
APPENDIX I:
DISTRIBUTION OF AND PUBLIC HEARINGS ON THE
DRAFT PROGRAMMATIC EIS/OEIS

**Notice of Availability (NOA) and Distribution List for the
Draft Programmatic EIS/OEIS**

Service area	Applicant name	Estimated annualized funding amount
WI-5	Legal Action of Wisconsin	3,689,622
NWI-1	Wisconsin Judicare	178,726
WI-2	Wisconsin Judicare	1,014,258
Wyoming:		
MWY	Legal Aid of Wyoming	14,324
NWY-1	Legal Aid of Wyoming	199,098
WY-4	Legal Aid of Wyoming	569,030

These grants and contracts will be awarded under the authority conferred on LSC by the Legal Services Corporation Act, as amended (42 U.S.C. 2996e(a)(1)). Awards will be made so that each service area is served, although none of the listed organizations are guaranteed an award or contract. This public notice is issued pursuant to the LSC Act (42 U.S.C. 2996f(f)), with a request for comments and recommendations concerning the potential grantees within a period of thirty (30) days from the date of publication of this notice. Grants will become effective and grant funds will be distributed on or about January 1, 2011.

Dated: September 29, 2010.

Janet LaBella,

*Director, Office of Program Performance,
Legal Services Corporation.*

[FR Doc. 2010-25245 Filed 10-7-10; 8:45 am]

BILLING CODE 7050-01-P

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

[Notice: (10-122)]

Notice of Information Collection

AGENCY: National Aeronautics and Space Administration (NASA).

ACTION: Notice of information collection.

SUMMARY: The National Aeronautics and Space Administration, as part of its continuing effort to reduce paperwork and respondent burden, invites the general public and other Federal agencies to take this opportunity to comment on proposed and/or continuing information collections, as required by the Paperwork Reduction Act of 1995 (Pub. L. 104-13, 44 U.S.C. 3506(c)(2)(A)).

DATES: All comments should be submitted within 60 calendar days from the date of this publication.

ADDRESSES: All comments should be addressed to Lori Parker, National Aeronautics and Space Administration, Washington, DC 20546-0001.

FOR FURTHER INFORMATION CONTACT: Requests for additional information or

copies of the information collection instrument(s) and instructions should be directed to Lori Parker, NASA PRA Officer, NASA Headquarters, 300 E Street, SW., JF0000, Washington, DC 20546, (202) 358-1351, Lori.Parker@nasa.gov.

SUPPLEMENTARY INFORMATION:

I. Abstract

The KEEP is a job shadowing program intended to provide students with career exploration under the mentorship of a Kennedy Space Center (KSC) NASA of contractor employee. Participation in the program is limited to students who are U.S. citizens, 16 years or older, who have been recommended by a teacher, guidance counselor, or other school official. Students may shadow for 1 day or up to 1 week.

II. Method of Collection

The collection of information will be made by the use of a Web-based on-line application system and a database of applicant information will be developed. We believe this is the most efficient and cost effective way to collect the information.

III. Data

Title: Kennedy Educational Experiences program (KEEP).

OMB Number: 2700-0135.

Type of Review: Extension, without change, of a currently approved collection.

Affected Public: Individuals or households.

Estimated Number of Respondents: 20.

Estimated Total Annual Burden Hours: 20.

Estimated Total Annual Cost to Government: \$0.

IV. Request for Comments

Comments are invited on: (1) Whether the proposed collection of information is necessary for the proper performance of the functions of NASA, including whether the information collected has practical utility; (2) the accuracy of NASA's estimate of the burden (including hours and cost) of the

proposed collection of information; (3) ways to enhance the quality, utility, and clarity of the information to be collected; and (4) ways to minimize the burden of the collection of information on respondents, including automated collection techniques or the use of other forms of information technology.

Comments submitted in response to this notice will be summarized and included in the request for OMB approval of this information collection. They will also become a matter of public record.

Lori Parker,

NASA PRA Clearance Officer.

[FR Doc. 2010-25446 Filed 10-7-10; 8:45 am]

BILLING CODE P

NATIONAL SCIENCE FOUNDATION

Notice of Public Hearings and the Availability of a Draft Programmatic Environmental Impact Statement/ Overseas Environmental Impact Statement (PEIS/OEIS)

AGENCY: National Science Foundation.

ACTION: Notice of public hearings and request for public comments on a Draft PEIS/OEIS for Marine Seismic Research Funded by the National Science Foundation (NSF) or Conducted by the U.S. Geological Survey (USGS).

SUMMARY: NSF gives notice of the availability of a Draft PEIS/OEIS (hereafter Draft PEIS) for marine seismic research funded by NSF or conducted by the USGS and requests public review and comment on the document. NSF also provides notice of public hearings on the Draft PEIS.

The Division of Ocean Sciences in the Directorate for Geosciences (GEO/OCE) has prepared the Draft PEIS as the lead agency with support from the cooperating agencies, USGS and the National Marine Fisheries Service (NMFS) of the National Oceanic and Atmospheric Administration (NOAA).

The Draft PEIS assesses the potential impacts of marine seismic research on the human and natural environment. Under the Proposed Action, a variety of

acoustic sources used for research activities funded by NSF or conducted by the USGS would be operated from various research vessels operated by U.S. academic institutions or government agencies. The seismic acoustic sources would include various airgun configurations (particularly strings or arrays with as little as 2 to as many as 36 seismic airguns), as well as low-energy seismic and non-seismic acoustic sources.

The Draft PEIS examines the potential impacts that may result from geophysical exploration and scientific research using seismic surveys that are funded by NSF or conducted by the USGS in non-Arctic waters. The Proposed Action is for academic and U.S. government scientists in the U.S., and possible international collaborators, to conduct marine seismic research from research vessels operated by U.S. academic institutions and government agencies. The purpose of the Proposed Action is to fund the investigation of the geology and geophysics of the seafloor by collecting seismic reflection and refraction data that reveal the structure and stratigraphy of the crust and/or overlying sediment below the world's oceans. NSF has a continuing need to fund seismic surveys that enable scientists to collect data essential to understanding the complex Earth processes beneath the ocean floor.

Two action alternatives and the No-Action Alternative have been carried forward for analysis. The Draft PEIS is available for public review for a 45-day period. Comments must be submitted on or before November 22, 2010.

NSF will conduct two public hearings to receive oral and written comments on the Draft PEIS. Federal, state, and local agencies and interested individuals are invited to be present or represented at the public hearings. This notice announces the dates and locations of the public hearings for this Draft PEIS.

An open house session will precede the scheduled public hearing at each of the locations listed below and will allow individuals to review the information presented in the Draft PEIS. NSF and USGS representatives will be available during the open house sessions to clarify information related to the Draft PEIS.

Dates & Addresses: All hearings will start with an open house session, followed by a presentation, and then the formal oral public comment period. Public hearings will be held on the following dates and at the following locations:

- Monday, October 25, 2010, 5–7 p.m. at Scripps Institution of Oceanography, University California-San Diego,

Vaughn Hall, Room 100, Discovery Way, La Jolla, CA.

- Wednesday, October 27, 2010, 5–7 p.m. at the National Science Foundation, 4201 Wilson Blvd., Room 110, Arlington, VA.

The Draft PEIS is available on NSF's Web site at: <http://www.nsf.gov/geo/ocel/envcomp/index.jsp>. Electronic or printed copies of the Draft PEIS are also available upon request from: Holly Smith, National Science Foundation, Division of Ocean Sciences, 4201 Wilson Blvd., Suite 725, Arlington, VA 22230. Telephone: (703) 292-8583. E-mail: nepacomments@nsf.gov.

SUPPLEMENTARY INFORMATION: Currently, individual Environmental Assessments (EAs) are prepared for individual or small numbers of related cruises to assess the impact of the generated seismic survey noise on the marine environment. In the 7 years from 2003 through 2009, NSF prepared 31 EAs assessing the impact of sound from seismic surveys on marine resources and species listed under the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA) during research projects investigating the geology and geophysics of the seafloor. These EAs were prepared for various worldwide, academic research cruises that required the use of various marine seismic sources involving different airgun configurations deployed from the primary U.S. academic seismic survey ship, or smaller airgun sources deployed from other research vessels, often with concurrent operations of non-seismic acoustic sources such as echosounders and bottom profilers.

For past seismic research cruise actions, an EA has been used as the basis for consultation with the NOAA Office of Protected Resources (OPR) under section 7(a)(2) of the ESA. For each of the research cruises, NOAA OPR issued a Biological Opinion (BO) and related Incidental Take Statements (ITSs), which included terms and conditions to reduce impacts on threatened and endangered species. In parallel with this effort, when applicable, a separate application for an Incidental Harassment Authorization (IHA) under Section 101(a)(5)(D) of the MMPA was submitted for each cruise to another division within NOAA OPR, which subsequently issued the IHA. The MMPA procedures for issuance of an IHA involve publication of a proposed IHA notice in the **Federal Register** and solicitation of comments on that notice.

To reduce this apparent duplication of effort in environmental documentation and to address the potential for cumulative effects of

marine seismic research acoustic sources upon marine resources, NSF and the USGS have decided that a PEIS should be prepared. Preparing a PEIS for NSF and USGS marine seismic research serves several purposes. First, it provides a format for a comprehensive cumulative impacts analysis by taking a view of the planned marine seismic research activities as a whole. This is accomplished by assembling and analyzing the broadest range of direct, indirect, and cumulative impacts associated with all marine seismic research activities in addition to other past, present, and reasonably foreseeable projects in the region of influence. Furthermore, the collective analysis of representative project locations will provide a strong technical basis for a more global assessment of the potential cumulative impacts of NSF-funded and USGS marine seismic activities in the future.

A PEIS also sets up a framework for streamlining the preparation of subsequent environmental documents where needed for individual cruises. It is expected that time- and location-specific aspects, or similarly detailed technical information if necessary to evaluate unique impacts of specific cruises and projects, will be addressed in EIS supplements, tiered EAs, or other appropriate environmental documentation that would follow the publication of this Draft PEIS. Thus, while NSF-funded and USGS marine seismic research is reviewed under this Draft PEIS, the analysis of site-specific impacts from future cruises may be reserved for future analysis. Tiering of environmental documents in this manner makes subsequent documents of greater use and meaning to the public as NSF's and USGS's marine seismic research develops, without duplicating previous paperwork and environmental analyses. Finally, a PEIS enables the identification of an appropriate and prudent set of standard mitigation measures to be integrated into future NSF-funded and USGS cruises, which is a key goal of NSF and USGS.

Federal, state, local agencies, Native American Tribes and Nations, and interested parties are invited to be present or represented at the public hearings. Written comments can also be submitted anytime during the public hearings or during the 45-day public review period of the Draft PEIS. Comments must be submitted on or before November 22, 2010.

Oral statements will be heard and transcribed by a stenographer; however, to ensure the accuracy of the record, all statements should be submitted in writing. All statements, both oral and

written, will become part of the public record on the Draft PEIS and will be responded to in the Final PEIS. Equal weight will be given to both oral and written statements. In the interest of time, and to ensure all who wish to give an oral statement have the opportunity to do so, each speaker's comments will be limited to three (3) minutes. If a long statement is to be presented, it should be summarized at the public hearing with the full text submitted either in writing at the hearing or mailed to: Holly Smith, National Science Foundation, Division of Ocean Sciences, Room 725, 4201 Wilson Blvd., Arlington, VA 22230. In addition, comments may be submitted via e-mail at: nepacomments@nsf.gov. All written comments must be postmarked by November 22, 2010 to ensure they become part of the official record.

FOR FURTHER INFORMATION CONTACT: For further information regarding the Draft PEIS contact: Holly Smith, National Science Foundation, Division of Ocean Sciences, 4201 Wilson Blvd., Suite 725, Arlington, VA 22230; telephone: (703) 292-8583; e-mail: nepacomments@nsf.gov.

Dated: October 5, 2010.

Suzanne H. Plimpton,

Reports Clearance Officer, National Science Foundation.

[FR Doc. 2010-25378 Filed 10-7-10; 8:45 am]

BILLING CODE 7555-01-P

NUCLEAR REGULATORY COMMISSION

[Docket No. NRC-2010-0235]

Agency Information Collection Activities: Submission for the Office of Management and Budget (OMB) Review; Comment Request

AGENCY: Nuclear Regulatory Commission (NRC).

ACTION: Notice of the OMB review of information collection and solicitation of public comment.

SUMMARY: The NRC has recently submitted to OMB for review the following proposal for the collection of information under the provisions of the Paperwork Reduction Act of 1995 (44 U.S.C. Chapter 35). The NRC hereby informs potential respondents that an agency may not conduct or sponsor, and that a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The NRC published a **Federal Register** Notice with a 60-day comment period on this information collection on August 3, 2010.

1. *Type of submission, new, revision, or extension:* Extension.

2. *The title of the information collection:* 10 CFR Part 39—Licenses and Radiation Safety Requirements for Well Logging.

3. *Current OMB approval number:* 3150-0130.

4. *The form number if applicable:* N/A.

5. *How often the collection is required:* Applications for new licenses and amendments may be submitted at any time. Applications for renewal are submitted every 10 years. Reports are submitted as events occur.

6. *Who will be required or asked to report:* Applicants for and holders of specific licenses authorizing the use of licensed radioactive material for well logging.

7. *An estimate of the number of annual responses:* 2,827 (346 NRC Licensees + 2,481 Agreement State Licensees).

8. *The estimated number of annual respondents:* 278 (34 NRC Licensees + 244 Agreement State Licensees).

9. *An estimate of the total number of hours needed annually to complete the requirement or request:* 60,296 hours (7,375 total NRC licensees hrs + 52,921 total Agreement State licensees hrs). The NRC licensees total burden is 7,375 hours (108 reporting hrs + 7,267 recordkeeping hrs). The Agreement State licensees total burden is 52,921 hours (767 reporting hrs + 52,154 recordkeeping hrs). The average burden per response for both NRC licensees and Agreement State licensees is 19.4 hours and the burden per recordkeeper is 214 hours.

10. *Abstract:* 10 CFR Part 39 establishes radiation safety requirements for the use of radioactive material in well logging operations. The information in the applications, reports and records is used by the NRC staff to ensure that the health and safety of the public is protected and that licensee possession and use of source and byproduct material is in compliance with license and regulatory requirements.

A copy of the final supporting statement may be viewed free of charge at the NRC Public Document Room, One White Flint North, 11555 Rockville Pike, Room O-1 F21, Rockville, Maryland 20852. OMB clearance requests are available at the NRC worldwide Web site: <http://www.nrc.gov/public-involve/doc-comment/omb/index.html>. The document will be available on the NRC home page site for 60 days after the signature date of this notice.

Comments and questions should be directed to the OMB reviewer listed below by November 8, 2010. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given to comments received after this date.

Christine J. Kymn, Desk Officer, Office of Information and Regulatory Affairs (3150-0130), NEOB-10202, Office of Management and Budget, Washington, DC 20503.

Comments can also be e-mailed to Christine.J.Kymn@omb.eop.gov or submitted by telephone at (202) 395-4638.

The NRC Clearance Officer is Tremaine Donnell, (301) 415-6258.

Dated at Rockville, Maryland, this 30th day of September 2010.

For the Nuclear Regulatory Commission.

Tremaine Donnell,

NRC Clearance Officer, Office of Information Services.

[FR Doc. 2010-25406 Filed 10-7-10; 8:45 am]

BILLING CODE 7590-01-P

NUCLEAR REGULATORY COMMISSION

[Docket No. NRC-2010-0234]

Agency Information Collection Activities: Submission for the Office of Management and Budget (OMB) Review; Comment Request

AGENCY: Nuclear Regulatory Commission (NRC).

ACTION: Notice of the OMB review of information collection and solicitation of public comment.

SUMMARY: The NRC has recently submitted to OMB for review the following proposal for the collection of information under the provisions of the Paperwork Reduction Act of 1995 (44 U.S.C. Chapter 35). The NRC hereby informs potential respondents that an agency may not conduct or sponsor, and that a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The NRC published a **Federal Register** Notice with a 60-day comment period on this information collection on July 7, 2010.

1. *Type of submission, new, revision, or extension:* Extension.

2. *The title of the information collection:* 10 CFR Part 63, "Disposal of High-Level Radioactive Wastes in a Proposed Geologic Repository at Yucca Mountain, Nevada."

3. *Current OMB approval number:* 3150-0199.

rates, which resulted in an increase in labor cost.

Dated: October 4, 2010.

