



OCT 14 2010

To All Interested Government Agencies and Public Groups:

Under the National Environmental Policy Act (NEPA), the National Marine Fisheries Service (NMFS) has performed an environmental review by preparing an Environmental Assessment for the following action.

- TITLE:** *Issuance of an Incidental Harassment Authorization to the Scripps Institution of Oceanography to Take Marine Mammals by Harassment Incidental to a Marine Geophysical Survey off of Central and South America in the Eastern Tropical Pacific Ocean, October-November, 2010.*
- LOCATION:** International waters off the coasts of Costa Rica, Panama, Colombia, Ecuador, and Peru, and within the Exclusive Economic Zones (EEZs) of Costa Rica, Panama, Colombia, and Ecuador in the Eastern Tropical Pacific Ocean
- SUMMARY:** The National Marine Fisheries Service (NMFS) plans to issue an Incidental Harassment Authorization (IHA), pursuant to Section 101(a)(5)(D) of the Marine Mammal Protection Act (16 U.S.C. 1631 *et seq.*), for the incidental take, by Level B harassment only, of a small number of marine mammals during a marine geophysical survey in the Eastern Tropical Pacific Ocean, October through November, 2010. NMFS conducted a NEPA analysis through an Environmental Assessment (EA) titled, "*Issuance of an Incidental Harassment Authorization to the Scripps Institution of Oceanography to Take Marine Mammals by Harassment Incidental to a Marine Geophysical Survey off of Central and South America in the Eastern Tropical Pacific Ocean, October-November 2010*" based, in part, on an environmental assessment report (hereinafter, Report), prepared by LGL Limited Environmental Research Associates (LGL), titled, "*Environmental Assessment of a Marine Geophysical Survey by the R/V Melville in the Pacific Ocean off Central and South America, October-November 2010*" and prepared an independent Finding of No Significant Impact (FONSI). In preparing the EA, NMFS incorporated the Report by reference and relied on specific analyses contained therein. NMFS has determined that the impact of conducting the seismic survey in the Eastern Tropical Pacific Ocean may result, at worst, in a temporary modification in behavior of small numbers of several species of marine mammals. Based on its review of the record, including the EA, Report, and FONSI, NMFS has determined that issuance of the IHA will not result in any significant direct, indirect, or cumulative impact to any element of the human environment. NMFS does not anticipate that take by injury (Level A harassment), serious injury, or death will occur; nor has NMFS authorized take by Level A harassment. NMFS has further determined that this activity will result in a negligible impact on the affected species or stocks.



## FINAL ENVIRONMENTAL ASSESSMENT

Issuance of an Incidental Harassment Authorization to the Scripps Institution of Oceanography to Take Marine Mammals by Harassment Incidental to a Marine Geophysical Survey off of Central and South America in the Eastern Tropical Pacific Ocean, October-November 2010



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**LOCATION:** The Eastern Tropical Pacific Ocean, off of Central and South America, in International Waters and within the Exclusive Economic Zones of Costa Rica, Panama, Colombia, and Ecuador

**ABSTRACT:** The National Marine Fisheries Service proposes to issue an Incidental Harassment Authorization to the Scripps Institution of Oceanography for the taking, by Level B harassment, of small numbers of marine mammals, incidental to conducting a marine geophysical (seismic) survey in the Eastern Tropical Pacific Ocean, October through November, 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
LOA	Letter of Authorization
MMPA	Marine Mammal Protection Act
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
SIO	Scripps Institution of Oceanography
U.S.C.	United States Code

# 1. CHAPTER 1 – PURPOSE AND NEED FOR ACTION

## 1.1. DESCRIPTION OF PROPOSED ACTION

In response to the receipt of a request from the Scripps Institution of Oceanography (SIO), the National Marine Fisheries Service (NMFS) proposes to issue an Incidental Harassment Authorization (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 EA, titled “*Issuance of an Incidental Harassment Authorization to the Scripps Institution of Oceanography to Take Marine Mammals by Harassment Incidental to a Marine Geophysical Survey in the Pacific Ocean off of Central and South America, October-November 2010*” (hereinafter, EA), addresses the impacts on the human environment that would result from the issuance of this IHA with a focus on impacts to marine mammals.

### 1.1.1. BACKGROUND

SIO plans to conduct a seismic survey off of Central and South America, in the Eastern Tropical Pacific Ocean from October through November 2010. SIO’s conduct of the seismic survey is part of an integrated geophysical and geochemical study designed to obtain data necessary to better understand how marine sediments record paleo-oceanographic information.

The survey will involve one source vessel, the *Melville*, which deploys a towed array of 2 airguns. Airguns function by venting high-pressure air into the water, which creates an air bubble. The airgun array is towed through the water column along the survey lines, introducing acoustic energy (via an oscillating air bubble that transmits sounds downward through the seafloor) into the water column.

