FINAL ENVIRONMENTAL ASSESSMENT

Issuance of an Incidental Harassment Authorization to the Lamont-Doherty Earth Observatory to Take Marine Mammals by Harassment Incidental to a Marine Geophysical Survey on the Shatsky Rise in the Northwest Pacific Ocean, July-September 2010

July 2010

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LOCATION: The Shatsky Rise in the Northwest Pacific Ocean, High Seas

ABSTRACT: The National Marine Fisheries Service proposes to issue an Incidental Harassment Authorization (IHA) to the Lamont-Doherty Earth Observatory for the taking, by Level B harassment, of small numbers of marine mammals, incidental to conducting a marine geophysical (seismic) survey at the Shatsky Rise in the northwest Pacific Ocean, July through September, 2010.

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LIST OF ACRONYMS, ABBREVIATIONS, AND INITIALISMS

BiOp	Biological Opinion
CFR	Code of Federal Regulations
CEQ	President's Council on Environmental Quality
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
FR	Federal Register
IHA	Incidental Harassment Authorization
ITA	Incidental Take Authorization
ITS	Incidental Take Statement
km	kilometer
L-DEO	Lamont-Doherty Earth Observatory
LOA	Letter of Authorization
NAO	NOAA Administrative Order
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
NOR	Notice of Receipt
NSF	National Science Foundation
OPR	Office of Protected Resources
U.S.C.	United States Code

1. CHAPTER 1 – PURPOSE AND NEED FOR ACTION

1.1. DESCRIPTION OF ACTION

In response to a receipt of a request from the Lamont-Doherty Earth Observatory (L-DEO), NMFS proposes to issue an IHA that authorizes takes by Level B harassment of marine mammals in the wild pursuant to section 101(a)(5)(D) of the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1631 *et seq.*), and the regulations governing the taking and importing of marine mammals (50 Code of Federal Regulations (CFR) Part 216).

This 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 on the Shatsky Rise in the Northwest Pacific Ocean, July-September 2010,*" (hereinafter, EA) addresses the impacts on the human environment that would result from the issuance of this IHA.

1.1.1. BACKGROUND

L-DEO plans to conduct a seismic survey on the Shatsky Rise, in the northeast Pacific Ocean from July through September 2010. The purpose of L-DEO's conduct of the seismic survey is to obtain data necessary to decipher the crustal structure of the Shatsky Rise (an oceanographic feature offshore of Japan); address major questions of the Earth's history and tectonics; and obtain data that could be used to improve estimates of regional earthquake occurrence and distribution.

L-DEO, a part of Columbia University, operates the oceanographic research vessel *Marcus G. Langseth* (*Langseth*) under a cooperative agreement with the U.S. National Science Foundation (NSF). As the action agency, NSF will fund L-DEO's proposed seismic survey on the Shatsky Rise as a part of the American Recovery and Reinvestment Act of 2009 (Public Law 111-2)[1].

L-DEO's seismic survey activities, which have the potential to cause marine mammals to be behaviorally disturbed, warrant an incidental take authorization from the NMFS under section 101(a)(5)(D) of the Marine MMPA. Accordingly, L-DEO has submitted a permit application requesting NMFS to issue an IHA for the take, by Level B harassment only, of small numbers of marine mammals, incidental to conducting a proposed marine geophysical (seismic) survey at the Shatsky Rise in the northwest Pacific Ocean from July 20, 2010 through September 9, 2010.

1.1.2. INCORPORATION OF NSF'S ANALYSIS AND REPORT BY REFERENCE

This EA incorporates the NSF's Final National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) Analysis Pursuant To Executive Order 12114 (NSF, 2010) and an associated report (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, July –*

[1] NMFS' federal action of supporting the seismic survey results from an expert review panel recommending L-DEO's research proposal titled, "*Collaborative Research: Geophysical Constraints on Mechanisms of Ocean Plateau Formation from Shatsky Rise, Northwest Pacific,*" for funding (NSF Award # 0927001) in 2009.

