-Stevens Fishery Conservation and Management Act (MSA) governs marine fisheries management in waters within the U.S. Exclusive Economic Zone, and requires federal agencies to consult with NMFS with respect to actions that may adversely impact Essential Fish Habitat (EFH). The proposed seismic survey would occur on the high seas approximately 1,200 kilometers (km) (745.6 miles (mi)) southeast of the east coast of Japan; there would be no potential impact to EFH because none is designated within the action area.

2) Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?

Response: NMFS does not expect either the proposed research activities or NMFS' action (*i.e.*, issuing an IHA to L-DEO that authorizes Level B harassment) to have a substantial impact on biodiversity or ecosystem function within the affected environment.

The EA analyzed the potential for the seismic survey activity to affect other ecosystem features and biodiversity components, including fish, invertebrates, seabirds, and sea turtles. NMFS' evaluation indicates that any direct, indirect or cumulative effects of the action would not result in a substantial impact on biodiversity or ecosystem function. Most effects are considered to be short-term, temporary in nature, and minimal, and would be highly unlikely to affect normal ecosystem function or predator/prey relationships; therefore, there will not be a substantial impact on marine life biodiversity or on the normal function of the high seas marine environment within the area affected by the proposed action.

Although there is a relative lack of knowledge about the potential physical (pathological and physiological) effects of seismic energy on marine fish and invertebrates, the available data suggest that there may be physical impacts on egg, larval, juvenile, and adult stages that are in close proximity to the seismic source. Whereas egg and larval stages are not able to escape such exposures, juveniles and adults most likely would avoid it. In the case of eggs and larvae, it is likely that the numbers adversely affected by such exposure would not significantly change the total number of those succumbing to natural mortality. Limited data regarding physiological impacts on fish and invertebrates indicate that these impacts are short term and are most apparent after exposure at close range. It is possible that zooplankton very close to the source may react to the shock wave caused by airgun operations. The pathological (mortality) zone for fish and invertebrates would be expected to be within a few meters of the seismic source to be used for this survey. Little or no mortality is expected. The proposed seismic program in the northwest Pacific Ocean is predicted to have negligible to low physical effects on the various life stages of fish and invertebrates. Though these effects do not require authorization under an IHA, the effects on these features were considered by NMFS with respect to consideration of effects to marine mammals and their habitats, and NMFS finds that the effects from the survey itself on fish and invertebrates are not anticipated to have a substantial effect on biodiversity and/or ecosystem function within the affected area.

3) Can the proposed action reasonably be expected to have a substantial adverse impact on public health or safety?

Response: NMFS does not expect either the proposed research activities or NMFS' action (*i.e.*, issuing an IHA to L-DEO) to have a substantial adverse impact on public health or safety. The proposed survey activities would occur in the open ocean, 1,200 km (745.6 mi) away from the nearest populated area. The constant monitoring for marine mammals and other marine life during seismic operations effectively eliminates the possibility of any humans being inadvertently exposed to levels of sound that might have adverse effects. Although the conduct of the seismic survey may carry some risk to the personnel involved (*i.e.*, boat or mechanical accidents during surveys), the applicant and those individuals working with the applicant would be required to be adequately trained or supervised in performance of the underlying activity (*i.e.*, the seismic survey) to minimize such risk to personnel. The survey is not expected to have any adverse impacts on traffic and transportation, as this is only a single working sound source vessel that will be at sea for a relatively short period of time over a relatively small geographic area. Also, there is little risk of exposure to hazardous materials or wastes, risk of contracting diseases, or risk of damage from a natural disaster.

4) Can the proposed action reasonably be expected to adversely affect endangered or threatened species, their critical habitat, marine mammals, or other non-target species?

Response: The EA evaluates the affected environment and potential effects of NMFS and L-DEO's actions, indicating that only the acoustic activities have the potential to affect marine mammals. These temporary acoustic activities would not affect physical habitat features, such as substrates and water quality. Additionally, the effects from vessel transit and routine operation of one seismic source vessel would not result in substantial damage to ocean and coastal habitats that might constitute marine mammal habitats. The potential for striking marine mammals and sea turtles is a concern with vessel traffic. The probability of a ship strike resulting in an injury or mortality of an animal has been associated with ship speed; it is highly unlikely that the proposed

seismic survey would result in an injury, serious injury, or mortality to any marine mammal or sea turtle as a result of vessel strike given the R/V *Marcus G. Langseth's* (*Langseth*) slow survey speed.