SIO, a part of the University of California, operates the oceanographic research vessel *Melville* under a charter agreement with the U.S. Office of Naval Research. As the action agency, the National Science Foundation (NSF) will fund SIO’s proposed seismic survey.

SIO’s seismic survey activities, which have the potential to cause marine mammals to be behaviorally disturbed, warrant an incidental take authorization from NMFS under section 101(a)(5)(D) of the MMPA. Accordingly, SIO 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 in the Eastern Tropical Pacific Ocean from October 19, 2010, through November 14, 2010.

As explained in Section 1.2, Scoping Summary, NMFS published a notice in the *Federal Register* announcing its preliminary determination to issue the proposed IHA in accordance with the procedures and requirements of the MMPA. The *Federal Register* notice referenced applicable documents such as the SIO application, provided detailed information on the description of the proposed action and anticipated impacts to marine mammals, set forth proposed measures for mitigation and monitoring, and initiated a 30-day period for the public to provide comments.

### **1.1.2. INCORPORATION OF NSF’S ANALYSIS AND REPORT BY REFERENCE**

After conducting an independent review of the information and analyses for sufficiency and adequacy, NMFS incorporates by reference the 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, 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 Melville in the Pacific Ocean off Central and South America, October-November 2010*”, (LGL, 2010) by reference pursuant to 40 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 of 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 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 conduct an intra-agency consultation 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. For purposes of NEPA, NMFS has prepared this EA to assist in determining whether or not there is a need to prepare an Environmental Impact Statement (EIS) (i.e., whether the IHA amounts to a major Federal action with significant impacts on the human environment). After reviewing this EA and other relevant environmental information and considering the context and intensity of anticipated environmental impacts, NMFS will determine whether or not environmental impacts are likely to be significant. If they are, NMFS would publish a Notice of Intent to prepare an EIS. If they are not, NMFS will prepare a Finding of No Significant Impact (FONSI) concluding the NEPA process for this action.

## **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 must publish a notice of proposed IHA 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 was prepared, and invites interested parties to submit written comments concerning the application and NMFS’ preliminary findings.

NAO 216-6 established agency procedures for complying with 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. While the CEQ regulations implementing NEPA and NAO 216-6, NOAA's agency NEPA procedures, do not require that a draft EA be made available for public comment, NMFS structures the decision-making process for issuance of IHAs to provide for involvement of the public to the maximum extent practical, including inviting the public to participate in the scoping process.

In order to identify environmental issues and impacts to be addressed in this EA, NMFS undertook several steps. NMFS independently evaluated and determined 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 also made available SIO'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 54095, September 3, 2010). As noted in Section 1.1.3, the *Federal Register* notice and corresponding public comment period is instrumental in providing the public with relevant environmental issues and information and offering the public a meaningful opportunity to offer comments for consideration by NMFS in the decision-making process.

#### **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 identify any comment either raising substantial questions as to whether the project may cause significant degradation to any marine mammal species or its habitat, or establishing a substantial dispute concerning the IHA's size, nature, or effect.

The Commission's comments are briefly summarized here. Generally, the Commission recommended that NMFS: require the applicant to use location-specific environmental parameters to estimate safety zones and to calculate associated exposure estimates; 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; 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 propose that the applicant revise its study design to include collection of meaningful baseline data on the distribution and behavior of marine mammals.

NMFS has considered 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' responses to these comments on the issuance of the IHA, provided below, will be included in the *Federal Register* notice announcing the issuance of the IHA.

## Commission comments and NMFS responses

1. *Prior to authorization, require the applicant to use location-specific environmental parameters to re-estimate safety zones and then recalculate associated exposures; Require the applicant to use in-situ measurements to verify and, if need be, refine the safety zones prior to or at the beginning of the survey; Require the applicant to determine actual exposures based on refined safety zones, sightability, and relevant detection functions.*

NMFS is confident in the peer-reviewed results of the seismic equipment calibration studies which, although viewed as conservative, are used to determine cruise-specific exclusion zones. With the expected low density of marine mammals, combined with the remote, deep-water survey location, NMFS has determined that the exclusion zones identified in the IHA are appropriate for the survey and additional field measurements are 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.

2. *Provide additional justification for NMFS's 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.*

NMFS believes that the planned monitoring program will be sufficient to visually detect, with reasonable certainty, most marine mammals within or entering identified exclusion zones (EZ). This monitoring, along with the required mitigation measures, will help ensure the authorized taking effects the least practicable adverse impact on the affected species or stocks and will have a negligible impact on the affected species or stocks. Until proven technological advances are made, nighttime mitigation measures during operations include combinations of the use of protected species observers (PSOs) and night vision devices. In the event of a complete shut-down of the airgun array, for mitigation or repairs, airgun operations will be suspended until nautical twilight-dawn (when PSOs are able to clear the EZ). Airgun operations will not begin until the entire EZ radius is visible for at least 30 minutes.