John Moses,

Director, Collection Strategies Division.

[FR Doc. 2010-25428 Filed 10-7-10; 8:45 am]

BILLING CODE 6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

[ER-FRL-8993-1]

Environmental Impacts Statements; Notice of Availability

Responsible Agency: Office of Federal Activities, General Information (202) 564-1399 or <http://www.epa.gov/compliance/nepa/>.

Weekly receipt of Environmental Impact Statements

Filed 09/27/2010 through 10/01/2010. Pursuant to 40 CFR 1506.9.

Notice

In accordance with Section 309(a) of the Clean Air Act, EPA is required to make its comments on EISs issued by other Federal agencies public. Historically, EPA has met this mandate by publishing weekly notices of availability of EPA comments, which includes a brief summary of EPA's comment letters, in the **Federal Register**. Since February 2008, EPA has been including its comment letters on EISs on its Web site at: <http://www.epa.gov/compliance/nepa/eisdata.html>. Including the entire EIS comment letters on the Web site satisfies the Section 309(a) requirement to make EPA's comments on EISs available to the public. Accordingly, on March 31, 2010, EPA discontinued the publication of the notice of availability of EPA comments in the **Federal Register**.

EIS No. 20100389, Final EIS, USFS, OR, D-Bug Hazard Reduction Timber Sales Project, To Lessen the Fuel and Safety Hazards Associated With the On-Going Outbreak of Mountain Pine Beetles, Diamond Lake Ranger District, Umpqua National Forest, Douglas County, OR, Wait Period Ends: 11/08/2010, Contact: Joyce Thompson 541-957-3457.

This document is available on the Internet at: <http://www.fs.fed.us/r6/umpqua/projects/projectdocs/d-bug-ts/index.shtml>.

EIS No. 20100390, Draft EIS, NSF, 00, Programmatic—Marine Seismic Research Funded by the National Science Foundation or Conducted by the U.S. Geological Survey, To Fund

the Investigation of the Geology and Geophysics of the Seafloor by Collecting Seismic Reflection and Refraction Data, Across the World's Ocean, Comment Period Ends: 11/22/2010, Contact: Holly Smith 703-292-8593.

This document is available on the Internet at <http://www.nsf.gov/geo/oce/envcomp/index.jsp>.

EIS No. 20100391, Final EIS, USACE, NC, Surf City and North Topsail Beach Project, To Evaluate Coastal Storm Damage Reduction, Topsail Island, Pender and Onslow Counties, NC, Wait Period Ends: 11/22/2010, Contact: Doug Piatkowski 910-251-4908.

EIS No. 20100392, Draft EIS, BR, CA, Nimbus Hatchery Fish Passage Project, To Create and Maintain a Reliable System for Collecting Adult Fish to Allow Reclamation, Rancho Cordova, Gold River, CA, Comment Period Ends: 11/30/2010, Contact: David Robinson 916-989-7179.

EIS No. 20100393, Final EIS, DOE, WA, Cushman Hydroelectric Project (FERC No. 0456), Design and Construction of New 3.6-MW Powerhouse on the North Fork of the Skokomish River, Mason County, WA, Wait Period Ends: 11/08/2010, Contact: Jane Summerson 202-340-9626.

EIS No. 20100394, Draft EIS, FHWA, NC, NC-109 Corridor Improvement Study, From Old Greensboro Road (NC-1798) to I-40/US 311, Davidson and Forsyth Counties, NC, Comment Period Ends: 11/22/2010, Contact: Vince Rhea 919-733-7844.

EIS No. 20100395, Final EIS, USACE, LA, Convey Atchafalaya River Water to Northern Terrebonne Marshes and Multipurpose Operation of Houma Navigation Lock, Integrated Feasibility Study, Louisiana Coastal Area (LCA) Implementation, Lafourche, Terrebonne, St. Mary Parish, LA, Wait Period Ends: 11/08/2010, Contact: Dr. Nathan Dayan 504-862-2530.

EIS No. 20100396, Final EIS, USACE, LA, Louisiana Coastal Area (LCA)—Louisiana, Terrebonne Basin Barrier Shoreline Restoration, Feasibility Study, Implementation, Terrebonne Parish, LA, Wait Period Ends: 11/08/2010, Contact: Dr. William P. Klein, Jr. 504-862-2540.

EIS No. 20100397, Final EIS, USACE, LA, Small Diversion at Convent/Blind River, Proposes to construct a Freshwater Diversion Project, Integrated Feasibility Study, Louisiana Coastal Area, St. James Parish, LA, Wait Period Ends: 11/08/2010, Contact: Dr. William P. Klein, Jr. 504-862-2540.

EIS No. 20100398, Final EIS, USACE, LA, Medium Diversion at White Ditch, Integrated Feasibility Study, Louisiana Coastal Area (LCA) Ecosystem Restoration, Implementation, Plaquemines Parish, LA, Wait Period Ends: 11/08/2010, Contact: Dr. Nathan Dayan 504-862-2530.

EIS No. 20100399, Final EIS, USACE, LA, Amite River Diversion Canal Modification Element of the Section 7006(E)(3) Ecosystem Restoration Project, Feasibility Study, Louisiana Coastal Area (LCA) Ascension and Livingston Parishes, LA, Wait Period Ends: 11/08/2010, Contact: Dr. William P. Klein, Jr. 504-862-2540.

Amended Notices

EIS No. 20100370, Final EIS, FHWA, WY, Jackson South Project, US/26/89/189/91 Improvements, Funding and Right-of-Way Approval, Teton County, WY, Wait Period Ends: 11/17/2010, Contact: Lee Potter 307-771-2946.

Revision to FR Notice Published 09/17/2010: Extending Comment Period from 10/18/2010 to 11/17/2010.

Dated: October 5, 2010.

Robert W. Hargrove,

Director, NEPA Compliance Division, Office of Federal Activities.

[FR Doc. 2010-25470 Filed 10-7-10; 8:45 am]

BILLING CODE 6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

[FRL-9212-5]

Science Advisory Board Staff Office; Notification of Two Public Teleconferences of the Science Advisory Board Ecological Processes and Effects Committee Augmented for Ballast Water

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice.

SUMMARY: The EPA Science Advisory Board (SAB) Staff Office announces two public teleconferences of the Science Advisory Board Ecological Processes and Effects Committee, augmented, to discuss its advice on the effectiveness of shipboard ballast water treatment processes and ways to improve future assessments of ballast water treatment systems to minimize the impacts of invasive species in vessel ballast water discharge.

DATES: The teleconference dates are October 26, 2010, from 2 p.m. to 6 p.m.



**NATIONAL SCIENCE FOUNDATION
4201 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22230**

1 October 2010

MEMORANDUM FOR: ALL INTERESTED GOVERNMENT AGENCIES, INDIVIDUALS, AND ORGANIZATIONS

FROM: National Science Foundation (NSF)

Notice of Public Hearings and the Availability of a Draft Programmatic Environmental Impact Statement/Overseas Environmental Impact Statement (PEIS/OEIS)

NSF gives notice of the availability of a Draft PEIS/OEIS (hereafter Draft PEIS) for marine seismic research funded by NSF or conducted by the U.S. Geological Survey (USGS) and requests public review and comment on the document. NSF also provides notice of public hearings on the Draft PEIS.

The Division of Ocean Sciences in the Directorate for Geosciences (GEO/OCE) has prepared the Draft PEIS as the lead agency with support from the cooperating agencies, USGS and the National Marine Fisheries Service (NMFS) of the National Oceanic and Atmospheric Administration (NOAA).

The Draft PEIS assesses the potential impacts of marine seismic research on the human and natural environment. Under the Proposed Action, a variety of acoustic sources used for research activities funded by NSF or conducted by the USGS would be operated from various research vessels operated by U.S. academic institutions or government agencies. The seismic acoustic sources would include various airgun configurations (particularly strings or arrays with as little as 2 to as many as 36 seismic airguns), as well as low-energy seismic and non-seismic acoustic sources.

The Draft PEIS examines the potential impacts that may result from geophysical exploration and scientific research using seismic surveys that are funded by NSF or conducted by the USGS in non-Arctic waters. The Proposed Action is for academic and U.S. government scientists in the U.S., and possible international collaborators, to conduct marine seismic research from research vessels operated by U.S. academic institutions and government agencies. The purpose of the Proposed Action is to fund the investigation of the geology and geophysics of the seafloor by collecting seismic reflection and refraction data that reveal the structure and stratigraphy of the crust and/or overlying sediment below the world's oceans. NSF has a continuing need to fund seismic surveys that enable scientists to collect data essential to understanding the complex Earth processes beneath the ocean floor.

Two action alternatives and the No-Action Alternative have been carried forward for analysis. The Draft PEIS is available for public review for a 45-day period. Comments must be received before or postmarked by November 22, 2010.

NSF will conduct two public hearings to receive oral and written comments on the Draft PEIS. Federal, state, and local agencies and interested individuals are invited to be present or represented at the public hearings. An open house session will precede the scheduled public hearing at each of the locations listed below and will allow individuals to review the information presented in the Draft PEIS. NSF and USGS representatives will be available during the open house sessions to clarify information related to the Draft PEIS.

Dates & Addresses: All hearings will start with an open house session, followed by a presentation, and then the formal oral public comment period. Public hearings will be held on the following dates and at the following locations:

- Monday, October 25, 2010, 5:00-7:00 p.m. at Scripps Institution of Oceanography, University California-San Diego, Vaughn Hall, Room 100, Discovery Way, La Jolla, CA.
- Wednesday, October 27, 2010, 5:00-7:00 p.m. at the National Science Foundation, 4201 Wilson Blvd., Room 110, Arlington, VA.

The Draft PEIS is available on NSF's website at: <http://www.nsf.gov/geo/oce/envcomp/index.jsp>. Electronic or printed copies of the Draft PEIS are also available upon request from: Holly Smith, National Science Foundation, Division of Ocean Sciences, 4201 Wilson Blvd., Suite 725, Arlington, VA 22230. Telephone: (703) 292-8583. Email: nepacomments@nsf.gov.

Supplementary Information: Currently, individual Environmental Assessments (EAs) are prepared for individual or small numbers of related cruises to assess the impact of the generated seismic survey noise on the marine environment. In the 7 years from 2003 through 2009, NSF prepared 31 EAs assessing the impact of sound from seismic surveys on marine resources and species listed under the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA) during research projects investigating the geology and geophysics of the seafloor. These EAs were prepared for various worldwide, academic research cruises that required the use of various marine seismic sources involving different airgun configurations deployed from the primary U.S. academic seismic survey ship, or smaller airgun sources deployed from other research vessels, often with concurrent operations of non-seismic acoustic sources such as echosounders and bottom profilers.

For past seismic research cruise actions, an EA has been used as the basis for consultation with the NOAA Office of Protected Resources (OPR) under section 7(a)(2) of the ESA. For each of the research cruises, NOAA OPR issued a Biological Opinion (BO) and related Incidental Take Statements (ITSs), which included terms and conditions to reduce impacts on threatened and endangered species. In parallel with this effort, when applicable, a separate application for an Incidental Harassment Authorization (IHA) under Section 101(a)(5)(D) of the MMPA was submitted for each cruise to another division within NOAA OPR, which subsequently issued the IHA. The MMPA procedures for issuance of an IHA involve publication of a proposed IHA notice in the *Federal Register* and solicitation of comments on that notice.

To reduce this apparent duplication of effort in environmental documentation and to address the potential for cumulative effects of marine seismic research acoustic sources upon marine resources, NSF and the USGS have decided that a PEIS should be prepared. Preparing a PEIS for NSF and USGS marine seismic research serves several purposes. First, it provides a format for a comprehensive cumulative impacts analysis by taking a view of the planned marine seismic research activities as a whole. This is accomplished by assembling and analyzing the broadest range of direct, indirect, and cumulative impacts associated with all marine seismic research activities in addition to other past, present, and reasonably foreseeable projects in the region of influence. Furthermore, the collective analysis of representative project locations will provide a strong technical basis for a more global assessment of the potential cumulative impacts of NSF-funded and USGS marine seismic activities in the future.

A PEIS also sets up a framework for streamlining the preparation of subsequent environmental documents where needed for individual cruises. It is expected that time- and location-specific aspects, or similarly detailed technical information if necessary to evaluate unique impacts of specific cruises and projects, will be addressed in EIS supplements, tiered EAs, or other appropriate environmental documentation that

would follow the publication of this Draft PEIS. Thus, while NSF-funded and USGS marine seismic research is reviewed under this PEIS, the analysis of site-specific impacts from future cruises may be reserved for future analysis. Tiering of environmental documents in this manner makes subsequent documents of greater use and meaning to the public as NSF's and USGS's marine seismic research develops, without duplicating previous paperwork and environmental analyses. Finally, a PEIS enables the identification of an appropriate and prudent set of standard mitigation measures to be integrated into future NSF-funded and USGS cruises, which is a key goal of NSF and USGS.

Federal, state, local agencies, Native American Tribes and Nations, and interested parties are invited to be present or represented at the public hearings. Written comments can also be submitted anytime during the public hearings or during the 45-day public review period of the Draft PEIS. Comments must be received before or postmarked by November 22, 2010.

Oral statements will be heard and transcribed by a stenographer; however, to ensure the accuracy of the record, all statements should be submitted in writing. All statements, both oral and written, will become part of the public record on the Draft PEIS and will be responded to in the Final PEIS. Equal weight will be given to both oral and written statements. In the interest of time, and to ensure all who wish to give an oral statement have the opportunity to do so, each speaker's comments will be limited to three (3) minutes. If a long statement is to be presented, it should be summarized at the public hearing with the full text submitted either in writing at the hearing or mailed to: Holly Smith, National Science Foundation, Division of Ocean Sciences, 4201 Wilson Blvd., Suite 725, Arlington, VA 22230. In addition, comments may be submitted via e-mail at: nepacomments@nsf.gov. Therefore, comments may be submitted 3 ways:

1. Mailed to: Holly Smith, National Science Foundation, Division of Ocean Sciences, 4201 Wilson Blvd., Suite 725, Arlington, VA 22230.
2. Sent via email at nepacomments@nsf.gov.
3. Submitted in writing at the public hearings.

All written comments submitted by mail must be postmarked by November 22, 2010 to ensure they become part of the official record.

For Further Information: For further information regarding the Draft PEIS contact:

Holly Smith
National Science Foundation
Division of Ocean Sciences
4201 Wilson Blvd., Suite 725
Arlington, VA 22230
Telephone: (703) 292-8583
Email: nepacomments@nsf.gov

Enclosure: CD containing Draft PEIS/OEIS and appendices.