L-DEO has not requested authorization for take of marine mammals that might occur incidental to vessel ship strike while transiting to and from the survey site. However, the probability of marine mammal interactions occurring during transit to and from the survey area is unlikely due to the Langseth's slow cruising speed which is approximately 11.5 mph (18.5 km/hr; 10 kts) which is generally below the speed at which studies have noted reported increases of marine mammal injury or death (Laist, Knowlton, Mead, Collet, & Podesta, 2001).

NMFS has determined that the proposed seismic survey may result in some Level B harassment (in the form of short-term and localized changes in behavior) of small numbers, relative to the population sizes, of 30 species of marine mammals. In addition to the potential incidental harassment of small numbers of marine mammals not listed under the Endangered Species Act (ESA; 16 U.S.C. 1531 *et seq*.), the seismic surveys may have the potential to adversely affect the following species listed as threatened or endangered species pursuant to the ESA: blue, fin, humpback, sei, north Pacific right, and sperm whales, and the green, loggerhead, hawksbill, olive ridley and leatherback sea turtles.

The following mitigation measures are planned for the survey to minimize adverse effects to protected marine mammal and marine turtle species:

(1) proposed exclusion zones;
(2) power-down procedures;
(3) shut-down procedures;
(4) ramp-up procedures;
(5) visual monitoring by Protected Species Visual Observers (PSVO); and
(6) passive acoustic monitoring.

Taking these measures into consideration, responses of marine mammals from the preferred alternative are expected to be limited to avoidance of the area around the seismic operation and short-term behavioral changes, falling within the MMPA definition of "Level B harassment." Short-term avoidance of the survey area and short-term behavioral changes by individual animals may adversely affect, but are not likely to jeopardize the existence of any endangered or threatened species of marine mammal or sea turtle in the area.

NMFS does not anticipate that marine mammal take by injury (Level A harassment), serious injury, or death would occur and expects that harassment takes should be at the lowest level practicable due to the incorporation of the mitigation measures required by the IHA. Numbers of individuals of all marine mammal species taken by harassment are expected to be small (relative to species or stock abundance), and the take is anticipated to have a negligible impact on any species or stock. The impacts of the seismic survey on marine mammals are specifically related to acoustic activities, and these are expected to be temporary in nature, negligible, and would not result in substantial impact to marine mammals or to their role in the ecosystem.

Pursuant to Section 7 of the ESA, NSF and NMFS' Office of Protected Resources (OPR), Permits and Conservation Division, concurrently engaged in formal Section 7 consultation with the OPR's Endangered Species Act Interagency Cooperation Division, regarding potential effects to

ESA-listed species. The OPR's Endangered Species Act Interagency Cooperation Division has issued a single Biological Opinion (BiOp) and included an Incidental Take Statement.

The BiOp provides supporting analysis for this FONSI and concluded that L-DEO's action and issuance of the IHA are not likely to jeopardize the continued existence of the blue, fin, humpback, sei, north Pacific right, and sperm whales or leatherback, green, loggerhead, hawksbill, and olive ridley sea turtles. The BiOp also concluded that designated critical habitat for these species does not occur in the action area and would not be affected by the survey. The NMFS Permits and Conservation Division will ensure that the mitigation and monitoring requirements established in the IHA include the Incidental Take Statement's terms and conditions applicable to marine mammals.

5) Are significant social or economic impacts interrelated with natural or physical environmental effects?

Response: The primary impacts to the natural and physical environment are expected to be acoustic and temporary in nature (and not significant), and not interrelated with significant social or economic impacts. Issuance of the IHA would not result in inequitable distributions of environmental burdens or access to environmental goods.

NMFS has determined that issuance of the IHA will not adversely affect low-income or minority populations. Further, there will be no impact of the activity on the availability of the species or stocks of marine mammals for subsistence uses. Therefore, no significant social or economic effects are expected to result from issuance of the IHA or the proposed seismic survey.

6) Are the effects on the quality of the human environment likely to be highly controversial?

Response: The effects of this action on the quality of the human environment are not likely to be highly controversial. There is no significant controversy about the effects of the seismic survey or the issuance of an IHA on the quality of the human environment.

For several years, NMFS has assessed and authorized incidental take for multiple seismic surveys conducted within the same year and has developed relatively standard mitigation and monitoring measures which the public has vetted during each public comment period for over five years. Moreover, the scope of the action is not unusually large or substantial. The mitigation measures are based on NMFS' past experiences and practices with similar projects and consideration of comments submitted on this action and other similar actions by the Marine Mammal Commission and members of the public.

Based on the analysis in the EA, consideration of public comments submitted on the proposed action in the *Federal Register* notice of a proposed IHA, and NMFS experience in issuing prior IHAs for similar actions, NMFS does not consider the effects of this action on the quality of the human environment to be highly controversial.