3. *Propose to SIO that it revise its study design to include collection of meaningful baseline data on the distribution and behavior of marine mammals.*

The purpose of this cruise is for marine geophysical research, not to conduct a dedicated marine mammal research survey. Extending or altering the survey is not practicable from either an operational or research standpoint for the applicant. Due to the remote location of the survey and the length of time needed to conduct the requested research, there may be little time left for the vessel to operate without the need for refueling and servicing.

During the cruise, there will be significant amounts of transit time pre- and post-survey during which PSOs will be on watch (e.g., prior to and after the seismic portions of the



survey). The collection of this observational data by PSOs may provide meaningful baseline data on marine mammals, but it is unlikely that the information would result in any statistically robust conclusions for this particular seismic survey.

In addition, SIO is not responsible for the study design. Through a cooperative agreement with the NSF, SIO is the operator of the R/V *Melville*, which hosts the field research program. The study is designed by the Principal Investigator and is submitted to NSF as a proposal for funding consideration and subsequently reviewed by a merit review panel. This study was selected based on its scientific merits, and extension or modification of the field component would require scientific justification and NSF approval and potentially further merit review.

4. *Extend the monitoring period to at least one hour before initiation of seismic activities and at least one hour before the resumption of airgun activities after a power-down because of a marine mammal sighting within a safety zone.*

As the Commission points out, several species of deep-diving cetaceans are capable of remaining underwater for more than 30 minutes, however, for the following reasons NMFS believes that 30 minutes is an adequate length for the monitoring period prior to the start-up of airguns: (1) in most cases PSOs are making observations during times when seismic sources are not being operated and will actually be observing prior to the 30 min observation period anyway, (2) the majority of the species that may be exposed do not stay underwater more than 30 minutes, and (3) if deep-diving individuals happened to be in the area in the short time immediately prior to the pre-start-up monitoring and if an animal's maximum underwater time is 45 min, there is only a one in three chance that the last random surfacing would be prior to the beginning of the required 30 min monitoring period.

Also, seismic vessels are moving continuously (because of the long, towed array) 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 movements is vertical [deep-diving]), the vessel will be far beyond the length of the safety radii within 30 min, and therefore it will be safe to resume acquisition.

In addition, mitigation measures are required to 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 exclusion zones. The Commission's recommendation would cause additional impact on the science mission, limiting acquisition opportunity without dramatically increasing overall effectiveness of visual monitoring.

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 NMFS proposal to issue an IHA under Section 101(a)(5)(D) of the MMPA and the alternatives to the proposed action and focuses on the effects to marine mammals. The IHA, if issued, would authorize the harassment of 20 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**

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 and thus amounts to a major Federal action for which environmental review is required. While NEPA does not dictate substantive outcome for an IHA, it requires consideration of environmental issues in federal agency planning and decision making related to that action.

### **1.3.2. ENDANGERED SPECIES ACT**

Section 7 of the ESA requires consultation with the appropriate federal agency (either NMFS or the US Fish and Wildlife Service) 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 CFR 402). NMFS has determined that issuance of the IHA is likely to result in adverse effects to listed marine mammal species and, therefore, NMFS is completing formal Section 7 consultation and preparing a Biological Opinion to consider whether or not the action is likely to jeopardize such species or result in the adverse modification or destruction of critical habitat designated for such species, if applicable.

### **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 *Federal Register* 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 impact on the species or stock and its habitat, and monitoring and reporting requirements 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 (NSF 2010, LGL 2010) are incorporated herein, by reference.

## **2. CHAPTER 2 – ALTERNATIVES INCLUDING THE PROPOSED ACTION**

This EA evaluates a range of reasonable 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 SIO's conduct of a marine geophysical survey in the Eastern Tropical Pacific Ocean from October 19, 2010, through November 14, 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 sets forth the appropriate level of mitigation measures and monitoring, then NMFS shall issue the IHA.

The EA, which incorporated NSF's analysis and LGL's Report, evaluated three alternatives: (1) issuance of an IHA and the conduct of the proposed seismic survey from October 19 through November 14, 2010; (2) issuance of an IHA and the conduct of the proposed seismic survey at an alternative time; and (3) a no action alternative (i.e., NMFS does not issue an IHA, and SIO does not conduct the survey). For the purposes of this EA, NMFS is considering the same alternatives as those considered by NSF, as presented (NSF, 2010; LGL, 2010).

### **2.1. ALTERNATIVE 1 – NO ACTION ALTERNATIVE**

This alternative, analyzed in NSF's analysis and LGL's Report, is hereby incorporated by reference (NSF, 2010; LGL, 2010). NSF considered, but rejected the no action alternative (i.e., NMFS does not issue an IHA, and, as a result, SIO would not conduct the seismic survey). This alternative does not meet SIO's purpose and need.

## **2.2. ALTERNATIVE 2 – PREFERRED ALTERNATIVE**

This alternative, analyzed in NSF’s analysis and LGL’s Report, is hereby incorporated by reference (NSF, 2010; LGL, 2010). Under this alternative, NSF considered that SIO would use one source vessel, the *Melville*, to conduct a seismic survey in international waters off the east coast of Central and South America. The project is scheduled to commence on October 19, 2010, and scheduled to end on November 14, 2010.