DISTRIBUTION LIST
DRAFT PROGRAMMATIC EIS/OEIS FOR MARINE SEISMIC RESEARCH
FUNDED BY NSF OR CONDUCTED BY USGS

FEDERAL AGENCIES

USEPA

U.S. Environmental Protection Agency
Office of Federal Activities
EIS Filing Section
Mail Code 2252-A, Room 7241
Ariel Rios Building (South Oval Lobby)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

U.S. EPA – Region 9
75 Hawthorne Street, 13th Floor
San Francisco, CA 94105

U.S. Department of State

John Field
U.S. Department of State
7203 Central Ave.
Takoma Park, MD 20912

BOEMRE

Jill Lewandowski, Protected Species Biologist
Environmental Assessment Branch
BOEMRE
381 Elden Street
Herndon, VA 20170

Deborah Epperson
BOEMRE
1201 Elmwood Park Boulevard (MS 5432)
New Orleans, LA 70123–2394

Casey Rowe
Gulf of Mexico OCS Region
BOEMRE
1201 Elmwood Park Boulevard (MS 5412)
New Orleans, LA 70123–2394

Wayne Crayton
BOEMRE
3801 Centerpoint Drive, Suite 500
Anchorage, AK 99503

James Price
Marine Mammals Env. Studies Coordinator
BOEMRE
381 Elden Street, MS 4041
Herndon, VA 20170-4817

USGS

Esther Eng
Chief, Environmental Management Branch
U.S. Geological Survey
MS-207
12201 Sunrise Valley Drive
Reston VA 20192

John Haines
Coordinator for Coastal & Marine Geology
U.S. Geological Survey Headquarters
12201 Sunrise Valley Drive, Mail Stop 915B
Reston, VA 20192-0002

James Devine
Senior Advisor for Science Applications
U.S. Geological Survey Headquarters
MS-106
12201 Sunrise Valley Drive
Reston, VA 20192

Navy

John Quinn
Deputy Director
Environmental Readiness Division (OPNAV
N45)
2511 Jefferson Davis Highway
Suite 2000
Arlington, VA 22202

Michael J. Weise
Marine Mammals & Biological Oceanography
Program
Office of Naval Research - Code 32
One Liberty Center, Rm 1068
875 N. Randolph St.
Arlington, VA 22203-1995

James E. Eckman
Marine Mammals & Biological Oceanography
Program
Office of Naval Research – Code 322
One Liberty Center, Rm 1073
875 N. Randolph St.
Arlington, VA 22203-1995

USFWS

John Fay
Division of Endangered Species
U.S. Fish and Wildlife Service
420 ARLSQ
4401 N. Fairfax Drive
Arlington, VA 22203

NOAA-NMFS

Steve Leathery, National NEPA Coordinator
NOAA National Marine Fisheries Service
1315 East-West Highway, Room 14555
Silver Spring, MD 20910

James Lecky, Director
Office of Protected Resources
NOAA National Marine Fisheries Service
1315 East West Highway
Silver Spring, MD 20901

Angela Somma, Chief Endangered Species
Division
Office of Protected Resources
NOAA National Marine Fisheries Service
1315 East West Hwy
Silver Spring, MD 20901

Karen Abrams
NOAA National Marine Fisheries Service
1315 East-West Highway
SSMC3, 14th Floor F/HC
Silver Spring, MD 20910

Brad Smith
NOAA National Marine Fisheries Service
222 W. 7th St.
Box 43
Anchorage, AK 99513

Jolie Harrison
NOAA National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910

Jay Barlow
NOAA National Marine Fisheries Service
8604 La Jolla Shores Dr.
La Jolla, CA 92038

MMC

Tim Ragen
Marine Mammal Commission
4340 East-West Highway, Suite 700
Bethesda, MD 20814

STATE AGENCIES

Clyde W. Namu'o, Administrator
State of Hawai'i
Office of Hawaiian Affairs
711 Kapi'olani Blvd., Suite 500
Honolulu, HI 96813

Mark Delaplaine
Federal Consistency Supervisor
California Coastal Commission
45 Fremont St., Suite 2000
San Francisco, CA 94105

OTHER INTERESTED PARTIES

Jessica Bertenshan
9500 Gilman Dr.
UC-San Diego
La Jolla, CA 92093

John Collins
Woods Hole Oceanographic Institution
MS-34
360 Woods Hole Rd.
Woods Hole, MA 02543

Pat Cooper
School of Ocean and Earth Sciences and
Technology
University of Hawaii
1680 East-West Road, POST 802
Honolulu HI 96822

Meagan Cummings
Lamont-Doherty Earth Observatory
P.O. Box 1000
61 Route 9W
Palisades, NY 10964-1000

John Eastlund
IODP
1000 Discovery Dr.
College Station, TX 77845

Lois Epstein
Cook Inlet Keeper
308 G St., Suite 219
Anchorage, AK 99501

Benny Gallaway
LGL
1410 Cavitt St.
Bryan, TX 77801

David Goldberg
Lamont-Doherty Earth Observatory
P.O. Box 1000
61 Route 9W
Palisades, NY 10964-1000

Jessica Gribbon
EarthTech
675 N. Washington St.
Alexandria, VA 22307

Richard Hammer
CSA Inc.
759 Parkway St.
Jupiter, FL 33477

Sean Higgins
Lamont-Doherty Earth Observatory
P.O. Box 1000
61 Route 9W
Palisades, NY 10964-1000

R.D. Hofman
Chevy Chase, MD 20815

Cara Horowitz
Natural Resources Defense Council
1314 Second St.
Santa Monica, CA 90401

Doug Johnson
College Station, TX 77845

Art June
Metcalf and Eddy
2751 Prospect Ave., Suite 200
Fairfax, VA 22031

George Krasnick
1003 Bishop St., Suite 1550
Pauahi Tower
Honolulu, HI 96813

Bill Lang
Mandeville, LA 70448

James Lima
Anchorage, AK 99501

Michael Link
LGL Alaska
1101 E 76th Ave., Suite B
Anchorage, AK 99513

Jeff McGuire
Woods Hole Oceanographic Institution
MS-24
360 Woods Hole Rd.
Woods Hole, MA 02543

Stephen Miller
9500 Gilman Dr.
UC-San Diego
La Jolla, CA 92093

Margo Morell
Consortium for Ocean Leadership
1201 New York Ave., Suite 400
Washington, DC 20005

Rebecca Nadel
Houston, TX 77079

Michael Purdy
Lamont-Doherty Earth Observatory
P.O. Box 1000
61 Route 9W
Palisades, NY 10964-1000

Scott Slougher
CRE
11 Dupont Circle NW, Suite 700
Washington, DC 20036

Brandon Southall
SEA, Inc.
911 Center Street, Suite B
Santa Cruz, CA 95060
Karen Stokesbury
CSA Inc.
759 Parkway St.
Jupiter, FL 33477

Lucy Swartz
Battelle
4112 Franklin St.
Kensington, MD 20895

Russell Tait
The Woodlands, TX 77382

Brian Taylor
School of Ocean and Earth Sciences and
Technology
University of Hawaii
1680 East-West Road, POST 802
Honolulu HI 96822

Goldy Thach
La Jolla, CA 92037

Dean Welch
Honolulu, HI 96815

Andrew Wigton
URC-GW3-866B
PO Box 2189
Houston, TX 77252

John Young
Houston, TX 77060

R/V *Marcus G. Langseth Science Oversight Committee:*

Graham M. Kent
Director Nevada Seismology Lab
Mail Stop 0174
University of Nevada/Reno
1664 N. Virginia St.
Reno, NV 89557

W. Steven Holbrook
Dept. Geology and Geophysics
University of Wyoming
Laramie, WY 82071-3006

Michael E. Enachescu
ER4030
Dept. of Earth Sciences
Memorial University of Newfoundland
Newfoundland, Canada A1B 3X7C

Nathan Bangs
Institute for Geophysics
University of Texas, Austin
10100 Burnet Road
Austin, TX 78758

H. Paul Johnson
School of Oceanography WB-10
Box 357940
University of Washington
Seattle, WA 98195-7940

Alexander (Sandy) Shor
School of Ocean and Earth Sciences and
Technology
University of Hawaii
1680 East-West Road, POST 802
Honolulu HI 96822

Mitchell Lyle
TAMU 3146
Texas A&M University
College Station, TX 77840-3146

Raymond W. Schmitt
Dept. Physical Oceanography
Woods Hole Oceanographic Institution
Mail Stop #21
Woods Hole, MA 02543

David W. Scholl
Emeritus Senior Scientist
U.S. Geological Survey
345 Middlefield Road
Menlo Park, CA 94025

Maya Tolstoy
Lamont-Doherty Earth Observatory
PO Box 1000
61 Rt 9 W
Palisades, NY 10964

Paul Ljunggren
Lamont-Doherty Earth Observatory
PO Box 1000
61 Rt 9 W
Palisades, NY 10964

Jeff Rupert
Lamont-Doherty Earth Observatory
PO Box 1000
61 Rt 9 W
Palisades, NY 10964

**Public Hearings on the
Draft Programmatic EIS/OEIS**

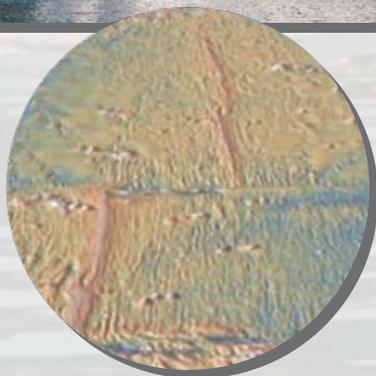
**Posters Used during the Public Hearings on the
Draft Programmatic EIS/OEIS**

WELCOME

**Public Hearing for
Draft Programmatic EIS/OEIS for Marine Seismic Research
Funded by the National Science Foundation (NSF)
or Conducted by the U.S. Geological Survey (USGS)**



**This public hearing is an opportunity to provide comments
on the Draft Programmatic EIS/OEIS to help us improve
our environmental impact analysis**





YOUR PARTICIPATION AND INPUT ARE IMPORTANT

- **Please ask questions. NSF, USGS, and NOAA representatives are here to answer your questions about the Proposed Action and to talk with you about your concerns.**
- **Please provide comments to help us understand your concerns. There are 3 ways to comment:**
 1. **Provide written comments at today's hearing.**
 2. **Submit comments via email to nepacomments@nsf.gov.**
 3. **Mail your comment sheet to:**

Holly Smith
Division of Ocean Sciences
National Science Foundation
4201 Wilson Blvd., Suite 725
Arlington, VA 22230
- **Please add your name to the mailing list to receive future notices about the NSF-USGS Marine Seismic Research Programmatic EIS/OEIS.**



Comments received today and during the entire 45-day public comment period (Oct. 8 - Nov. 22, 2010) will be addressed during the preparation of the Final Programmatic EIS/OEIS

THANK YOU FOR PARTICIPATING!



National Environmental Policy Act (NEPA)



NEPA guides the environmental impact analysis.

The Draft Programmatic EIS/OEIS assesses the potential impacts from the use of acoustic sources and associated activities in support of marine geophysical surveys funded by NSF or conducted by the USGS on the following resources:

Natural Resources

- Marine Acoustics
- Essential Fish Habitat
- Water Quality
- Marine Mammals, Fish, Birds, and Invertebrates
- Threatened and Endangered Species
- Hazardous Materials
- Hazardous Waste



Cultural Resources

- Historic and Archaeological Resources



Human Resources

- Socioeconomics (Private and Commercial Fisheries)
- Recreation
- Health and Safety



Your involvement is essential to the NEPA process

The Programmatic EIS Timeline

**Notice of Intent Published
Sept. 22, 2005**

**Scoping
Sept. 22 - Oct. 28, 2005**

**Preparation of
Draft Programmatic EIS/OEIS**

**Notice of Availability of
Draft Programmatic
EIS/OEIS (Oct. 8, 2010)**

**Public Comment Period
45 Days (Oct. 8 - Nov. 22, 2010)**

**Public Hearings
Oct. 25 - La Jolla, CA
Oct. 27 - Arlington, VA**

**Preparation of
Final Programmatic EIS/OEIS**

**Notice of Availability of
Final Programmatic EIS/OEIS**

30-day Wait Period

Record of Decision

There are many opportunities for your involvement in the Programmatic EIS/OEIS process.

- **Participate** in public hearings
- **Identify** community-specific issues and concerns
- **Ensure** you are on the mailing list
- **Read and comment** on the Draft Programmatic EIS/OEIS
- **Review** the Final Programmatic EIS/OEIS



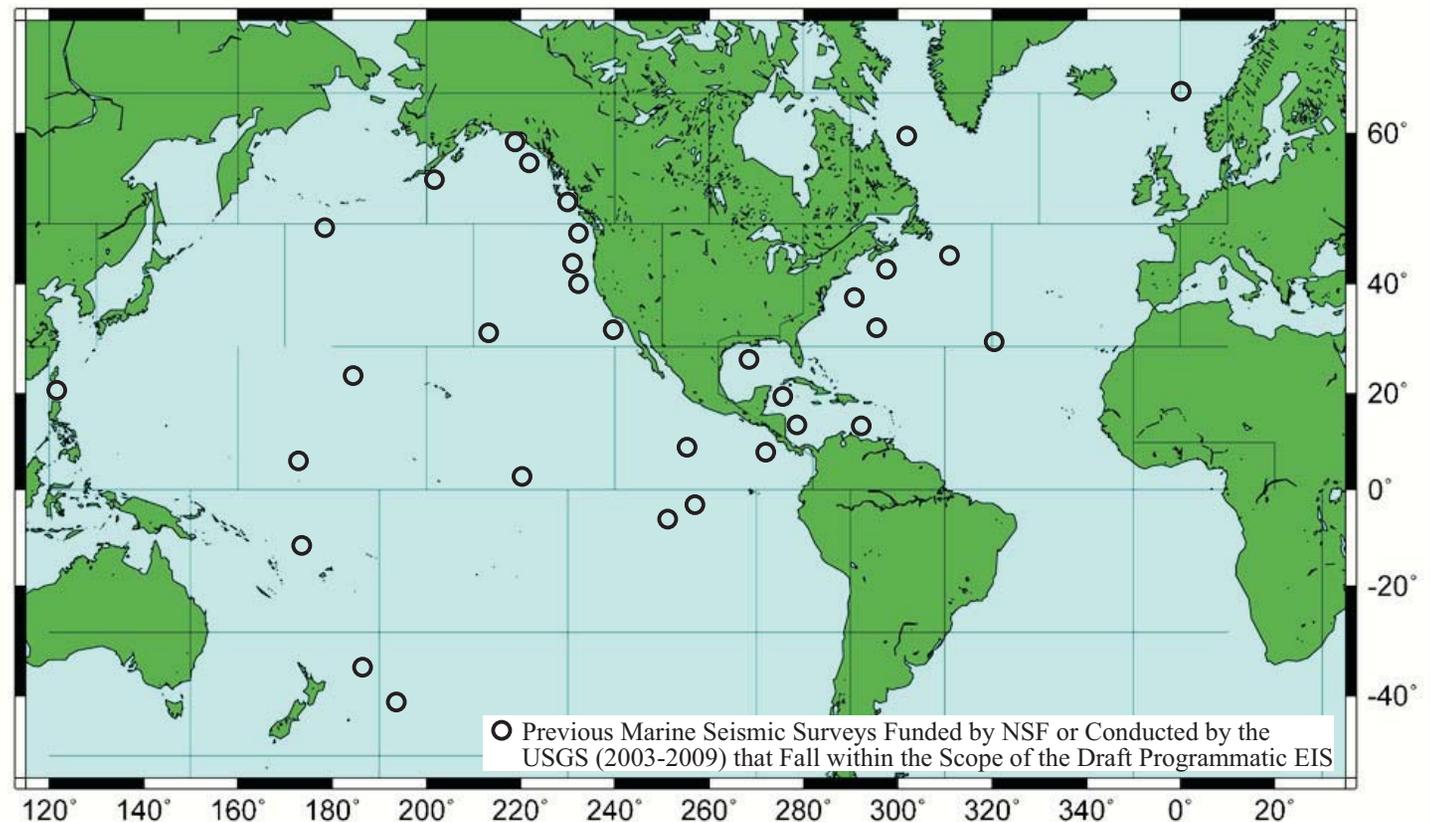


Draft Programmatic EIS/OEIS for Marine Seismic Research Funded by NSF or Conducted by the USGS Proposed Action