NMFS considered the Marine Mammal Commission comments as a component of the marine mammal impacts analysis required by the MMPA in order to reach a determination that only level B harassment would occur as a result of the proposed L-DEO/NSF survey, and in making this FONSI.

Specific responses to public comments will be provided in the *Federal Register* notice announcing the issuance of the IHA.

No comments raised substantial questions as to whether the survey would cause significant degradation to any component of the human environment, including marine mammals or sea turtles or their habitat. There is no substantial dispute concerning the survey's size, nature or effect. Therefore, NMFS has concluded that the proposed survey and issuance of the IHA are not likely to be controversial.

7) Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers, essential fish habitat, or ecologically critical areas?

Response: There are no unique areas or ecologically critical areas in the action area. The proposed action would only authorize Level B harassment of marine mammals during a single oceanographic research seismic survey cruise within the northwest Pacific Ocean. Neither NMFS's issuance of an IHA nor L-DEO's proposed seismic survey is expected to substantially impact the survey area. Detailed information about the affected environment, marine mammals and other marine life, and all potential adverse direct, indirect and cumulative impacts related to the proposed action are provided in the EA.

8) Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

Response: NMFS does not expect either the seismic survey or the issuance of an IHA to have effects on the human environment that would be highly uncertain or involve unique or unknown risks. While NMFS' judgments on impact thresholds are based on somewhat limited data, enough is known for NMFS and the IHA-regulated entity (here NSF and L-DEO) to develop precautionary measures to minimize the potential for significant impacts on biological resources. The multiple mitigation and monitoring requirements are designed to ensure the least practicable impact on the affected species or stocks of marine mammals, and also to gather additional data on environmental impacts that may help inform future decision-making.

The exact mechanisms of how different sounds may affect certain marine organisms are not fully understood, but, as noted, we believe the best available data allows us to support our findings for this action. NMFS has authorized marine mammal take for similar types of oceanographic research seismic surveys for seven years, and monitoring reports received pursuant to the requirements of the authorizations have indicated that there were no unanticipated or unauthorized impacts as a result of the seismic surveys.

The EA and FONSI acknowledge that there is limited information available on the density of marine mammals in the specific proposed survey area. However, the EA incorporates density data on the marine mammal species in the survey area that were available from several sources: (1) Japanese sighting surveys conducted since the early 1980s and fisheries observers in the high-seas driftnet fisheries during 1987–1990; (2) a 2002 Hawaiian Islands survey; and (3) surveys of the California Current ecosystem off the U.S. west coast between 1991 and 2005, and then extrapolates marine mammal density information based upon similarities in habitat and oceanographic features. NMFS believes the density estimates used to assess the number of incidental harassments of marine

mammals use data that are suitable for application in the marine environment that is affected by this action.

The best available science, including input from prior monitoring reports for seismic surveys, supports NMFS' determination that adverse impacts are unlikely and will be minimized through the implementation of the proposed mitigation and monitoring requirements. Therefore, the effects on the human environment are not likely to be highly uncertain and do not involve unique or unknown risks.

9) Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?

Response: The proposed action of L-DEO conducting the seismic survey in the northwest Pacific Ocean (via the federal action of NSF funding the survey) and NMFS' proposed action of issuing an IHA to L-DEO that authorizes take (Level B behavioral harassment) of a small number of marine mammals, incidental to the conduct of L-DEO's seismic survey, are interrelated. The seismic survey conducted under the requirements of an IHA for Level B harassment of marine mammals is not expected to result in cumulatively significant impacts when considered in relation to other separate actions with individually insignificant effects.

NMFS has issued incidental take authorizations for other seismic research surveys (to L-DEO and other parties) that may have resulted in the harassment of marine mammals, but the research surveys are dispersed both geographically (throughout the world) and temporally, are short-term in nature, and use mitigation and monitoring measures to minimize impacts to marine mammals and to minimize other potential adverse environmental impacts in the activity area. There are no other NSF-sponsored seismic surveys scheduled for the northwest Pacific Ocean in 2012 and therefore, NMFS is unaware of any synergistic impacts to marine resources associated with reasonably foreseeable future actions that may be planned or occur within the same region of influence. The impacts of L-DEO's proposed seismic survey in the northwest Pacific Ocean are expected to be no more than minor and short-term with no potential to contribute to cumulatively significant impacts.

10) Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?

Response: The seismic survey and the issuance of an IHA are not expected to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or cause loss or destruction of significant scientific, cultural or historical resources.