NMFS will incorporate the mitigation and monitoring measures and reporting requirements described in NSF’s analysis and LGL’s 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 SIO to comply with the statutory and regulatory requirements of the MMPA and ESA.

Required mitigation and monitoring measures are summarized briefly here. Generally, NMFS requires that SIO undertake (1) visual monitoring by protected species observers (PSOs), (2) establishment of an exclusion zone (EZ), (3) speed or course alteration, provided that doing so will not compromise operational safety requirements, (4) GI airgun shut down procedures, and (5) ramp-up procedures. NMFS has determined that for acoustic effects, using acoustic thresholds in combination with corresponding safety radii is an effective way to consistently apply measures to avoid or minimize the impacts of an action. Thresholds are used to establish a mitigation shut-down, or exclusion, zone, i.e., if an animal enters an area calculated to be ensonified above the level of an established threshold, a sound source is shut down.

Three PSOs will be based aboard the seismic source vessel for the duration of the cruise and will watch for marine mammals near the vessel during daytime airgun operations and during start-up of airguns at any time. Watches will be conducted by at least one observer 100% of the time during seismic surveys in daylight hours. PSOs will record data to estimate the numbers of marine mammals exposed to various received sound levels and to document 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 shutdown of the seismic source when a marine mammal is within or near the EZ.

## **3. CHAPTER 3 – AFFECTED ENVIRONMENT**

The summary of the physical and biological environment of the study area, as analyzed in NSF’s analysis and LGL’s Report, are hereby incorporated by reference (NSF, 2010; LGL, 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.

Forty-three species of marine mammals, including 29 odontocetes (toothed whales), 7 mysticetes (baleen whales), 6 pinnipeds (seals and sea lions), and the marine sea otter (*Enhydra lutris*), are known to occur in the eastern tropical Pacific Ocean (ETP). Of these, 23 cetacean (whale and dolphin) species are likely to occur in the proposed survey areas in the ETP during October-November. Three of these 23 cetacean species are listed under the Endangered Species Act as Endangered: the sperm (*Physeter macrocephalus*), humpback (*Megaptera novaeangliae*), and blue (*Balaenoptera musculus*) whales. The five species of marine mammals expected to be most common in the waters of the project area, all delphinids (dolphin-like), include the short beaked

common dolphin (*Delphinus delphis*), pantropical spotted dolphin (*Stenella attenuata*), bottlenose dolphin (*Tursiops truncatus*), Risso's dolphin (*Grampus griseus*), and short-finned pilot whale (*Globicephala macrorhynchus*).

#### 4. CHAPTER 4 –ENVIRONMENTAL CONSEQUENCES

NSF's analysis and LGL's 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 (NSF, 2010; LGL, 2010).

NMFS has evaluated the potential impacts of SIO's action in order to determine whether to authorize incidental take of marine mammals pursuant to the MMPA. NMFS, 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.

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 predator/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's 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.

SIO will conduct the proposed open-water marine geophysical survey for a short period of time (seismic activities of 15 days total) in deep water (water greater than 1,000 meters (m) (3,820 feet (ft)) in depth). As the *Melville* transits the area while conducting the survey, any displacement of marine fish species by the proposed action would be temporary. Many fish species (i.e., those that do not have swim bladders, have rudimentary swim bladders (such as bottom-dwelling species, including flatfish), or well-developed swim bladders that are not directly connected to the ears) tend to have relatively poor auditory sensitivity and are not likely to be affected by exposure to intense noise. The seismic survey may potentially displace prey items of marine mammals, such as fish. However, prey items would return after the *Melville* has powered down the airgun array.

The overall response of fishes and squids is to exhibit startle responses and undergo vertical and horizontal movements away from the sound source. NMFS does not expect that the survey would have a substantial cumulative effect on any fish or invertebrate species. Although some loss of fish and other marine life might occur as a result of being in close proximity to the seismic airguns, this loss is, while short-term and adverse, is not expected to be significant.

NMFS conducted additional literature reviews for purposes of the MMPA analyses, and applicable information is included here to support this finding. Sperm whales (*Physeter macrocephalus*) regularly feed on squid and some fishes and may be feeding while in the area during the proposed

survey. One study<sup>1</sup> investigating behavioral response of southern calamari squid exposed to seismic survey sound reported that the squid exhibited both startle and avoidance responses. It is expected that sperm whales remaining in this area, although potentially not affected directly, would experience indirect effects from airgun activities through reduced feeding opportunities. Like their prey, sperm whales are expected to follow prey out of the survey area temporarily and re-distribute back into the area once survey activities are complete and prey species return.