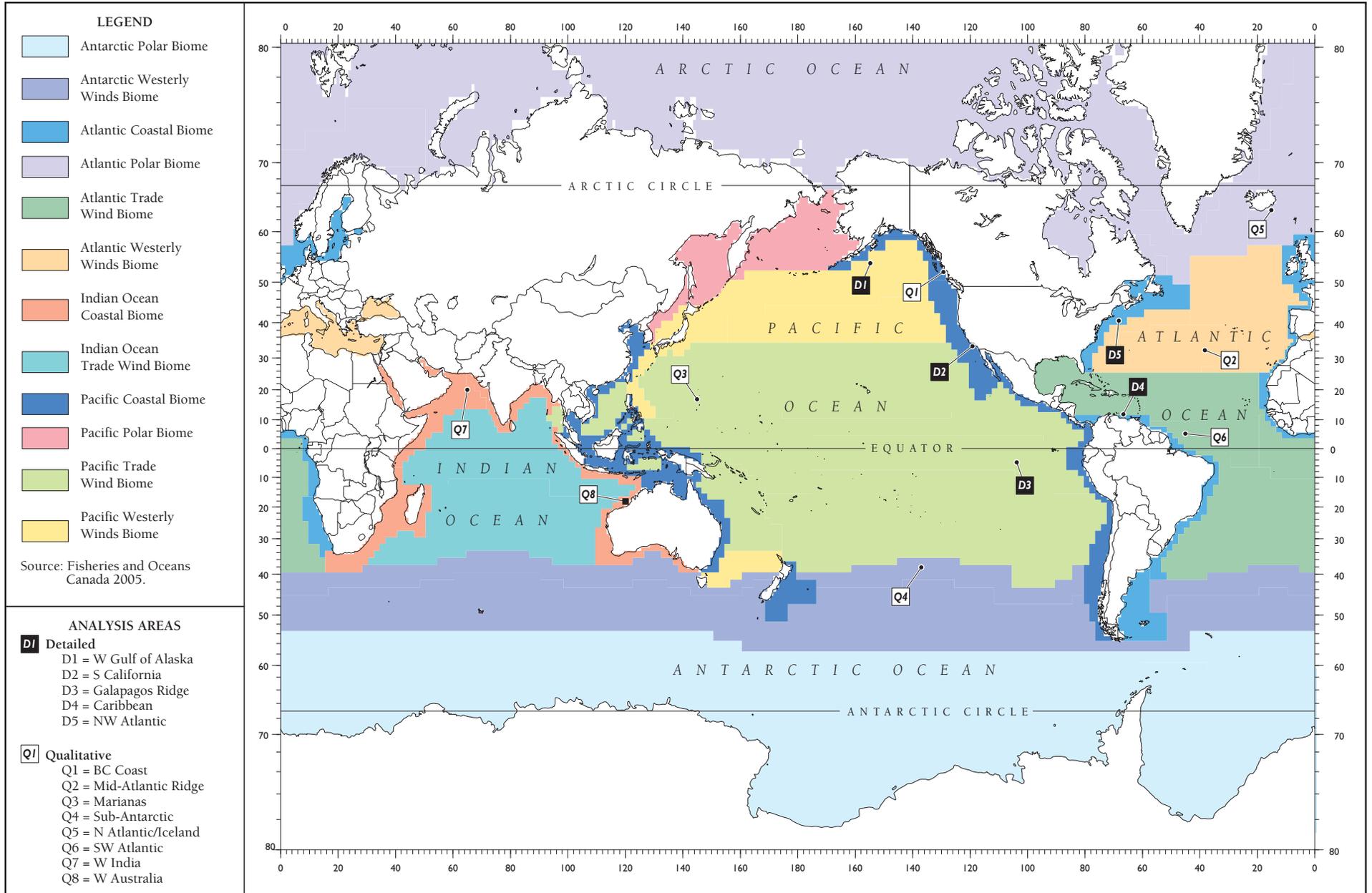
Under the Proposed action, NSF and the USGS would conduct marine seismic research operations from various research vessels operated by U.S. academic institutions or government agencies. The primary research vessel would be the R/V Marcus G. Langseth (owned by NSF and operated by Lamont-Doherty Earth Observatory, Columbia University), which has unique 2D and 3D seismic research capabilities within the U.S. academic fleet. The Draft Programmatic EIS/OEIS addresses the variety of airgun configurations that would be operated from the R/V Langseth, as well as multi-beam echosounders, sub-bottom profilers, and other standard active acoustic sources that would be deployed in support of typical marine seismic surveys. In addition, the Draft Programmatic EIS/OEIS considers low-energy seismic sources (e.g., 1-2 airguns and GI guns, sparkers, boomers, chirp systems) that are used by the USGS or are funded by NSF on other academic research vessels.

World-wide marine seismic research operations (excluding Arctic and Antarctic waters) would occur throughout the year on the R/V Langseth and other seismic research vessels. The research voyages can last anywhere from 1 day to 2 months, and operate 24/7 depending upon the scientific experiment and the ship capabilities and endurance.





Longhurst Biomes and Proposed Detailed and Qualitative Analysis Areas





Draft Programmatic EIS/OEIS for Marine Seismic Research Funded by NSF or Conducted by the USGS



R/V Langseth, the primary research vessel for NSF-funded marine seismic research.

General Seismic Programs

A close-up of the seismic airgun releasing air bubbles at the water surface immediately after a pulse of air is released.



- NSF and the USGS use conventional seismic methodology to conduct academic geophysical studies of ocean bottom structures.
- NSF-funded studies are conducted by universities from around the world, including graduate students. Examples of research topics include tectonic plate formation, mapping and aging of ocean floor sediment layers, and underwater crater and crevasse structure.
- USGS research has been directed progressively more to nearshore and inner shelf coastal research, where low-energy acoustic sources are generally adequate.
- Seismic surveys introduce high levels of Low Frequency (predominantly < 250 Hz) intermittent sound into the marine environment.
- Airguns are arranged in an array designed to focus sound downward; however, some sound propagates horizontally.
- Airguns emit strong pulses of compressed air that result in sound pulses ~0.1 sec in duration near the source, lengthening to ~1 sec at a distance. Each pulse is followed by ~6-120 sec of silence.
- Airgun array is towed near the water surface ~30-50 m behind the vessel.
- Returning acoustic signals are received passively by hydrophones in 1 - 4 streamers, each up to 3-8 km long, and/or Ocean Bottom Seismometers (OBSs).
- Narrow-beam sub-bottom profilers and multibeam echosounders are used to study shallow sediment layers and water depth by directing intermittent sonic “chirps” towards ocean bottom.

R/V Marcus G. Langseth



The R/V Langseth proposed for use during the NSF marine seismic academic studies. Other vessels deploying smaller sound sources would also be used.

Measuring Sound in Water

- Seismic noise is measured in decibels (dB), a measure of loudness, which is a logarithmic scale. The level can also be measured in terms of pressure or energy. A 10 times increase in pressure produces a 20 dB increase, whereas a 10 times increase in energy produces a 10 dB increase. These are potentially confusing, so it is important to clearly define the terms being used.
- Reported dB levels in air and water are not directly comparable due to differences in standard units and in the density of air vs. water, thus 117 dB *in air* ≈ 180 dB *in water*.
- Frequency: in number of oscillations per second, referred to as Hertz (Hz).
- Because the airgun array (multiple airguns) is a distributed sound source rather than a single point source, the highest sound levels measurable at any location in the water will be less than the normal source level.



An engineer prepares to deploy a single airgun from the vessel as part of an “array” of airguns. Each airgun is suspended about 8 m below the water surface from a white or pink float shown here. The energy to the airguns is compressed air supplied by compressors on board the source vessel.



General Concept of Marine Seismic Reflection and Refraction Surveys



Note: Other acoustic receivers that may be used in seismic surveys include ocean surface sonobuoys, Ocean Bottom Cables (OBCs) in water depths >1,000 m, and borehole seismometers for certain types of experiments.

Hydrophone Streamer (receiver)

Acoustic Source
(e.g., airgun)

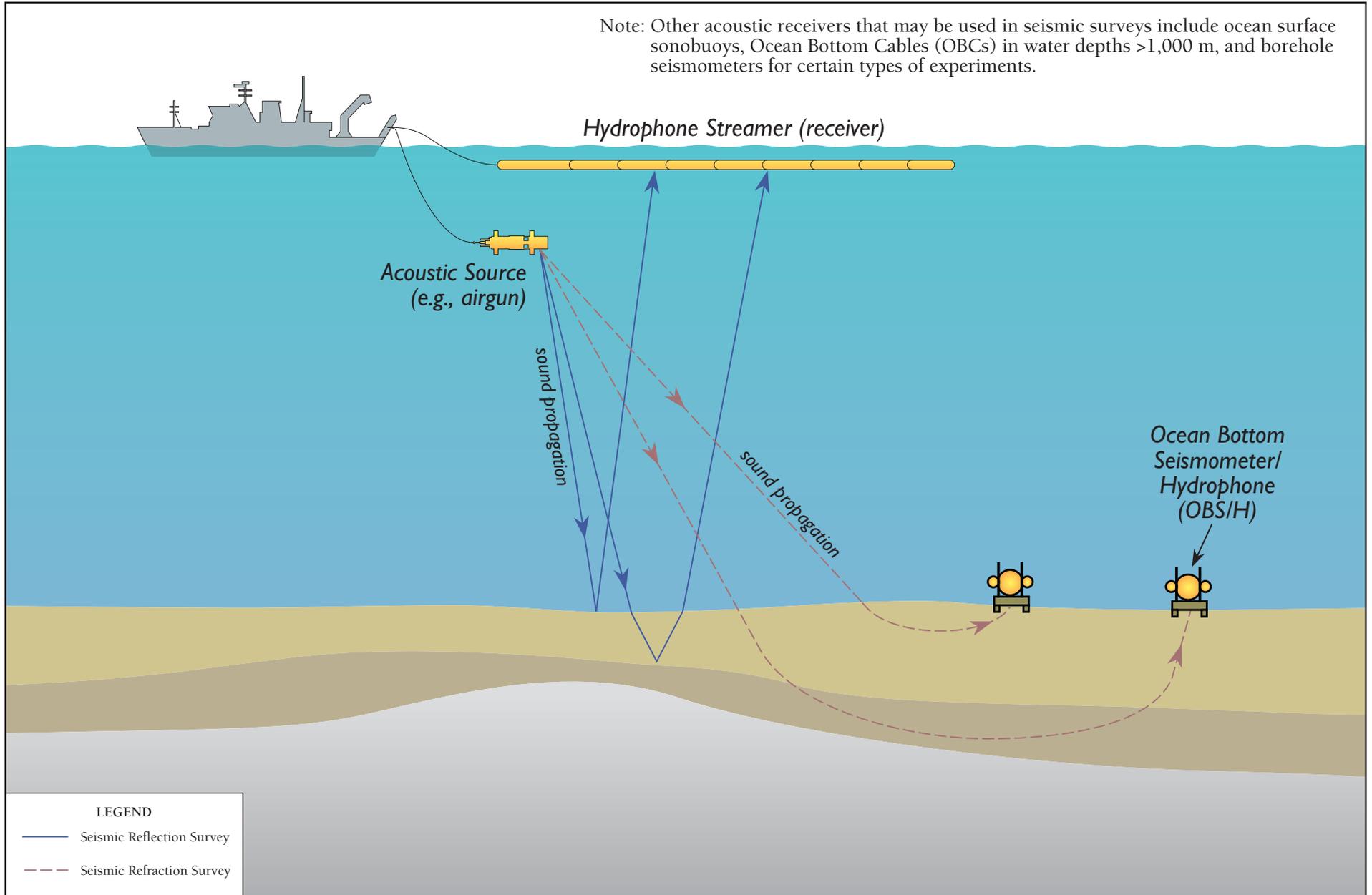
sound propagation

sound propagation

Ocean Bottom
Seismometer/
Hydrophone
(OBS/H)

LEGEND

- Seismic Reflection Survey
- - - Seismic Refraction Survey





Mitigation and Monitoring



- Monitoring and mitigation are conducted to minimize and avoid (as possible) potential effects of seismic operations on marine mammals and sea turtles
- Below are examples of how NSF-funded seismic studies have been incorporating monitoring and mitigation into their geophysical research programs conducted from aboard seismic vessels



The observer station aboard the R/V Langseth and an observer actively searching for marine mammals and sea turtles. Two “big-eye” binoculars, handheld binoculars, and a data collection “desk” are used by experienced Protected Species Visual Observers (PSVOs) to monitor and record their observations. When marine mammals or sea turtles are seen in or near the “safety zone”, the observers immediately contact the airgunners to implement a power down or shut down of the airguns as required by the National Marine Fisheries Service (NMFS).

Monitoring

Visual observations

- With naked eye and “reticle” and “big-eye” binoculars
- During all daytime seismic operations

Passive acoustic monitoring

- Listen for mammal vocalizations during all day & night seismic operations when high-energy sources are in use
- Software estimates bearings to vocalizing mammals, which are relayed to PSVOs

The passive acoustic monitoring (PAM) station used by marine mammal observers below deck in the science lab. The biologist on duty listens for live sounds of marine mammals detected by hydrophones while simultaneously watching a real-time spectrographic display for frequency ranges produced by calling animals. When sounds are detected, the direction to those sounds is determined when possible. This information is communicated to the PSVOs on the observation tower to aid in locating the animals when they surface



Noise Criteria for Mitigation

Current NMFS criteria:

- Cetaceans and pinnipeds should not be exposed to pulsed sounds with received levels ≥ 180 and 190 dB re 1 microPa (rms), Respectively
- 180 dB (rms) criterion sometimes applied for sea turtles
- No specific criteria for other marine animals

Updated criteria allowing for recent data on auditory effects are being developed for marine mammals, fish, and sea turtles

Program design

- Timing, location, avoidance of sensitive areas
- Use smallest possible acoustic source level

Ramp-up

- “Soft” start over 30-35 minutes

Safety radius

- Power or shut down for sightings within the radius
- Whales/dolphins/turtles (180 dB [rms])
- Seals/sea lions (190 dB [rms])

Mitigation

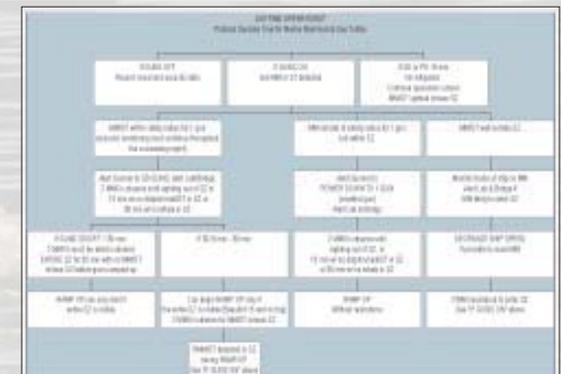
Mitigation Based on Predicting and Modeling Effects

- Goal is to estimate and predict the exposure level of marine mammals and sea turtles to seismic sounds
- This information is used to develop appropriate mitigation to minimize exposure of marine mammals and sea turtles

Predicting sound levels underwater is complicated

- Sound paths and received levels are affected by changes in temperature, salinity, water depth, and bottom conditions
- An animal’s exposure to sound is affected by its depth and distance from the seismic source

To address these issues in the Draft Programmatic EIS, sophisticated acoustic propagation models (i.e., MONM) have been used to predict the sound field. These have been combined with models of animal movement (i.e., AIM) that account for differences in behavior among different species.



An example of a “decision flow chart” used to aid in determining what type of mitigation to implement for marine mammals and sea turtles while conducting observations during a marine seismic study. A flow chart is developed specifically for each project. Conditions and mitigation requirements differ depending on a number of factors such as water depth, expected species, number and configuration of airguns, etc.

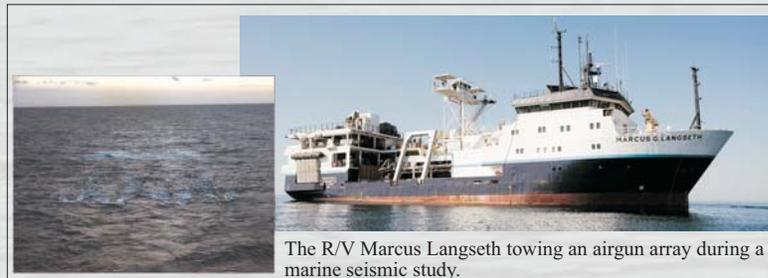


Potential Effects of Sounds from Marine Seismic Research Sources on Marine Animals



Range of Potential Effects

- **No response/tolerance** commonly noted
- **Habituation** often occurs (i.e., get used to sound)
- **Masking** or “blocking out” of animal sounds by seismic research sound sources likely minimal because sound sources are not continuous
- **Possible hearing impairment and other physical effects** demonstrated for fish close to sound source, not demonstrated in any marine mammal



Effects and Concerns Differ by Species

- Little information on most species
- Some species studied more than others
- Few systematic studies
- Monitoring during seismic operations shows variable reactions and often tolerance

Toothed Whales (Dolphins, Porpoises)



- Dolphins and porpoises often seen from seismic vessels, including bowriding; evidence of some localized avoidance
- Sperm whales recent comprehensive studies indicate no strong overt responses
- Beaked whales, no data; inhabit deep offshore waters

Concern: beaked whales appear sensitive to sonar sounds, but nothing is known about effects of airgun sounds; dolphins and porpoises do not always avoid the safety zone

Pinnipeds (Seals, Sea Lions)



- Some indication of slight avoidance & behavior changes
- Radio tagging work indicates stronger (but temporary) avoidance than is evident from visual observations

Concern: pinnipeds do not always avoid the safety zone



Baleen Whales (Large whales such as gray, blue, and fin)

Systematic studies of humpback, bowhead, gray whales:

- Most avoid by 3-8 km (migrating bowheads by up to 35 km)
- Some approach
- Most sensitive during migration, but migration/feeding continues
- Respiratory changes
- Avoidance is usually localized, short-term

Concern: most baleen whales are endangered or threatened and are especially sensitive to low-frequency sounds

Sea Turtles



- Increase swimming speed, change behavior, move away from sound based on studies in captivity and at sea

Concern: little quantitative information about sound levels that elicit response

Marine Fish

- Airgun energy <2 m away can damage/kill eggs and larvae (natural mortality of eggs & larvae >99%)
- Airgun pulses >180 dB re 1 μ Pa can damage snapper ears
- Studies of freshwater species: no lasting damage
- Some move away from seismic sounds