September, 2010," (LGL, 2010) by reference pursuant to 40 Code of Federal Regulations (CFR) 1502.21 and NOAA Administrative Order (NAO) 216-6 § 5.09(d).

1.1.3. Purpose and Need

The primary purpose of NMFS issuing an IHA is to provide an exception from the take prohibitions under the MMPA to allow "takes" by "level B harassment" of marine mammals, including endangered species, for the conduct the seismic survey. The need for the issuance of the IHA is related to NMFS' mandates under the MMPA. Specifically the MMPA prohibits takes of marine mammals, with specific exceptions, including the incidental, but not intentional, taking of marine mammals, for periods of not more than one year, by United States citizens who engage in a specified activity (other than commercial fishing).

IHA issuance criteria require that activities authorized by an IHA 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. In addition, the IHA 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 monitoring and reporting of such takings.

Issuance of an IHA is a federal agency action. For purposes of section 7 of the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et. seq*), NMFS must consult with itself to ensure that its action is not likely to jeopardize the continued existence of any federally-listed species or result in the destruction or adverse modification of critical habitat.

1.2. Scoping Summary

The MMPA and its implementing regulations governing issuance of an IHA (50 CFR § 216.107) require that upon receipt of a valid and complete application for an IHA, NMFS publish a notice of receipt in the *Federal Register* (FR). The notice summarizes the purpose of the requested IHA, includes a statement about whether an EA or an Environmental Impact Statement (EIS) was prepared, and invites interested parties to submit written comments concerning the application.

NAO 216-6 established agency procedures for complying with the NEPA and the implementing regulations issued by the President's Council on Environmental Quality (CEQ). NAO 216-6 specifies that the issuance of an IHA under the MMPA is among a category of actions that require further environmental review and the preparation of NEPA documentation. The CEQ regulations implementing the NEPA do not require that a draft EA be made available for public comment as part of the scoping process.

NMFS independently evaluated the sufficiency of the scope of NSF's analysis and Report, based on prior experience with the consideration and issuance of IHAs for scientific marine geophysical surveys. NSF made available L-DEO's application and NSF's analysis and Report on the agency's website (http://www.nsf.gov/geo/oce/envcomp/index.jsp) for a 30-day public comment period. NMFS also made available the environmental analysis and the Report to the public at (http://www.nmfs.noaa.gov/pr/permits/incidental.htm#applications) concurrently with the release of the *Federal Register* notice of request for comments on the proposed IHA (75 FR 28568, May 21, 2010).

1.2.1. COMMENTS ON APPLICATION AND EA

The Marine Mammal Commission (Commission) provides comments on all proposed IHAs as part of their established role under the MMPA (§ 202 (a)(2), *humane means of taking marine mammals*). No other organizations or private citizens have submitted comments to date. NMFS evaluated all comments and did not consider any to be controversial with respect to environmental effects of the action.

The Commission's comments are briefly summarized here. Generally, the Commission recommended that NMFS: provide additional justification for its preliminary determination that the planned monitoring program will be sufficient to detect, with a high level of confidence, all marine mammals within or entering the identified safety zones; clarify when passive acoustic monitoring would not be used to detect marine mammals or when two observers would not be on duty and the conditions under which these otherwise required components of the monitoring program would not be considered practicable; extend the required monitoring period at start-up to at least one hour before the initiations of seismic activities and one hour before the resumption of airgun activities after a power-down because of a marine mammal sighting within the safety zone; and require that observers collect and analyze data on the effectiveness of ramp-up as a mitigation measure during all such procedures.

NMFS will consider the comments regarding additional mitigation measures within the context of the MMPA requirement to effect the least practicable adverse effect to marine mammals and their habitats. NMFS will provide responses to specific comments on the issuance of the IHA in the Federal Register notice announcing the issuance of the IHA. NMFS finds that the NSF's analysis and Report include appropriate mitigation measures to allow a meaningful analysis of the direct, indirect, and cumulative effects of issuing the IHA on marine mammals and other marine species, including marine turtles, seabirds, fish, and invertebrates.