Available data suggest that sounds from the airguns will diminish dramatically by the time they travel more than 1,000 m (3,820 ft) to the ocean floor. The seismic program in the northeast Pacific Ocean is not expected to significantly impact benthic and invertebrate communities in the study area.

The existing body of information on the impacts of seismic survey sound on marine invertebrates and benthic fauna is very limited. Recent controlled field experiments<sup>2</sup> on adult crustaceans exposed to seismic energy did not result in any significant pathological impacts on the animals. The study reported that the seismic survey did not: (1) cause any acute or mid-term mortality of the crab; (2) alter feeding behavior; or (3) affect embryo survival or post-hatch locomotion of larvae.

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. 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; however, it is highly unlikely that the proposed seismic survey would result in a serious injury or mortality to any marine mammal as a result of vessel strike given the *Melville's* slow survey speed.

NMFS anticipates, and would authorize, the incidental, Level B harassment only, in the form of temporary behavioral disturbance, of several species of cetaceans. 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 EA and Report. The Level B harassment is not expected to affect biodiversity or ecosystem function. As with marine mammals, sea turtles may experience threshold shifts and behavioral responses.

#### **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's Report, are hereby incorporated by reference (NSF, 2010; LGL, 2010).

#### **4.2. EFFECTS OF ALTERNATIVE 2 – PREFERRED ALTERNATIVE**

The NSF's analysis and LGL's Report, incorporated by reference, describe, in detail, the

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<sup>1</sup> McCauley, R.D., J. Fewtrell, A.J. Duncan, C. Jenner, M.-N. Jenner, J.D. Penrose, R.I.T. Prince, A. Adhitya, J. Murdoch, and K. McCabe. 2000b. Marine seismic surveys – a study of environmental implications. APPEA J. 40:692-706.

<sup>2</sup> Christian, J.R., A. Mathieu, D.H. Thomson, D. White, and R.A. Buchanan. 2003. Effect of seismic energy on snow crab (*Chionoecetes opilio*). Environmental Studies Research Funds Report No. 144. Calgary, AB, Canada. November.

potential effects of airgun sounds, multibeam echosounder and sub-bottom profiler 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.

SIO proposed a number of monitoring and mitigation measures for marine mammals as part of the action evaluated in NSF's analysis and LGL's 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 SIO:

- (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) change of speed and/or course when PSOs detect marine mammals either in or entering the EZ;
- (3) shut-down procedures when PSOs detect marine mammals within the EZ while the airgun array is operating; and
- (4) ramp-up procedures.

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 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, and NMFS' notice of proposed IHA (75 FR 54095, September 3, 2010), nor is take by injury authorized by this IHA.

#### **4.3. 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 NMFS.

#### **4.4. 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's Report are hereby incorporated by reference (NSF, 2010; LGL, 2010).

NMFS does not expect SIO's activities to have adverse consequences on the viability of marine mammals in the study 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. Numbers of

individuals of all species taken by harassment are expected to be small (relative to species or stock abundance), and the marine seismic survey will have a negligible impact on the affected species or stocks of marine mammals. The requirement of no unmitigable adverse impact to subsistence uses does not apply here because of the location of the proposed activity.

#### **4.5. 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's Report, are hereby incorporated by reference (NSF, 2010; LGL, 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 impacts 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.

NMFS has issued incidental take authorizations for other seismic research surveys (to SIO and other parties) 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 in the activity area. There are no other NSF-sponsored seismic surveys scheduled for the ETP in 2010 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.

#### **5. LIST OF PREPARERS**

Ben Laws  
Fishery Biologist  
Office of Protected Resources  
NOAA/National Marine Fisheries Service  
Silver Spring, MD

#### **6. WORKS CITED**

LGL Ltd., e. r. (2010). *Environmental Assessment of a Marine Geophysical Survey by the R/V Melville in the Pacific Ocean off Central and South America, October–November 2010.*

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



**FINDING OF NO SIGNIFICANT IMPACT  
FOR THE ISSUANCE OF AN INCIDENTAL HARASSMENT AUTHORIZATION  
TO SCRIPPS INSTITUTION OF OCEANOGRAPHY TO TAKE MARINE MAMMALS INCIDENTAL  
TO CONDUCTING A MARINE GEOPHYSICAL SURVEY  
IN THE EASTERN TROPICAL PACIFIC OCEAN, OCTOBER-NOVEMBER, 2010**

**NATIONAL MARINE FISHERIES SERVICE**

**BACKGROUND**

The National Marine Fisheries Service (NMFS) received an application from Scripps Institution of Oceanography (SIO) requesting an incidental harassment authorization (IHA) pursuant to NMFS' responsibility to authorize the take of small numbers of marine mammals incidental to an otherwise lawful activity, other than commercial fishing, pursuant to section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1631 *et seq.*) 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 prepared an Environmental Assessment (EA) titled "*Issuance of an Incidental Harassment Authorization to the Scripps Institution of Oceanography to Take Marine Mammals by Harassment Incidental to a Marine Geophysical Survey in the Pacific Ocean off of Central and South America, October-November 2010*". This EA incorporates the NSF's Final 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 Melville in the Pacific Ocean off Central and South America, October-November 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). Both EAs are incorporated by reference into this Finding of No Significant Impact (FONSI).