Concern: seismic may impact spawning and migration, scare fish away from fishing areas

Marine Invertebrates

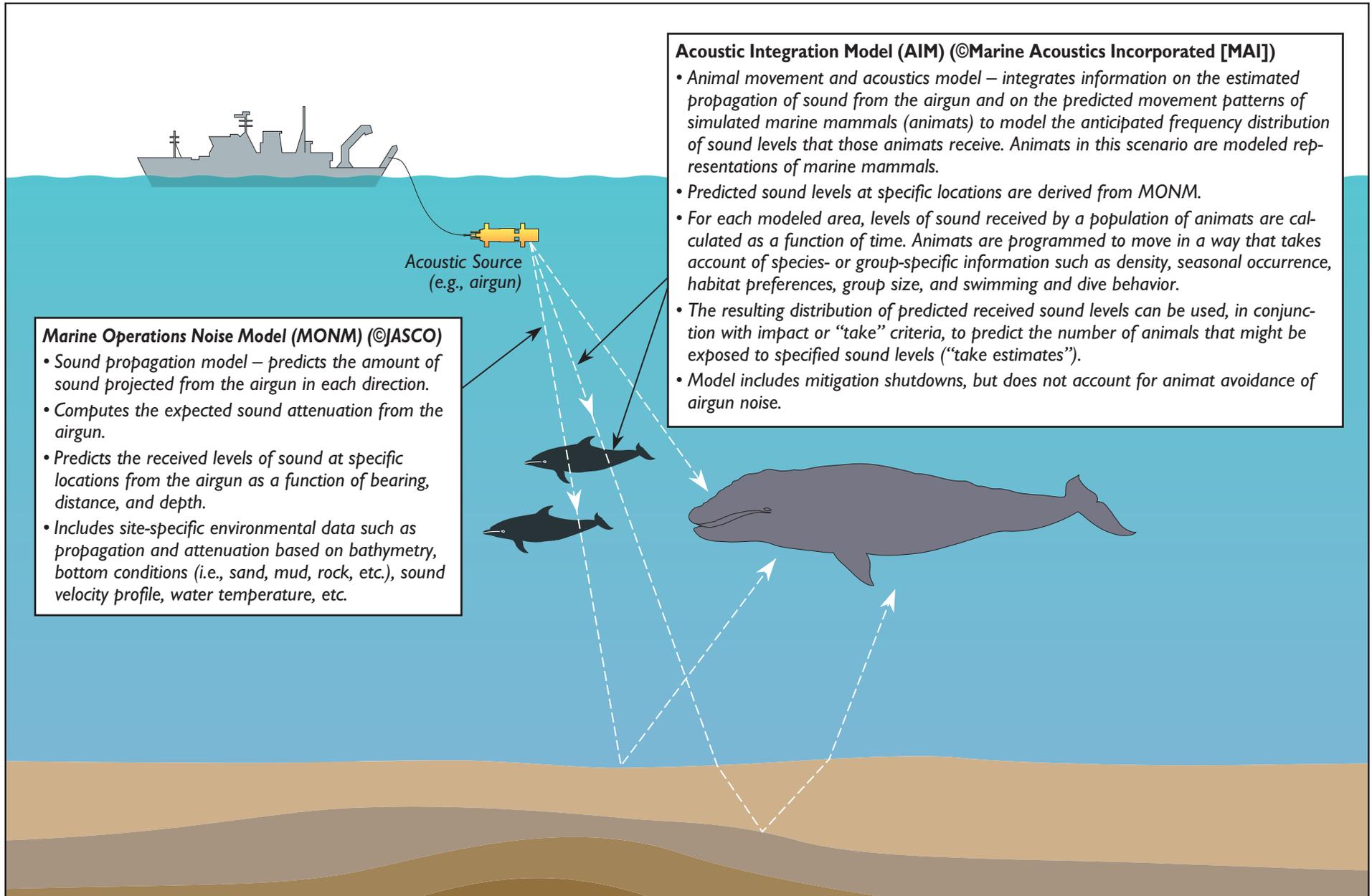


- Impacts presumed to be low
- No mortality or impact on crab eggs or females

Concern: effects largely unknown



Relationship of Marine Operations Noise Model (MONM) and Acoustic Integration Model (AIM)



**Slides from the NSF Presentation Given at the
Public Hearings on the
Draft Programmatic EIS/OEIS**

WELCOME

to the Public Hearing on the
Draft Programmatic EIS/OEIS for Marine
Seismic Research Funded by the National
Science Foundation (NSF) or Conducted
by the U.S. Geological Survey (USGS)



Draft Programmatic Environmental Impact Statement/Overseas Environmental Impact Statement for Marine Seismic Research Funded by the National Science Foundation or Conducted by the U.S. Geological Survey

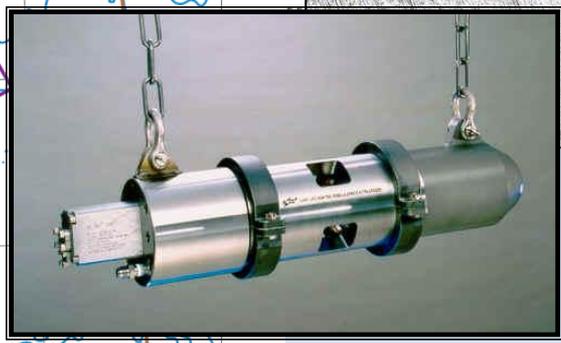
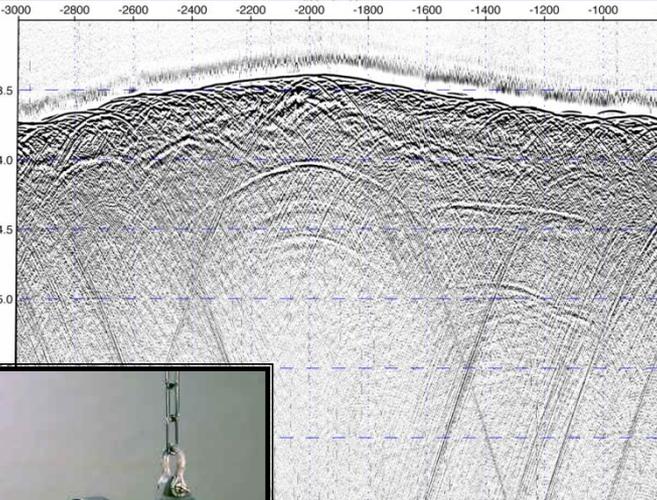
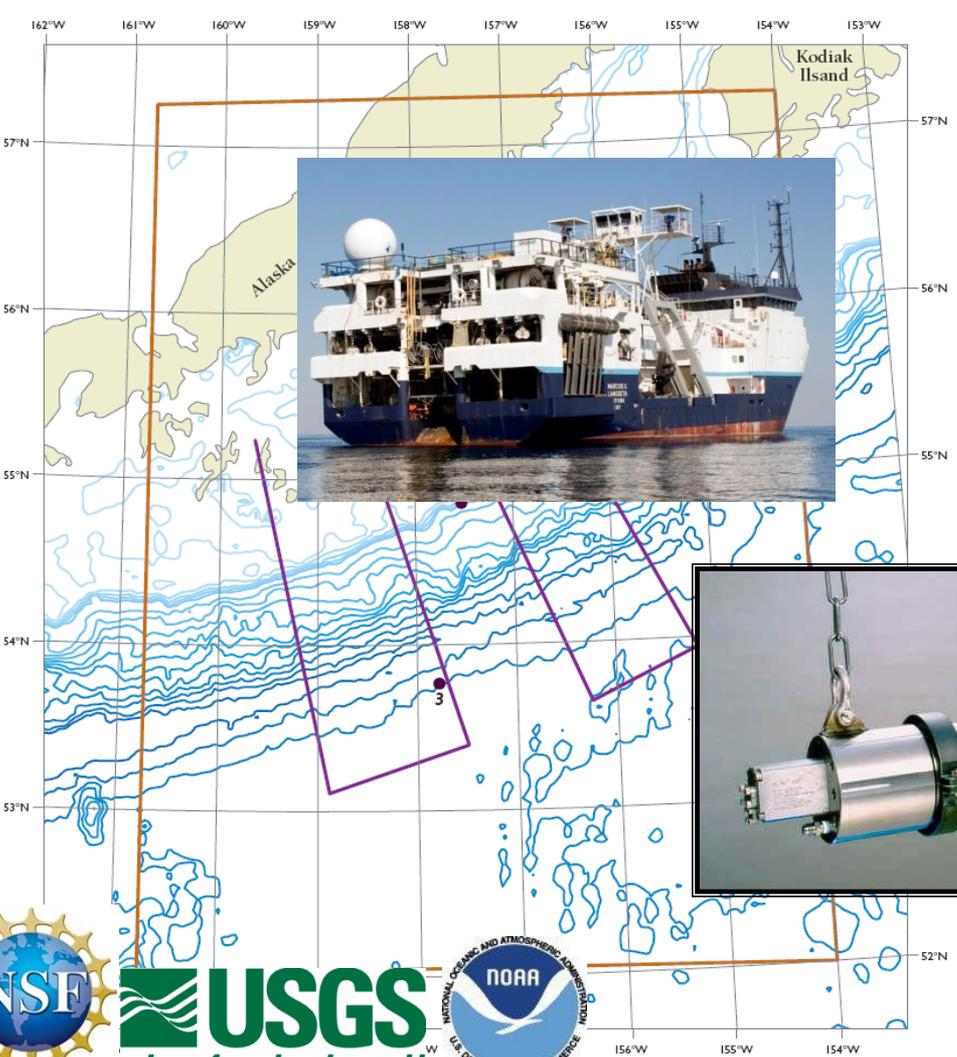
Public Hearings:

La Jolla, CA

Arlington, VA

October 25, 2010

October 27, 2010



NSF

- NSF is an Independent federal agency, created by Congress in 1950 "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense..."
- Funds ~20% of federally supported basic research at U.S. colleges and universities
- Issues ~11,000 grants annually to fund proposals judged by merit-review
- Annual budget of ~\$6.9B (FY 2010)
- NSF-funded researchers have won more than 180 Nobel Prizes as well as other honors



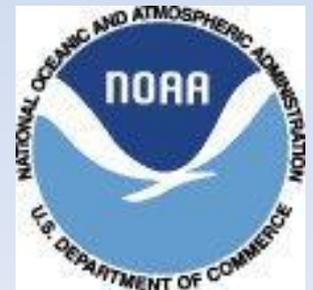
U.S. Geological Survey (USGS)

- Scientific federal agency with no regulatory responsibility
- Within the US Department of the Interior
- The largest U.S. agency dealing with water, earth, and biological sciences. The USGS also has responsibility for civilian mapping (including offshore)
- Collects, monitors, analyzes, and provides scientific understanding about conditions, issues, and problems associated with natural resources, hazards, environments, and climate change.



National Marine Fisheries Service (NMFS)

- Within the US Department of Commerce 's National Oceanic and Atmospheric Administration
- Lead federal agency responsible for the stewardship of the nation's offshore living marine resources and their habitat
- Manages, conserves and protects fish, whales, dolphins, sea turtles and other living ocean creatures
- NMFS' Office of Protected Resources works to conserve, protect, and recover species under the Endangered Species Act and Marine Mammal Protection Act

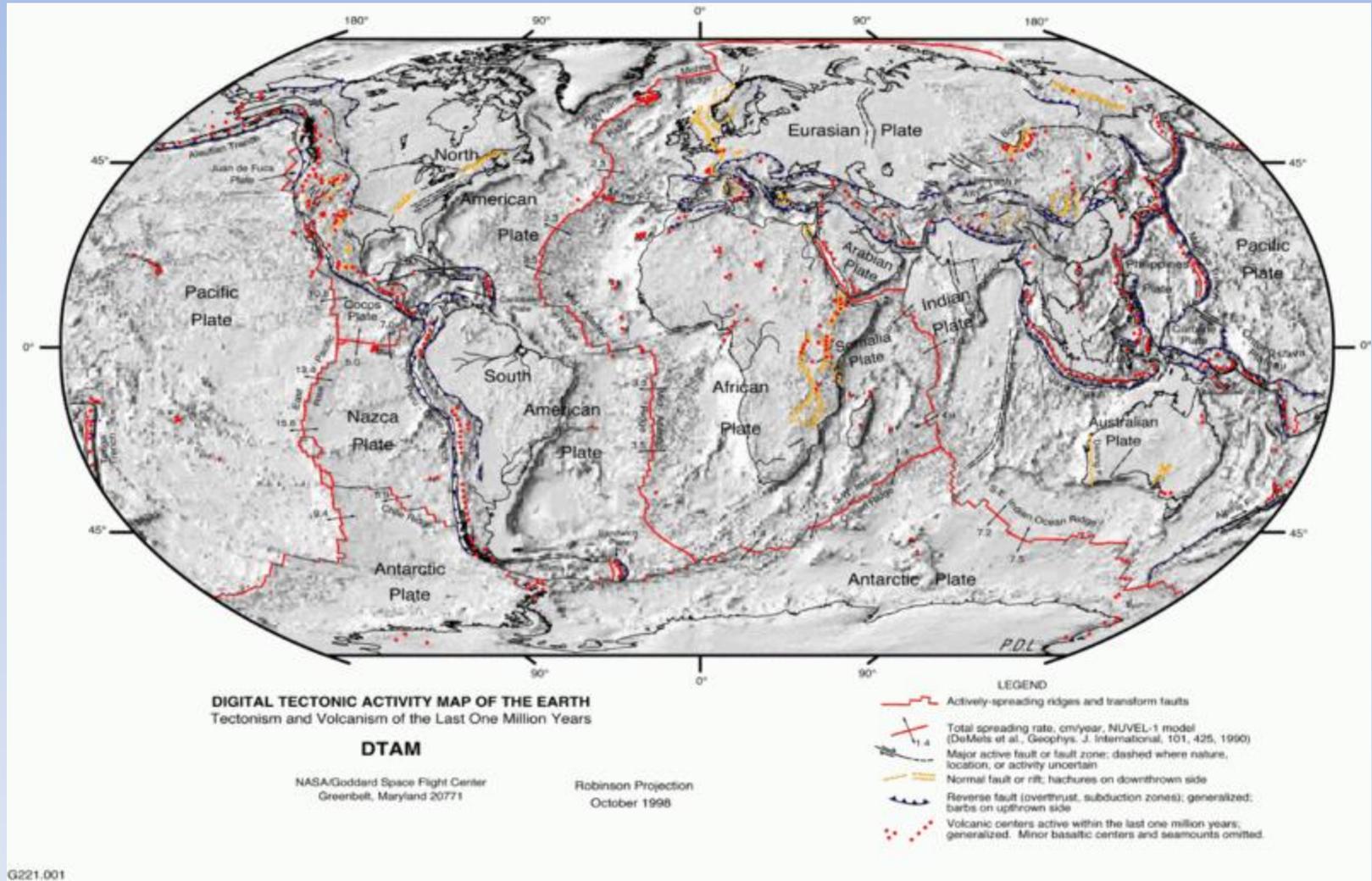


Purpose & Need for the Draft Programmatic EIS/OEIS

- Examines the potential impacts that may result from geophysical exploration and scientific research seismic surveys that are funded by NSF or conducted by the USGS
- Proposed Action is for academic and US government scientists to conduct marine seismic research from research vessels operated by US academic institutions and government agencies
- Purpose of the proposed action is the investigation of the geology and geophysics of the Earth beneath the oceans using seismic data to reveal the underlying structure and stratigraphy of the sediments and deeper crust to help inform our understanding of complex Earth and atmospheric processes which is in support of the NSF & USGS missions.

The Science...