1.2.2. ISSUES WITHIN THE SCOPE OF THIS EA

The EA addresses the proposal of NMFS to issue an IHA under Section 101(a)(5)(D) of the MMPA and the alternatives to the proposed action. The IHA, if issued, would authorize the harassment of 34 species of marine mammals, incidental to marine geophysical activities.

NMFS identified the following issues as relevant to the action and appropriate for detailed evaluation: tolerance, masking of natural sounds, behavioral disturbance, temporary or permanent hearing impairment, or non-auditory physical or physiological effects.

1.3. APPLICABLE LAWS AND NECESSARY FEDERAL PERMITS, LICENSES, AND ENTITLEMENTS

This section summarizes federal, state, and local permits, licenses, approvals, and consultation requirements necessary to implement the proposed action.

1.3.1. NATIONAL ENVIRONMENTAL POLICY ACT

The NEPA, enacted in 1969, is applicable to all "major" federal actions significantly affecting the quality of the human environment. A major federal action is an activity that is fully or partially funded, regulated, conducted, or approved by a federal agency. NMFS'

issuance of an IHA for incidental harassment of marine mammals represents approval and regulation of the applicant's activities. While NEPA does not dictate substantive requirements for an IHA, it requires consideration of environmental issues in federal agency planning and decision making.

1.3.2. Endangered Species Act

Section 7 of the ESA requires consultation with the appropriate federal agency (either NMFS or the USFWS) for federal actions that "may affect" a listed species or critical habitat. NMFS' issuance of an IHA affecting ESA-listed species or designated critical habitat, directly or indirectly, is a federal action subject to these section 7 consultation requirements. Accordingly, NMFS is required to ensure that its action is not likely to jeopardize the continued existence of any threatened or endangered species or result in destruction or adverse modification of critical habitat for such species. Regulations specify the requirements for these consultations (50 Part CFR 402).

1.3.3. Marine Mammal Protection Act

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 by harassment of small numbers of marine mammals of a species or population stock, for periods of not more than one year, by United States citizens who engage in a specified activity (other than commercial fishing) within a specific geographic region if certain findings are made and, a notice of a proposed authorization is provided to the public for review.

Authorization for 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. 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 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."

1.3.4. Executive Order (E.O.) 12114

The requirements for E.O. 12114, Environmental Effects Abroad of Major Federal Actions, discussed in the NSF analysis and Report (LGL, 2010; NSF, 2010) are incorporated herein, by reference.

2. Chapter 2 – Alternatives Including the Proposed Action

This EA evaluates the alternatives to ensure that they would fulfill the purpose and need, namely: (1) the issuance of an IHA for the take of marine mammals by level B behavioral harassment, incidental to L-DEO's conduct of a marine geophysical survey on the Shatsky Rise in the northwest Pacific Ocean from July 20, 2010 through September 9, 2010; and (2) compliance with the MMPA which sets forth specific standards (i.e., unmitigable adverse impact and negligible impact) that must be met in order for NMFS to issue an IHA.

The Proposed Action (Preferred) alternative represents the activities proposed in the submitted application for an IHA, with standard monitoring and mitigation measures. If the action will have no more than a negligible impact on the species or stocks; will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses; and set forth the appropriate level of mitigation measures and monitoring, then NMFS shall issue the IHA.

The EA, which incorporated NSF's analysis and LGL Report, evaluated three alternatives: (1) issuance of an IHA and the conduct of the proposed seismic survey from July 20 through September 9, 2010; (2) issuance of an IHA and the conduct the proposed seismic survey at an alternative time; and (3) a no action alternative (i.e., NMFS does not issue an IHA and L-DEO does not conduct the survey). For the purposes of this EA, NMFS is considering the same alternatives as those considered by NSF, as presented (LGL, 2010; NSF, 2010).