The EA specifically analyzes the fact that SIO intends to obtain an IHA from NMFS in order to conduct the seismic survey with the R/V *Melville* (*Melville*). The EA assesses the potential impacts to the environment associated with the proposed issuance of an IHA and the potential effects of airgun sounds and signals from multibeam echosounders and sub-bottom profilers on marine species while conducting the seismic survey. The EA evaluates two alternatives: (1) a no action alternative (i.e., do not issue an IHA and do not conduct the survey) and (2) issuance of an IHA and conduct the associated seismic survey from October 19 through November 14, 2010.

NMFS has satisfied the requirements for an authorization for the take of small numbers of 20 species of marine mammals, by Level B harassment only, incidental to the preferred alternative of conducting marine geophysical surveys (seismic surveys) in the Eastern Tropical Pacific Ocean (ETP), October through November, 2010. NMFS proposes to issue the IHA with mitigation measures, as described in Alternative 2 of the EA. In addition, NMFS issued a Biological Opinion (BiOp) in accordance with the requirements of Section 7 of the ESA summarizing the results of a formal interagency and intra-agency consultation. The BiOp found that the effects of the seismic survey, including issuance of the IHA, were not likely to jeopardize the continued existence of the three listed species of whale and five listed species of sea turtle. Critical habitat has not been designated for any of the eight affected species and the action, therefore, will not affect designated critical habitat. The analyses in the EA, as informed by the BiOp, support the findings and determination.

### **ANALYSIS**

National Oceanic and Atmospheric Administration Administrative Order (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 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: The research activities and NMFS' action (i.e., issuing an IHA to SIO) are not anticipated to cause substantial damage to ocean and coastal habitats. The action will authorize Level B harassment of marine mammals, incidental to seismic surveys for a short period of time (approximately 15 days of seismic surveys during a research cruise occurring between October 19 and November 14, 2010) in international and foreign waters offshore from Central and South America.

The survey will involve one source vessel, the *Melville*, which deploys a towed array of 2 airguns. Airguns function by venting high-pressure air into the water, which creates an air bubble. The airgun array is towed through the water column along the survey lines, introducing acoustic energy (via an oscillating air bubble that transmits sounds downward through the seafloor) into the water column.

The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), a law implemented by NMFS, governs marine fisheries management in waters within the Exclusive Economic Zone of United States, including conservation of Essential Fish Habitat (EFH). The proposed seismic survey will occur on the high seas and in waters within the EEZ of foreign nations in the ETP. There will, thus be no impact to marine resources within the U.S. EEZ. There is no EFH 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: The seismic survey and the issuance of an IHA will not have a substantial impact on biodiversity and/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 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 predator/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.

SIO will conduct the proposed open-water marine geophysical survey for a short period of time (seismic activities of 15 days total) in deep water (water greater than 1,000 meters (m) (3,820 feet (ft)) in depth). As the *Melville* transits the area while conducting the survey, any displacement of marine fish species by the proposed action would be temporary. Many fish species (i.e., those that do not have swim bladders, have rudimentary swim bladders (such as bottom-dwelling species, including flatfish), or well-developed swim bladders that are not directly connected to the ears) tend to have relatively poor auditory sensitivity and are not likely to be affected by exposure to intense noise. The seismic survey may potentially displace prey items of marine mammals, such as fish. However, prey items would return after the *Melville* has powered down the airgun array.

The overall response of fishes and squids is to exhibit startle responses and undergo vertical and horizontal movements away from the sound source. NMFS does not expect that the survey would have a substantial cumulative effect on any fish or invertebrate species. Although some loss of fish and other marine life might occur as a result of being in close proximity to the seismic airguns, this loss is, while short-term and adverse, is not expected to be significant.

NMFS conducted additional literature reviews for purposes of the MMPA analyses, and applicable information is included here to support this finding. Sperm whales (*Physeter macrocephalus*) regularly feed on squid and some fishes and may be feeding while in the area during the proposed survey. One study<sup>1</sup> investigating behavioral response of southern calamari squid exposed to seismic survey sound reported that the squid exhibited both startle and avoidance responses. It is expected that sperm whales remaining in this area, although potentially not affected directly, would experience indirect effects from airgun activities through reduced feeding opportunities. Like their prey, sperm whales are expected to follow prey out of the survey area temporarily and re-distribute back into the area once survey activities are complete and prey species return.

Available data suggest that sounds from the airguns will diminish dramatically by the time they travel more than 1,000 m (3,820 ft) to the ocean floor. The seismic program in the northeast Pacific Ocean is not expected to significantly impact benthic and invertebrate communities in the study area.