Plate Tectonics



G221.001

Image created by NASA

Seafloor and Subsurface Features

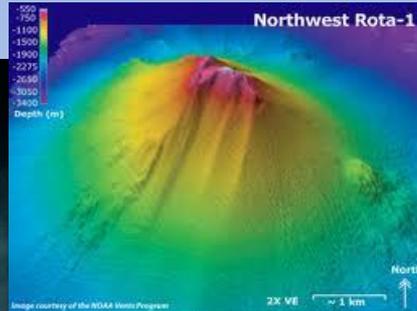
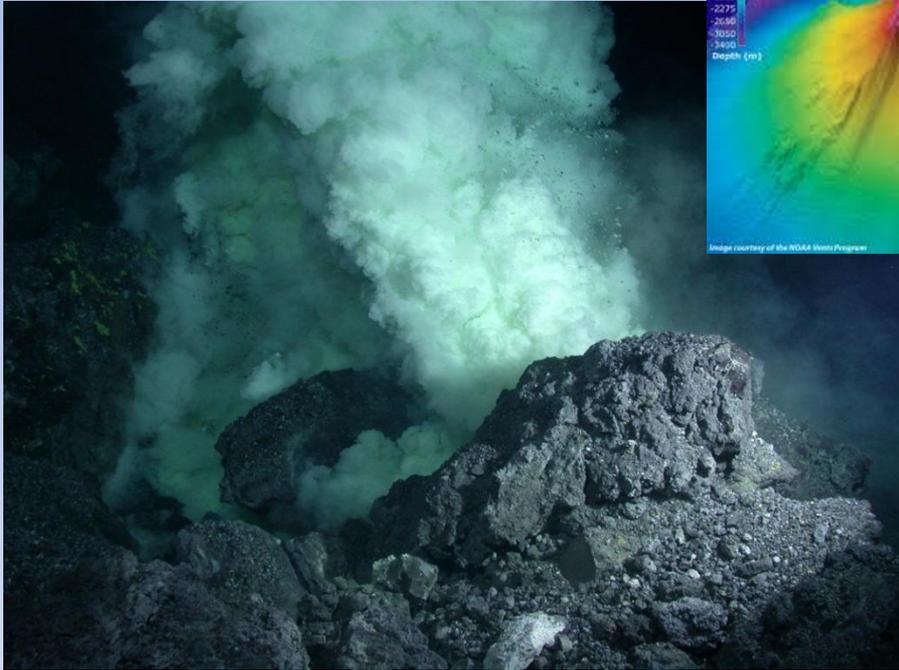


Image from
<http://nwrota2009.blogspot.com/>

Submarine Volcanoes

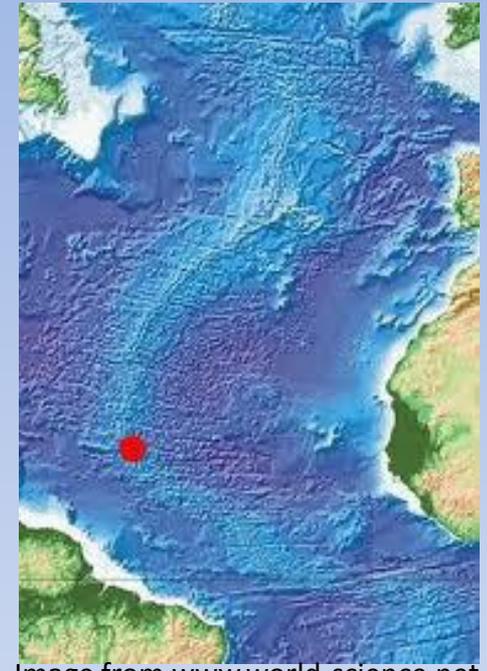
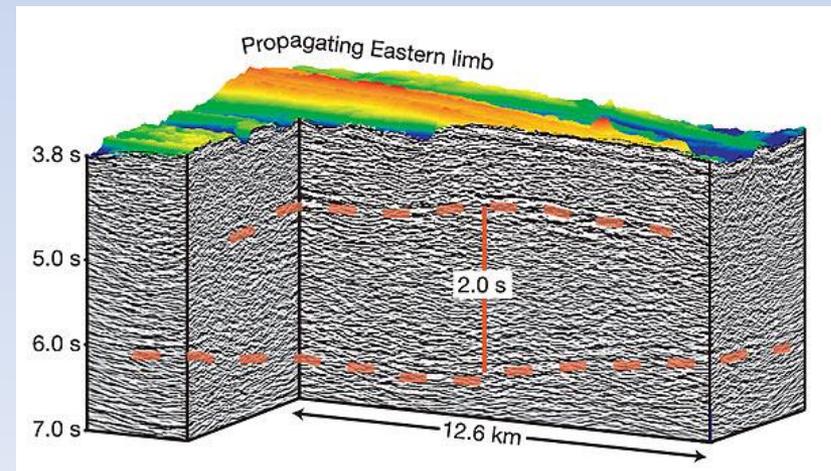


Image from www.world-science.net
Mid-Ocean Ridges

Degassing lava erupts onto the seafloor at NW Rota-1 volcano.
(photo credit: copyright Woods Hole Oceanographic Institution).
<http://oregonstate.edu/dept/ncs/newsarch/2009/May09/rota.html>

Magma Chamber

Crust and mantel boundary beneath melt sill (Singh et al. 2006)



Natural Hazards



2010 Chile Earthquake - Santiago
Photo credit: Esteban Maldonado



Coastal Landslide caused by the 2010 Haiti Earthquake.
Image from www.gallery.usgs.gov

Earthquakes

Tsunami



March 28, 1964, Seward, Alaska. Image from
http://wcatwc.arh.noaa.gov/web_tsus/19640328/19640328.htm

Landslides

Marine Seismic Research

NSF-funded marine seismic research:

- Science driven: Proposal & merit review process
- Globally ranging, spanning domestic, international, and foreign territorial waters, usually in water deeper than ~1000 m or conducted along transects from shallow to deeper water
- NSF funds 4-7 surveys/year, each lasting 1 to 7 weeks
- *R/V Marcus G. Langseth*: Primary vessel used for high energy surveys
- Other academic vessels used for low energy surveys



R/V Langseth

USGS Marine Seismic Research

USGS Activities

Low energy (e.g., Chirp)

- mostly within 5 nm of the shoreline
- 8 to 12 surveys/yr, each of 1 to 3 weeks' duration
- water depths up to 1000 m on the West Coast, 500 m in the Gulf of Mexico, and 100 m on the East Coast

High energy (e.g., multiple airguns or GI guns)

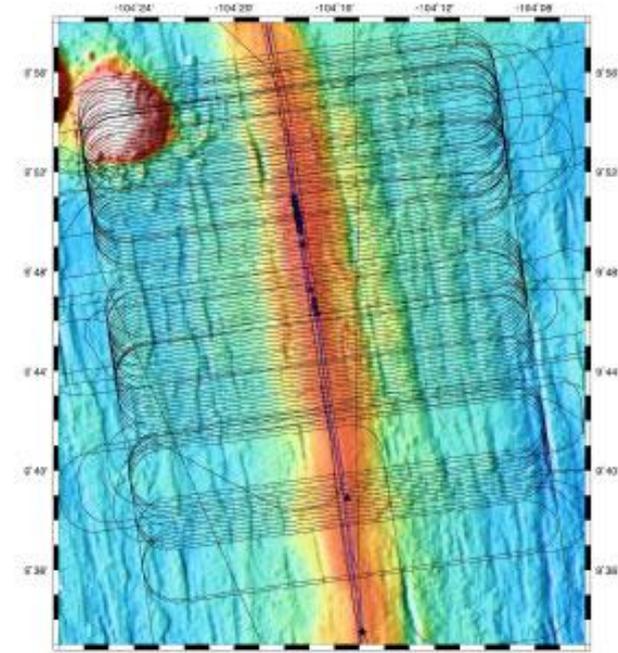
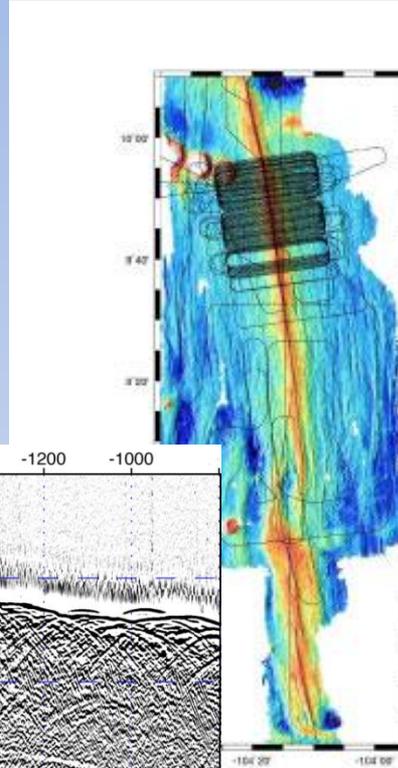
- 1 to 2 surveys per year, with more frequent surveys possible in the future; duration up to a few weeks
- deepwater cruises both inside and outside the 200 nm limit

USGS Coastal and Marine Science objectives include:

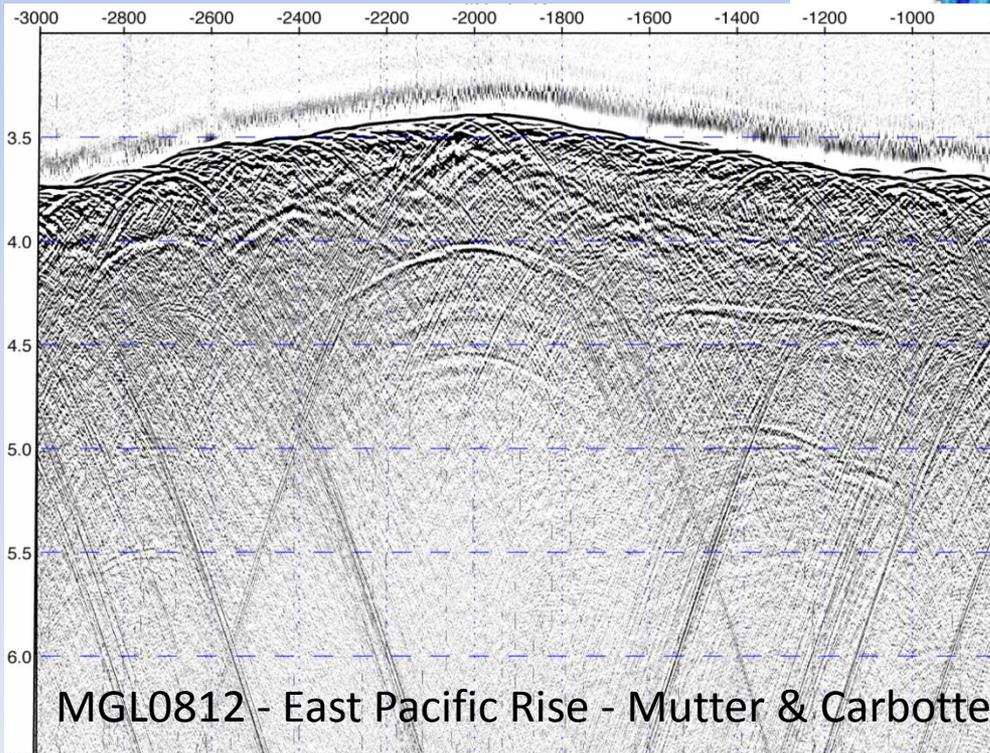
- mapping associated with the Convention on the Law of the Sea to determine the outer limits of U.S. sovereign rights beyond 200 nm
- understanding the dynamic offshore environment for slope failures that may cause tsunamis, coastal erosion, faults, gas seeps, and other features
- researching marine aspects of global change, sea level rise, and their impacts on society

Different types of Marine Seismic Surveys

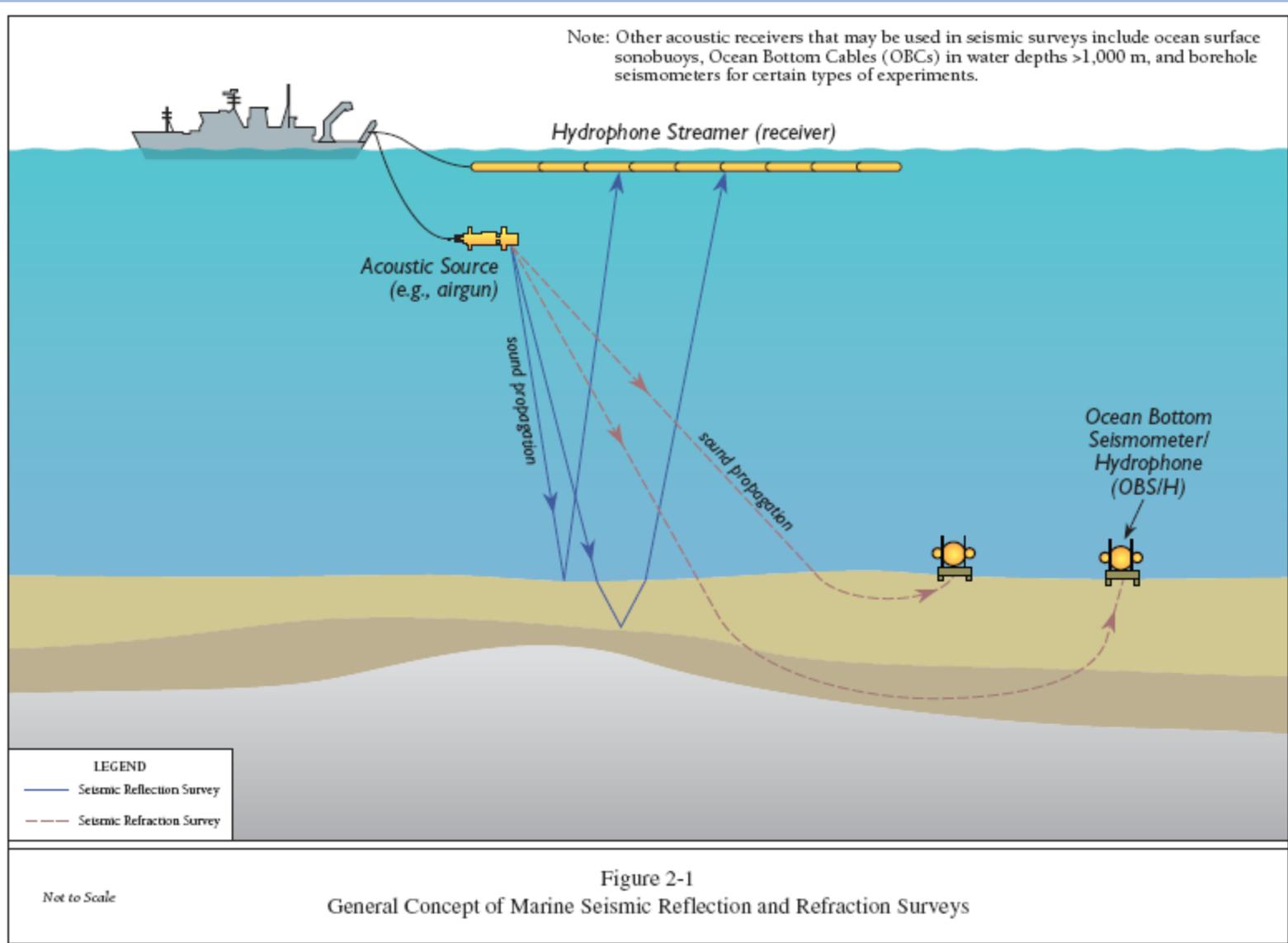
- 2-D
- 3-D
- Other: VSP; 4-D; OBC



Track line coverage for 3D MCS along the East Pacific Rise. S. Carbotte, LDEO.