The proposed seismic survey would occur on the high seas and would not affect any areas listed or eligible for listing in the U.S. National Register of Historic Places. There are no significant cultural or historic resources in the action area. Thus, the federal actions of conducting the seismic survey and issuing an IHA would not cause loss or destruction of any significant cultural or historic resource.

11) Can the proposed action reasonably be expected to result in the introduction or spread of a non-indigenous species?

Response: The seismic survey and the issuance of an IHA are not expected to lead to the introduction of any non-indigenous species into the environment because L-DEO would implement all international preventive measures to prevent the spread of non-indigenous species.

The primary concern regarding the introduction or spread of a non-indigenous species from the proposed seismic survey is through ballast water exchange. However, non-indigenous species are not likely to be introduced or spread into the project area through ballast water exchange as the *Langseth* complies with International Maritime Organization guidelines and United States Coast Guard regulations for Ballast Water Management.

12) Is the proposed action likely to establish a precedent for future actions with significant effects or does it represent a decision in principle about a future consideration?

Response: The seismic survey and the issuance of an IHA are not expected to set a precedent for future actions with significant effects nor represent a decision in principle regarding future considerations.

To ensure compliance with statutory and regulatory standards, NMFS' actions under section 101(a)(5)(D) of the MMPA must be considered individually and be based on the best available information, which is continuously evolving. Subsequent requests for incidental take authorizations would be evaluated upon their own merits relative to the criteria established in the MMPA, ESA, and NMFS implementing regulations on a case-by-case basis.

As mentioned above, NMFS has issued many authorizations for seismic research surveys. A finding of no significant impact for this action, and for NMFS's issuance of an IHA, may inform the environmental review for future projects but would not establish a precedent or represent a decision in principle about a future consideration.

13) Can the proposed action reasonably be expected to threaten a violation of any Federal, State, or local law or requirements imposed for the protection of the environment?

Response: The seismic survey and the issuance of an IHA would not violate any federal, state, or local laws for environmental protection. Both NSF and NMFS have fulfilled their Section 7 responsibilities under the ESA (see response to Question 4) and the MMPA (by submitting an application for an IHA) for this action. Also, all requirements have been met to prevent the spread of non-indigenous species into the action area (see response to Question 11).

14) Can the proposed action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?

Response: The seismic survey and the issuance of an IHA are not expected to result in any significant cumulative adverse effects on target or non-target species incidentally taken by harassment due to seismic survey activities.

NMFS has issued incidental take authorizations for other seismic research surveys (to L-DEO and other agencies) that may have resulted in the harassment of marine mammals, but they are dispersed both geographically (throughout the world) and temporally, are short-term in nature, and all use mitigation and monitoring measures to minimize impacts to marine mammals.

Cumulative effects refer to the impacts on the environment that result from a combination of past, existing, and imminent human activities and natural processes As evaluated in the EA, human activities in the region of the proposed seismic survey in the northwest Pacific Ocean include vessel traffic and fishing activities. Those activities, as described in the EA, when conducted separately or in combination with other activities, could adversely affect marine mammals and sea turtles in the survey area. Because of the relatively short time that the project area will be ensonified (not more than 7 days), the action will not result in synergistic or cumulative adverse effects that could have a substantial effect on any species.

The proposed survey does not target any marine mammal or sea turtle and is not expected to result in any individual, long-term, or cumulative adverse effects on the species incidentally taken by harassment due to these activities. The potential temporary behavioral disturbance of marine mammals and sea turtles might result in short-term behavioral effects for these marine species within the ensonified zones, but no long-term displacement of marine mammals, endangered species, or their prey is expected as a result of the survey conducted under the requirements of the IHA. The research conducted under the requirements of the IHA would not be expected to have a substantial cumulative effect on any fish species, fish habitat, or invertebrate species as discussed in the EA. Therefore, NMSF does not expect any cumulative adverse effects on any species as a result of the seismic survey.

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting EA titled "*Issuance of an Incidental Harassment Authorization to the Lamont-Doherty Earth Observatory to Take Marine Mammals by Harassment Incidental to a Marine Geophysical Survey in the Northwest Pacific Ocean, March through May, 2012,*" and documents that it references, NMFS has determined that issuance of an IHA to L-DEO for the take, by Level B harassment only, of small numbers of marine mammals incidental to conducting a seismic survey in the northwest Pacific Ocean in accordance with Alternative 2 in NMFS' 2012 EA will not significantly impact the quality of the human environment, as described in this FONSI, in the EA, the NSF/L-DEO Report, and in NSF's NEPA Analysis.

In addition, all beneficial and adverse impacts of the action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an Environmental Impact Statement for this action is not necessary. The EA thereby provides a supporting analysis for this FONSI.

MAR 15 2012

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Date