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<sup>1</sup> McCauley, R.D., J. Fewtrell, A.J. Duncan, C. Jenner, M.-N. Jenner, J.D. Penrose, R.I.T. Prince, A. Adhitya, J. Murdoch, and K. McCabe. 2000b. Marine seismic surveys – a study of environmental implications. APPEA J. 40:692-706.

The existing body of information on the impacts of seismic survey sound on marine invertebrates and benthic fauna is very limited. Recent controlled field experiments<sup>2</sup> on adult crustaceans exposed to seismic energy did not result in any significant pathological impacts on the animals. The study reported that the seismic survey did not: (1) cause any acute or mid-term mortality of the crab; (2) alter feeding behavior; or (3) affect embryo survival or post-hatch locomotion of larvae.

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 anticipates, and would authorize, the incidental, Level B harassment only, in the form of temporary behavioral disturbance, of several species of cetaceans. 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 EA and Report. The Level B harassment is not expected to affect biodiversity or ecosystem function. As with marine mammals, sea turtles may experience threshold shifts and behavioral responses.

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

Response: The seismic survey activities and the issuance of an IHA are not expected to have a substantial adverse impact on public health or safety.

The proposed survey area is distant from the nearest landmass and will not have an adverse impact on public health and safety.

### **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 SIO's action, 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; however, it is highly unlikely that the proposed seismic survey would result in a serious injury or mortality to any marine mammal as a result of vessel strike given the *Melville's* slow survey speed.

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 20 species of marine mammals and five species of sea turtles. In addition to the

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<sup>2</sup> Christian, J.R., A. Mathieu, D.H. Thomson, D. White, and R.A. Buchanan. 2003. Effect of seismic energy on snow crab (*Chionoecetes opilio*). Environmental Studies Research Funds Report No. 144. Calgary, AB, Canada. November.

potential incidental harassment of small numbers of marine mammals not listed under the U.S. Endangered Species Act of 1973 as Amended (ESA; 16 U.S.C. 1531 *et seq.*), the seismic surveys may have the potential to adversely affect (i.e. by incidentally harassing) the following species listed as threatened or endangered species pursuant to the ESA: blue (*Balaenoptera musculus*) and sperm (*Physeter macrocephalus*) whales, and the green (*Chelonia mydas*), loggerhead (*Caretta caretta*), hawksbill (*Eretmochelys imbricata*), olive ridley (*Lepidochelys olivacea*) and leatherback (*Dermochelys coriacea*) sea turtles.

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

- (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) change of speed and/or course when PSOs detect marine mammals either in or entering the EZ;
- (3) shut-down procedures when PSOs detect marine mammals within the EZ while the airgun array is operating; and
- (4) ramp-up procedures.

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.” Avoidance of the survey area and short-term behavioral changes are likely to affect, but not likely to jeopardize the existence of any marine mammals in the area.

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. Numbers of individuals of all 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 the species or stock.

Pursuant to Section 7 of the ESA, NSF and NMFS’ Office of Protected Resources (OPR), Permits, Conservation, and Education Division, concurrently engaged in formal Section 7 consultation with the OPR’s Endangered Species Division, regarding potential effects to ESA-listed species. The OPR’s Endangered Species Division has issued a Biological Opinion (BiOp).

The BiOp provides supporting analysis for this FONSI and concludes that:

- (1) NSF’s actions and NMFS’ action of issuing an IHA are not likely to jeopardize the continued existence of blue, humpback, and sperm whales, and sea turtles.
- (2) the activities are not likely to adversely modify or destroy critical habitat, as there is no such designation in international waters.
- (3) if NMFS issues the IHA, the Endangered Species Division has issued an incidental take statement (ITS) for the incidental take of blue whales, sperm whales, humpback whales and sea turtles.

The Permits, Conservation, and Education Division will ensure that the Reasonable and Prudent Measures, as implemented by specific terms and conditions, include the mitigation and monitoring requirements established in the IHA for listed marine mammals.

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

Response: No significant social or economic effects are expected from the proposed action. 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. Finally, there will be no impact of the activity on the availability of the species or stocks of marine mammals for subsistence uses.

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

Response: There is no significant controversy about the effects of the seismic survey and 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. Nor are the effects unique. The mitigation measures are based on NMFS' past experiences and practices with similar projects.

NSF made available SIO'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 54095, September 3, 2010).

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.

Generally, the Commission recommended that NMFS: require the applicant to use location-specific environmental parameters to estimate safety zones and to calculate associated exposure estimates; 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; 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 propose that the applicant revise its study design to include collection of meaningful baseline data on the distribution and behavior of marine mammals.

NMFS considered these comments as a component of the analysis of the significance of the proposed action. Specific responses will be provided in the *Federal Register* notice announcing the issuance of the IHA.

Overall, NMFS does not consider the effects of this action on the quality of the human environment to be highly controversial as its own evaluation of the action, as well as review of public comments, has not identified any issue raising substantial questions as to whether the project may cause significant degradation to any marine mammal species or its habitat, or establishing a substantial dispute concerning the IHA's size, nature, or effects.