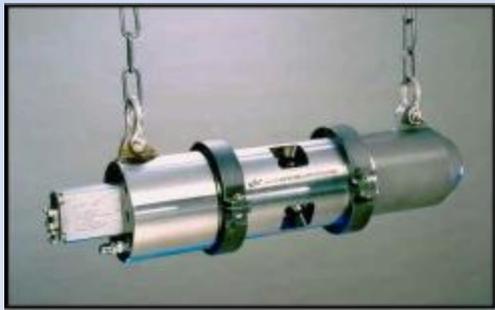


Reflection & Refraction Surveys



Energy Level Categorization

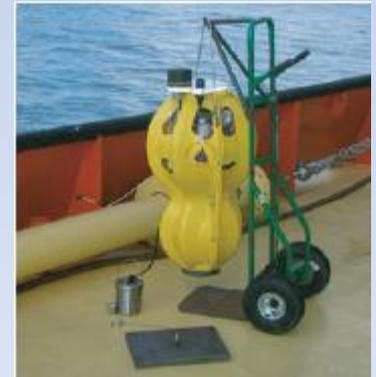
- Seismic surveys were divided into two categories in the Draft PEIS:
 - High Energy – Generally > 4 airguns
 - Low energy – Generally ≤ 4 airguns, boomer, sparkers, waterguns, chirp
- Factors that influence categorization include: Source, source volume, tow depth, and spacing



Representative Airgun



Streamer Reels on *R/V Langseth*



WHOI Active=Source/Rapid Response OBS/H

PEIS Analysis Approach

- 5 representative Detailed Analysis Areas (DAAs) & 8 Qualitative Analysis Areas (QAAs)
 - Sites where future surveys are likely to occur
 - Sites within a wide range of Longhurst Biomes
- Survey season
- Source levels & configurations (number & type of airguns, 2D, 3D, etc.)
- Modeling (AASM, MONM, AIM) to predict **Take Estimates**
- Monitoring and mitigation measures
- Affected environment and environmental consequences of the proposed action on the following resources:
 - Animals: marine invertebrates, fish, sea turtles, seabirds, marine mammals (cetaceans, pinnipeds, sea otter, manatee)
 - Socioeconomics
 - Cultural Resources
- Cumulative Impacts



Harbor seal

(Photo: T. Mangelson, Alaska Sea Grant)

Exemplary (Representative) Analysis Areas

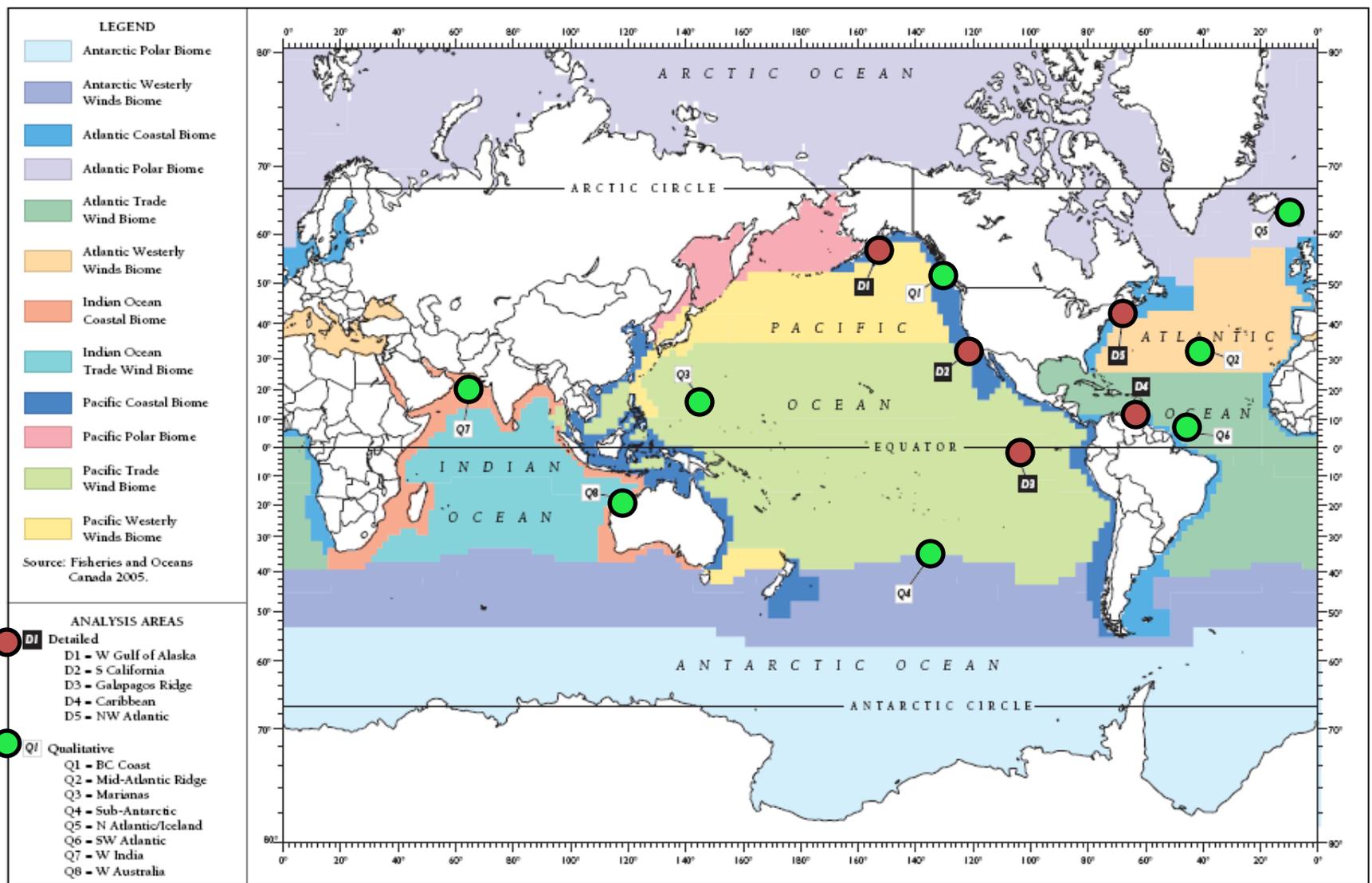


Figure 2-18
Longhurst Biomes and Proposed Detailed and Qualitative Analysis Areas



Modeling

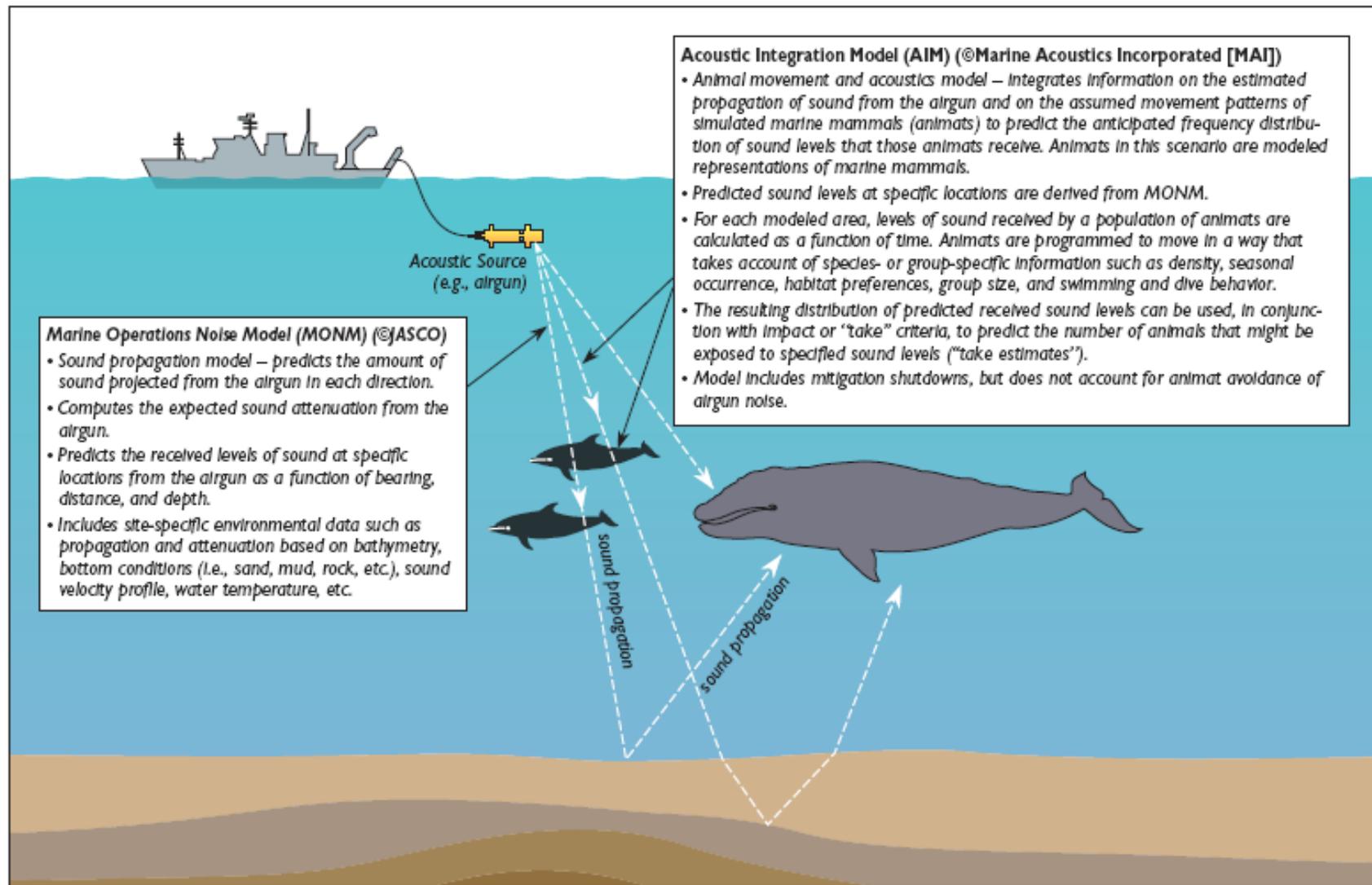


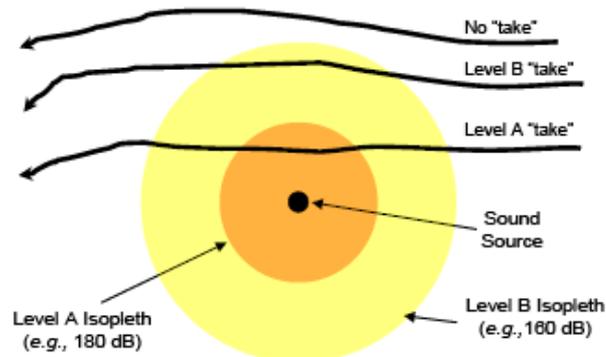
Figure 2-27

Relationship of Marine Operations Noise Model (MONM)
and Acoustic Integration Model (AIM)

Not to Scale

Modeling

- Considered both rms and SEL
 - Used existing NMFS guidance on “take” for pulsed sounds:
 - Level A Harassment (Injury) = 180 (cetaceans)/190 (pinnipeds) dB re 1 μ Pa (rms)
 - Level B Harassment (Behavioral) = 160 dB re 1 μ Pa (rms)
 - Used the proposed energy (SEL) criterion:
 - Level A Harassment (Injury) = 198 (cetaceans)/186 (pinnipeds) dB re 1 μ Pa²•sec
- Considered both flat and M-weighting
- Considered site specific environmental “context”
 - seafloor, temperature, salinity



From Appendix B (AMR): Figure B-10. Illustration of Pressure-based Exposure or “Take” Methodology (not to scale)

Monitoring & Mitigation

- Mitigation during survey planning phases
- Visual monitoring
- Passive Acoustic Monitoring (PAM)
- Proposed Safety Radii or “Mitigation Zone”
- Mitigation during Operations:
 - Vessel speed/course alteration
 - Airgun power down & shut down
 - Airgun ramp-up
 - Special mitigation measures for circumstances/species of particular concern



Alternatives

- Alternative A: Conduct marine seismic research using cruise-specific mitigation measures
 - *for expected no take situations:*
 - *Standard 200-m FMZ*
 - *for expected take situations:*
 - *Calculate FMZ & MZ for high & low energy sources*
- Alternative B (Preferred): Conduct marine seismic research using cruise-specific mitigation measures with generic mitigation measures for low-energy acoustic sources
 - *for expected no take situations:*
 - *Standard 200-m FMZ*
 - *for expected take situations:*
 - *Calculate FMZ for high & low energy sources,*
 - *Calculate MZ for high energy sources*
 - *Standard 100m MZ for low energy sources*
- No Action Alternative

Potential Environmental Impacts

Environmental Consequences:

- Direct and indirect affects of the proposed action mainly as a result of noise from acoustic energy sources (e.g. airguns)
- Potential impacts to species are expected to be limited to short-term and localized behavioral disturbances (such as Level B), and not significant to populations.
- Although noise modeling results for DAAs indicate that Level A injury impacts to marine mammals or threatened and endangered species may occur, for actual surveys, additional mitigation measures would be added to the cruise parameters to reduce and eliminate Level A impacts or the potential for injury.

Cumulative Impacts:

- Results indicate no significant cumulative effects to the affected environment from proposed actions.
- Monitoring and mitigation, pre-cruise planning, evaluation of other regional activities influence results

Future surveys:

- When future surveys are identified, a site specific environmental analysis will be developed.
- All future seismic surveys would be permitted according to the rules and regulations of the applicable agencies of U.S. federal, state, and foreign governments.
- Incorporate technological advances made in seismic sources, monitoring/mitigation techniques and tools, which demonstrate reduction in environmental impacts.

Thank you!

- Scripps Institution of Oceanography
- USGS
- NMFS
- John Diebold, LDEO



California sea lion
(Photo: Indianapolis Zoo)

There are 3 ways to comment on the Draft Programmatic EIS/OEIS:

1. Submit written or oral comments at this hearing.
2. Email comments to: nepacomments@nsf.gov
3. Mail comments to:

Holly Smith

Division of Ocean Sciences

National Science Foundation

4201 Wilson Blvd., Suite 725

Arlington, VA 22230

NSF-USGS Marine Seismic Research Draft Programmatic EIS/OEIS

PUBLIC HEARING ATTENDANCE RECORD AND SPEAKER CARD

PLEASE PRINT CLEARLY

Date _____

Name _____

Address _____

City, State, Zip _____

Name of official, organization, or group you represent (if applicable): _____

Please Note

- Check if you want to **SPEAK PUBLICLY**
- Check if you want a paper copy of the Final Programmatic EIS/OEIS
- Check if you want a CD of the Final Programmatic EIS/OEIS

Comments will be published in the Final EIS/OEIS. The name, city, and state locations of persons making comments will appear in the Final EIS/OEIS. Specific address information of commenters and meeting attendees will not be printed in the Final EIS/OEIS, but will be used to create a mailing list for the document.

NSF-USGS Marine Seismic Research Draft Programmatic EIS/OEIS

PUBLIC HEARING ATTENDANCE RECORD AND SPEAKER CARD

PLEASE PRINT CLEARLY

Date _____

Name _____

Address _____

City, State, Zip _____

Name of official, organization, or group you represent (if applicable): _____

Please Note

- Check if you want to **SPEAK PUBLICLY**
- Check if you want a paper copy of the Final Programmatic EIS/OEIS
- Check if you want a CD of the Final Programmatic EIS/OEIS

Comments will be published in the Final EIS/OEIS. The name, city, and state locations of persons making comments will appear in the Final EIS/OEIS. Specific address information of commenters and meeting attendees will not be printed in the Final EIS/OEIS, but will be used to create a mailing list for the document.

ATTENDANCE RECORD AND SPEAKER CARD BACK

Data Required by the Privacy Act of 1974 (5 USC 552A)

1. Authority: 42 USC 4321-4370a.
2. Principal Purpose: Information is used to compile a list of hearing attendees for the administrative record.
3. Routine Uses
 - a. The card is used to signify an individual's desire to make a statement during the public comment portion of the hearing.
 - b. Names and addresses will be used to compile distribution lists for future documents.
 - c. Specific address information of persons making comments and meeting attendees will not be printed in the Final Programmatic EIS/OEIS. The names and city and state locations of commenters will appear in the Final Programmatic EIS/OEIS. Comments will also be published in the Final Programmatic EIS/OEIS.
4. Effect of individual not providing address information: Failure to provide mailing address information may prevent receipt of the Final Programmatic EIS/OEIS.

ATTENDANCE RECORD AND SPEAKER CARD BACK

Data Required by the Privacy Act of 1974 (5 USC 552A)

1. Authority: 42 USC 4321-4370a.
2. Principal Purpose: Information is used to compile a list of hearing attendees for the administrative record.
3. Routine Uses
 - a. The card is used to signify an individual's desire to make a statement during the public comment portion of the hearing.
 - b. Names and addresses will be used to compile distribution lists for future documents.
 - c. Specific address information of persons making comments and meeting attendees will not be printed in the Final Programmatic EIS/OEIS. The names and city and state locations of commenters will appear in the Final Programmatic EIS/OEIS. Comments will also be published in the Final Programmatic EIS/OEIS.
4. Effect of individual not providing address information: Failure to provide mailing address information may prevent receipt of the Final Programmatic EIS/OEIS.