2.1. Alternative 1 – No Action Alternative

This alternative, analyzed in NSF's analysis and LGL Report, is hereby incorporated by reference (LGL, 2010; NSF, 2010). NSF considered, but rejected the no action alternative (i.e., L-DEO would not conduct the seismic survey and would not seek an IHA; thereby eliminating the need for NMFS to issue an IHA). This alternative does not meet the purpose and need of L-DEO.

2.2. Alternative 2 – Conduct the Survey at a Different Time of Year

This alternative, analyzed in NSF's analysis and LGL Report, is hereby incorporated by reference (LGL, 2010; NSF, 2010). The NSF considered, but rejected, the scenario where L-DEO would conduct the proposed seismic survey at a different time of the year after obtaining an IHA from NMFS. The proposed dates for the cruise (July through September, 2010) are the most suitable dates would best suit the purpose and need, from a logistical perspective, for L-DEO, the *Langseth*, and its crew.

2.3. Alternative 3 – Preferred Alternative

This alternative, analyzed in NSF's analysis and LGL Report, is hereby incorporated by reference (LGL, 2010; NSF, 2010). Under this alternative, NSF considered that L-DEO would use one source vessel, the *Langseth* to conduct a seismic survey in international waters approximately 1,200 kilometers (km) off the east coast of Japan. The project is scheduled to commence on July 20, 2010, and scheduled to end on September 9, 2010.

NMFS will incorporate the mitigation and monitoring measures and reporting requirements described in NSF's analysis and LGL Report into the IHA. Accordingly, this Preferred Alternative (Issuance of an IHA with Mitigation) would satisfy the purpose and need of the action—issuance of an IHA, with mitigation measures and monitoring, would enable the agency and L-DEO to comply with the statutory and regulatory requirements of the MMPA and ESA.

3. Chapter 3 – Affected Environment

The summary of the physical and biological environment of the Shatsky Rise area analyzed in NSF's analysis and LGL Report, are hereby incorporated by reference (LGL, 2010; NSF, 2010). The analysis and Report present baseline information necessary for consideration of the alternatives, and

describe the resources that would be affected by the alternatives, as well as environmental components that would affect the alternatives if they were to be implemented.

4. CHAPTER 4 –ENVIRONMENTAL CONSEQUENCES

NSF's analysis and LGL Report which address potential direct, indirect, and cumulative impacts of the marine seismic survey on marine mammals, sea turtles, fish, and invertebrates and impacts to prey species and marine mammal habitats are hereby incorporated by reference (LGL, 2010; NSF, 2010).

NMFS' evaluation indicates that any direct or indirect effects of the action would not result in a substantial impact on biodiversity or ecosystem function. Most effects are considered to be short-term and unlikely to affect normal ecosystem function or predatory/prey relationships; therefore, there will not be a substantial impact on marine life biodiversity or on the normal function of the nearshore or offshore environment. NMFS finds that NSF's analysis and LGL Report include appropriate mitigation measures to allow a meaningful analysis of the direct, indirect, and cumulative effects of issuing the IHA on marine mammals and other marine species, including marine turtles, seabirds, fish, and invertebrates.

NMFS has evaluated the potential impacts of L-DEO's action in order to determine whether to authorize incidental take of marine mammals pursuant to the MMPA. NMFS has, therefore, has determined that an EA is appropriate to evaluate the potential significance of impacts to marine mammals and other species resulting from the issuance of this IHA. NSF expects that marine mammals, including species that are depleted and strategic due to listing as threatened or endangered species under the ESA, may be present throughout the study area and throughout the seasons during which the project might occur.

4.1. EFFECTS OF ALTERNATIVE 1 – NO ACTION ALTERNATIVE

The summary of the effects of the No Action alternative, analyzed in NSF's analysis and LGL Report, are hereby incorporated by reference (LGL, 2010; NSF, 2010).

4.2. EFFECTS OF ALTERNATIVE 2 – CONDUCT THE SURVEY AT A DIFFERENT TIME

The summary of the effects of Alternative 2, analyzed in NSF's analysis and LGL Report, are hereby incorporated by reference (LGL, 2010; NSF, 2010).