**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 other unique or ecologically critical areas in the action area. The proposed action would only authorize one seismic survey within the ETP. NMFS's issuance of an IHA is not expected to significantly impact the survey area. Detailed information about the affected environment, other marine mammals, and marine life are provided in the EA. Although substantial effects to these areas are not anticipated, any appropriate coordination with the appropriate government organization related to SIO's action would be conducted by NSF and the U.S. Department of State.

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

Response: The seismic survey and the issuance of an IHA are not expected to have effects on the human environment that would likely 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 SIO) to develop precautionary measures to minimize the potential for significant impacts on biological resources. The multiple mitigation and monitoring requirements required of SIO are designed to ensure the least practicable impact on the affected species or stocks of marine mammals and also to gather additional data to inform future decision-making.

The exact mechanisms of how different sounds may affect certain marine organisms are not fully understood, but, as noted, there is no substantial dispute about the size, nature, or effect of this particular action. NMFS has been authorizing take for these same types of surveys for years, and monitoring reports received pursuant to the requirements of the authorizations have not indicated that impacts that were not anticipated or authorized occurred as a result of the 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 survey data from the ETP 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 impacts, if any, are likely to be insignificant and will be reduced substantially through the implementation of the proposed mitigation and monitoring requirements. Therefore, the effects on the human environment are not likely to be highly uncertain or 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 SIO conducting the seismic survey in the ETP (via the federal action of NSF funding the survey) and NMFS' proposed action of issuing an IHA to SIO that authorizes take (Level B behavioral harassment, only) of a small number of marine mammals, incidental to the conduct of SIO's seismic survey are interrelated. The seismic survey and the issuance of an IHA are not expected to result in cumulatively significant impacts when considered in relation to other separate, yet insignificant actions.

The EA specifically analyzes the fact that SIO intends to obtain an IHA from NMFS in order to conduct the seismic survey. The EA briefly examined the impact of the seismic survey in light of other human activities within the study area. Although the airgun sounds from the seismic survey have higher source levels than the sounds generated from vessel traffic, tourism, and fishing activities; sounds generated from other human activities have lower peak pressures that occur continuously over extended periods. Thus, the impacts of SIO's proposed seismic survey in the ETP are expected to be no more than minor and short-term.

NMFS has issued incidental take authorizations for other seismic research surveys (to SIO and other parties) 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 in the activity area. There are no other NSF-sponsored seismic surveys scheduled for the ETP in 2010 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.

**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 or within the EEZ's of other foreign nations 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 resources.

**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 SIO would implement all international proactive 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 *Melville* 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. Issuance of an IHA to a specific individual or organization for a given activity does not guarantee or imply that NMFS will authorize others to conduct similar activities. 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, and this project has no unique aspects that would suggest it be a precedent for any future actions. For these reasons, the seismic survey and the issuance of an IHA are not precedent setting.

**13) Can the proposed action reasonably be expected to violate 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 SIO 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. Causal agents of cumulative effects can include multiple causes, multiple effects, effects of activities in more than one locale, and recurring events. As evaluated in the EA, human activities in the region of the proposed seismic survey in the ETP include vessel traffic, tourism, and fishing activities. Those activities as described in the EA, when conducted separately or in combination with other activities, could affect marine mammals and sea turtles in the survey area.

Because of the relatively short time that the project area will be ensonified (15 days), the action will not result in synergistic cumulative adverse effects that could have a substantial effect on the target or any non-target species (See response to Questions 4). The survey will also not be expected to have a substantial cumulative effect on any fish or invertebrate species. Although some loss of fish and other marine life might occur as a result of being in close proximity to the seismic airguns, this loss is not expected to be significant.

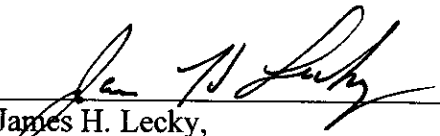
The proposed survey does not target any marine mammal or sea turtle and is not expected to result in any significant cumulative adverse effects on the species incidentally taken by harassment due to these activities. The potential temporary behavioral disturbance of marine mammals and sea turtles might 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 or the issuance of an IHA.

The issuance of the IHA would also not be expected to have a substantial cumulative effect on any fish, fish habitat or invertebrate species as discussed in this document. Therefore, no cumulative adverse effects on any species are expected due to the seismic survey.

#### **DETERMINATION**

In view of the information presented in this document and the analysis contained in this EA and documents it references, NMFS has determined that the issuance of an IHA for the take, by harassment, of small numbers of marine mammals incidental to SIO's October through November, 2010, seismic survey in the Eastern Tropical Pacific Ocean will not significantly impact the quality of the human environment, as described above, in the EA, and associated Report.

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.

  
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James H. Lecky,  
Director, Office of Protected Resources,  
National Marine Fisheries Service

OCT 14 2010

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Date