4.3. EFFECTS OF ALTERNATIVE 3 – PREFERRED ALTERNATIVE

The NSF's analysis and LGL Report, incorporated by reference, describe in detail the potential effects of airgun sounds, multibeam echosounder and sub-bottom profiler signals, and acoustic release signals on marine species, particularly marine mammals and marine turtles of particular concern (see Section IV and Appendices B through E of the LGL Report). The Report also includes analyses of effects on sea turtles, fish and invertebrates.

L-DEO proposed a number of monitoring and mitigation measures for marine mammals as part of the action evaluated in NSF's analysis and LGL Report. In analyzing the effects of the preferred alternative, NMFS has considered the following monitoring and mitigation measures as part of the preferred alternative as considered by NSF and L-DEO:

(1) establishment of an exclusion zone (EZ) to avoid injury to marine mammals and visual monitoring of the EZ by protected species observers (PSOs);

(2) power-down procedures when PSOs detect marine mammals within the EZ or entering the EZ;
(3) shut-down procedures when PSOs detect marine mammals within the EZ while the airgun array is operating at full volume or during a power-down;
(4) ramp-up procedures; and
(5) procedures for species of concern such as emergency shut-down procedures for North Pacific right whales (*Eubalaena japonica*).

NMFS may consider additional mitigation measures as included in the final IHA issued under the MMPA. Inclusion of these monitoring and mitigation measures is anticipated to minimize and/or avoid impacts to marine resources. With the above planned monitoring and mitigation measures, unavoidable impacts to each species of marine mammal and sea turtle that could be encountered are expected to be limited to short-term, localized changes in behavior (such as brief masking of natural sounds) and distribution near the seismic vessel. At most, effects on marine mammals may be interpreted as falling within the MMPA definition of "Level B behavioral harassment" for those species managed by the NMFS. No long-term or significant effects are expected on individual marine mammals, marine turtles, seabirds, fish, invertebrates, or the populations to which they belong or on their habitats.

NMFS does not anticipate that take by injury (Level A harassment), serious injury, or death will occur and expects that harassment takes should be at the lowest level practicable due to the incorporation of the mitigation measures proposed in the application, analysis and Report, nor is take by injury authorized by this IHA.

4.4. Compliance with Necessary Laws – Necessary Federal Permits

NMFS has determined that the IHA is consistent with the applicable requirements of the MMPA, ESA, and NMFS' regulations. The applicant has secured or applied for necessary permits from the NMFS.

4.5. Unavoidable Adverse Impacts

The summary of unavoidable adverse impacts to marine mammals, marine turtles, seabirds, fish, invertebrates, or the populations to which they belong or on their habitats occurring in the survey area analyzed in NSF's analysis and LGL Report, are hereby incorporated by reference (LGL, 2010; NSF, 2010).

NMFS does not expect L-DEO's activities to have adverse consequences on the viability of marine mammals in the Shatsky Rise area. Further, NMFS does not expect the marine mammal populations in that area to experience reductions in reproduction, numbers, or distribution that might appreciably reduce their likelihood of surviving and recovering in the wild. The marine seismic survey will have a negligible impact on the affected species or stocks of marine mammals.

4.6. Cumulative Effects

The summary of cumulative effects to marine mammals, marine turtles, seabirds, fish, invertebrates, or the populations to which they belong or on their habitats occurring in the survey area analyzed in NSF's analysis and LGL Report, are hereby incorporated by reference (LGL, 2010; NSF, 2010). The impacts of the seismic survey on marine mammals and sea turtles 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. NMFS does not expect that the survey would have a substantial cumulative effect on any fish or invertebrate species.

5. List of Preparers

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6. References

LGL. (2010). *LGL Ltd. environmental research associates. Environmental Assessment of a Marine Geophysical Survey by the R/V Marcus G. Langseth on the Shatsky Rise in the Northwest Pacific Ocean,July–September 2010.* King City, Ontario.

NSF. (2010). *National Science Foundation. Final National Environmental Policy Act of 1969 Analysis Pursuant To Executive Order 12114.*