NSF-USGS MARINE SEISMIC RESEARCH DRAFT PROGRAMMATIC EIS/OEIS

Public Hearing Guidelines for Oral Comments

- If you wish to provide oral comments, please mark the speaker card appropriately (available at the registration desk).
- Please limit your comments to the analyses contained within the Draft Programmatic EIS/OEIS for Marine Seismic Research funded by NSF or conducted by the USGS.
- Speakers will be organized in the following priority:
 - Elected officials (e.g., individuals officially representing federal, state, and local government and tribal offices), and
 - Individuals, organizations, and other interested parties.
- Comments will be limited to 3 minutes:
 - The 3 minutes will begin after you enter your name for the record,
 - After 2 minutes have elapsed, a yellow card will be shown by the timekeeper to indicate you have 1 minute left to finish your comment,
 - At the end of 3 minutes, a red card will be shown and you will need to finish your comments, and
 - Depending on the number of speakers and the duration of the public hearing, the public hearing moderator may offer individuals additional time to speak; however, written comments are encouraged to ensure your input is completely received.
- Comments should always be directed towards the presiding public hearing moderator. This will help ensure your comments are recorded accurately by the court reporter.
- Please speak clearly and start your comments with your name and organization that you represent (if this is applicable).
- Please note that all oral comments are being transcribed by a court reporter and the transcripts will become part of the public and administrative record for the Programmatic EIS/OEIS.
- The audience is requested to please minimize movement and talking while others are making comments. If you need to leave the room, please take advantage of the time when we are changing speakers.
- Depending on the number of speakers, the public hearing moderator may ask that speakers move to a reserved seating area to minimize time between speakers. This will ensure that everyone has an opportunity to provide oral comments.
- Please avoid applause or open remarks during comments. This makes it difficult to hear the speaker and takes time away from that and subsequent speakers.

Thank you for your cooperation.

Public Hearing on the Draft Programmatic EIS/OEIS:

Scripps Institution of Oceanography

La Jolla, CA – October 25, 2010

P.O. Box 120191, San Diego, CA 92112-0191

AFFIDAVIT OF PUBLICATION

TEC, INC.
514 VIA DE LA VALLE, SUITE 308
ATTN: CLAUDIA TAN
SOLANA BEACH, CA 92075

STATE OF CALIFORNIA } ss.
County of San Diego }

The Undersigned, declares under penalty of perjury under the laws of the State of California: That she is a resident of the County of San Diego. That she is and at all times herein mentioned was a citizen of the United States, over the age of twenty-one years, and that she is not a party to, nor interested in the above entitled matter; that she is Chief Clerk for the publisher of

The San Diego Union-Tribune

a newspaper of general circulation, printed and published daily in the City of San Diego, County of San Diego, and which newspaper is published for the dissemination of local news and intelligence of a general character, and which newspaper at all the times herein mentioned had and still has a bona fide subscription list of paying subscribers, and which newspaper has been established, printed and published at regular intervals in the said City of San Diego, County of San Diego, for a period exceeding one year next preceding the date of publication of the notice hereinafter referred to, and which newspaper is not devoted to nor published for the interests, entertainment or instruction of a particular class, profession, trade, calling, race, or denomination, or any number of same; that the notice of which the annexed is a printed copy, has been published in said newspaper in accordance with the instructions of the person(s) requesting publication, and not in any supplement thereof on the following dates, to wit:

Oct 1, 2010



Chief Clerk for the Publisher

10/13/10

Date

Affidavit of Publication of

Legal Advertisement
Ad # 0010436117
ORDERED BY: CLAUDIA TAN

NOTICE

The National Science Foundation (NSF) announces the notice of the availability of a Draft Programmatic Environmental Impact Statement/Overseas Environmental Impact Statement (Draft PEIS) for marine seismic research funded by NSF or conducted by the USGS and requests public review and comment on the document. NSF also provides notice of public hearings on the Draft PEIS. The Draft PEIS assesses the potential impacts of marine seismic research on the human and natural environment. Under the Proposed Action, a variety of acoustic sources used for research activities funded by NSF or conducted by the USGS would be operated from various research vessels operated by U.S. academic institutions or government agencies. The seismic acoustic sources would include various airgun configurations, as well as low-energy seismic and non-seismic acoustic sources. The Draft PEIS examines the potential impacts that may result from geophysical exploration and scientific research using seismic surveys that are funded by NSF or conducted by the USGS in non-Arctic waters.

NSF will conduct public hearings to receive oral and written comments on the Draft PEIS. Federal, state, and local agencies and interested individuals are invited to be present or represented at the public hearings. The hearings will start with an open house session, followed by a presentation, and then the formal oral public comment period. The public hearings will be held on the following date and at the following locations:

- Monday, October 25, 2010, 5:00 - 7:00 p.m. at Scripps Institution of Oceanography, University California-San Diego, Vaughn Hall, Room 100, Discovery Way, La Jolla, CA.
- Wednesday, October 27, 2010, 5:00-7:00 p.m. at the National Science Foundation, 4201 Wilson Blvd., Room 110, Arlington, VA.

The Draft PEIS is available on NSF's website at:

<http://www.nsf.gov/geo/ocs/envcomp/index.jsp>. Electronic or printed copies of the Draft PEIS are also available upon request from: Holly Smith, National Science Foundation, Division of Ocean Sciences, 4201 Wilson Blvd., Suite 725, Arlington, VA 22230. Telephone: (703) 292-8583. Email: nepacomment@nsf.gov.



PUBLIC HEARING SIGN-IN SHEET

National Science Foundation (NSF) – U.S. Geological Survey (USGS) Marine Seismic Research Draft Programmatic EIS/OEIS

Location: La Jolla, CA

Date: October 25, 2010

(CD or hardcopy)

Name	Mailing/E-mail Address (please print clearly)	I would like a copy of the Final EIS/OEIS
JIM FAHEY	JIM@CALIFORNIAKATLANSANDSOURCES.COM	YES NO
ROBT BARTO	SOLARBART@AOL.COM	No
Jim Holik	NSF	NO
Nancy Lo	Nancy.Lo@NOAA.GOV	NO
Meagan Cummings	L-DEO/Cummings@ldeo.columbia.edu meagan.c	no
Mark Lambert	mark-e-lambert@raytheon.com	No
Candace Nachman	Candace.Nachman@noaa.gov	NO
Adrian Hill	ah2427@columbia.edu	NO
Dave Goldberg	goldberg@ldeo.columbia.edu	No
Mike Purdy	mpurdy@ldeo.columbia.edu	no
Bob Wilson		NO
Steve Holbrook	stevch@uwyo.edu	No

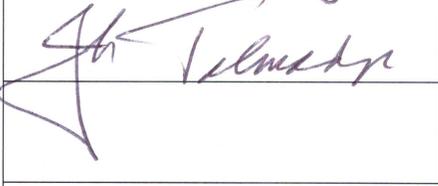


PUBLIC HEARING SIGN-IN SHEET

**National Science Foundation (NSF) – U.S. Geological Survey (USGS)
Marine Seismic Research Draft Programmatic EIS/OEIS**

Location: La Jolla, CA

Date: October 25, 2010

Name	Mailing/E-mail Address (please print clearly)	I would like a copy of the Final EIS/OEIS
GRAHAM KENT	gkent@unt.edu	HAVE one
MAYA TOLSTOY	mt290@columbia.edu	NO
TIM SCHNOOR	TIM.SCHNOOR@NAVY.MIL	NO
BRUCE APPELCAIN	hb@ucsd.edu	NO
JON ALBERTS	JON@UNPLS.ORG	YES NO
ALEXANDER SHOR	SHOR@HAWAII.EDU	YES online
WOODY SUTHERLAND	woody5@ucsd.edu	YES online
Nathan Bangs	nathan@is.utexas.edu	No
	hpdupres@aol.com	No

In The Matter Of:
*National Science Foundation Public
Hearing on the Draft P.E.I.S.*

*Public Hearing Proceedings
October 25, 2010*

National Court Reporters Inc. 888.800.9656

Original File NSFFINAL.TXT

Min-U-Script®

National Court Reporters, Inc. 888.800.9656

1 NATIONAL SCIENCE FOUNDATION (NSF)
2 PUBLIC HEARING ON THE
3 DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT (PEIS)
4 FOR MARINE SEISMIC RESEARCH

5
6
7
8 TRANSCRIPT OF PROCEEDINGS

9 VOLUME I

10 (Pages 1 - 29, inclusive)

11
12
13 TAKEN ON: October 25, 2010

14 TAKEN AT: Scripps Institute of Oceanography
15 Vaughn Hall, Room 100,
16 Discovery Way
17 La Jolla, California

18
19
20 REPORTED BY: Katrina F. Burlason,
21 RPR, CSR No. 5898
22
23
24
25

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

APPEARANCES

RICK SPAULDING, PROJECT MANAGER
TEC, Inc.
6765 NE Day Road
Bainbridge Island, Washington 98110
206.855.4997
rlspaulding@tecinc.com

HOLLY SMITH, PROJECT MANAGER
NATIONAL SCIENCE FOUNDATION

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

I N D E X

OPENING STATEMENT FOR NSF:	PAGE	4
OPENING STATEMENT FOR TEC, INC.:	PAGE	7
(Recess for Viewing Posters and for Discussion)		
OVERVIEW OF EIS AND PROPOSED ACTION:	PAGE	9
(Recess)		
MODERATOR'S STATEMENT:	PAGE	24
PUBLIC COMMENTS:		
Prof. Mike Purdy	PAGE	27
MODERATOR'S CLOSING STATEMENT:	PAGE	29

1 LA JOLLA, CALIFORNIA, MONDAY, OCTOBER 25, 2010

2
3 (Open house portion of the hearing began at
4 5:00 p.m., where discussions were held off the record
5 and posters were on display.)

6
7 MS. SMITH: I guess we can get started.

8 I want to welcome everybody to the meeting
9 tonight. I'm Holly Smith, in the Division of Ocean
10 Sciences at the National Science Foundation. I
11 currently serve as the project manager for the Draft
12 Programmatic Environmental Impact Statement, Overseas
13 Environmental Impact Statement, commonly referred to as
14 the Draft Programmatic EIS. So this is funded by NSF
15 and USGS. We are very appreciative of your time for
16 coming out here, and we look forward to hearing your
17 comments.

18 This hearing is being held in accordance with
19 the provisions of the National Environmental Policy Act,
20 or NEPA, and the regulations that are published by the
21 Council on Environmental Quality. The purpose of this
22 hearing is to receive public comments on the Draft
23 Programmatic EIS. The USGS and National Oceanic and
24 Atmospheric Administration, or NOAA, are cooperating
25 agencies in the preparation of the Programmatic EIS.

1 And before I go further, can everyone hear me
2 okay?

3 Although during the open house/poster session
4 you may have met many of the representatives from NSF,
5 USGS, NOAA, and the contractors that assisted us in the
6 preparation of the Draft Programmatic EIS, I would like
7 the members of the EIS project team to introduce
8 themselves and state their role in the process. I'll
9 start over here.

10 Caroline?

11 MS. BLANCO: I'm Caroline Blanco. I'm an
12 environmental attorney at National Science Foundation.

13 MR. SPAULDING: I'm Rick Spaulding. I'm the
14 Project Manager for TEC; in other words, the manager for
15 writing of the document.

16 MS. ENG: Hi. I'm Esther Eng, with the U.S.
17 Geological Survey. I'm the chief of the Environmental
18 Management Branch at headquarters.

19 MR. DEVINE: I'm Jim Devine, U.S. Geological
20 Survey. I'm the senior proving officer for NEPA
21 Processes.

22 MS. SMITH: Jon?

23 MR. CHILDS: Jon Childs, geophysicist. I'm a
24 member of the U.S. Geological Survey, and I participated
25 as a reviewer and expert witness, I guess.

1 MS. SMITH: Candace?

2 MS. NACHMAN: Hi. Candace Nachman, with NOAA
3 Fisheries, back in Silver Spring, and we're a
4 cooperating agency for marine mammals and sea turtle
5 issues.

6 MS. SMITH: Anyone else?

7 MS. BROWNLOW: I'm Jackie Brownlow. I'm with
8 TEC, and I'm assisting Rick with this hearing.

9 MS. SMITH: And --

10 MR. FRANKEL: I'm Adam Frankel. I'm an
11 acoustic biologist with Marine Acoustics, Incorporated,
12 and I helped prepare some of the EIS chapters.

13 MS. SMITH: And in the back of the room?

14 MS. TAN: I'm Claudia Tan. I'm with TEC, and
15 I'm helping with the hearing process.

16 MS. GRAY: I'm Liza Gray. And I am also with
17 TEC, and I'm assisting with the public hearing.

18 MS. SMITH: All right. Team members will
19 remain here for the duration of the hearing, so please
20 feel free to approach anyone from the EIS team if you
21 would like to discuss the project.

22 The hearing will be conducted in three parts.
23 First, after this brief introduction, Rick Spaulding,
24 who works for TEC, will provide an overview of the
25 format and guidelines for tonight's meeting. After his

1 overview, I will make a presentation on the purpose and
2 need for the Programmatic EIS for NSF-USGS marine
3 seismic research and will summarize the analytical
4 approach taken. The third part of this hearing will be
5 an opportunity to provide NSF and USGS with oral
6 comments on the Draft Programmatic EIS and make
7 statements for the record. The input that you provide
8 will guide us in the Programmatic EIS process with
9 valuable information about your concerns and questions
10 about the Draft Programmatic EIS analysis so that we may
11 address those concerns in preparation of the Final
12 Programmatic EIS.

13 MR. SPAULDING: Thank you, Holly.

14 As Holly said, my name is Rick Spaulding. I'm
15 the project manager for the contractor that is preparing
16 the Draft and the Final Programmatic EIS, and I'll act
17 as the sort of moderator or facilitator for the meeting
18 tonight.

19 One of the things I want to sort of encourage
20 is I'd ask you to keep in mind that this is a public
21 hearing. It's not a debate. It's not a popularity vote
22 on the analysis presented in the Draft Programmatic EIS,
23 nor is it designed as a question-and-answer session,
24 although legitimate clarifying questions as part of your
25 comments may be asked and be recorded for clarification

1 in the Final Programmatic EIS.

2 This hearing is about the adequacy of the
3 analysis presented in the Draft Programmatic EIS.
4 Concerns about non-environmental issues should not be
5 raised at this hearing. They will not add anything to
6 the record and will simply take away from other
7 speakers' times and opportunities to comment on the
8 Draft Programmatic EIS.

9 When you came in, you should have been asked
10 to fill out a speaker card if you're interested in
11 presenting an oral comment tonight. If you have not
12 filled out a card and you do wish to make a comment
13 tonight, please fill out one now, and we will use those
14 to call your name during the comment period.

15 Please keep in mind also that all of the
16 proceedings, from when Holly began, are being recorded
17 by a court reporter, and they'll become part of the
18 official public record and they'll be included in the
19 appendix of the Final EIS.

20 Should you choose to submit any comments in
21 writing, this would be the appropriate time and place to
22 do that. We have comment sheets outside on the table as
23 you enter. You can leave your comments in the box in
24 the back there with the cookies. It's to encourage you
25 to come and look at the comments sheets, so that's why

1 we put the cookies there.

2 If you wish to comment in other ways on the
3 Programmatic EIS, there are a number of ways you can do
4 that. You can either provide written comments
5 tonight -- As I have stated, you can provide written
6 comments by mail or you can provide them via e-mail at a
7 later date -- and the address we will show you later,
8 but it's all in the materials -- or you can present them
9 to the court reporter tonight as an oral comment.
10 Written comments submitted by mail will be accepted
11 until November 22nd, 2010, at the end of the 45-day
12 comment period. All comments made at the hearing or
13 provided in writing will be given equal consideration.

14 And at this time I would like to have Holly
15 come back and give a brief presentation on the
16 Programmatic EIS.

17 MS. SMITH: Thank you.

18 First, again I'd like to thank you all for
19 coming to tonight's public hearing. As Rick mentioned,
20 I'll provide a brief overview of the Draft Programmatic
21 EIS, but further details on the information I will
22 describe can be found in the actual document. After my
23 presentation, formal comments can be provided as part of
24 the formal public hearing process, as Rick just
25 mentioned.

1 The preparation of this Programmatic EIS was
2 initiated in 2005 with NSF as the lead agency and the
3 National Oceanic and Atmospheric Administration's
4 National Marine Fisheries Service, or NMFS, as a
5 cooperating agency because of their regulatory
6 oversight. USGS joined the effort several years ago and
7 is an official cooperating agency. Both NSF and USGS
8 are action agencies, whereas NMFS is involved as a
9 regulating agency.

10 NSF is an independent federal agency and was
11 created in the 1950s to promote the progress of science.
12 NSF funds approximately 20 percent of the federally
13 supported basic research at U.S. colleges and
14 universities. We receive approximately 40,000 proposals
15 each year for research, education, and training
16 projects, which are judged by a rigorous merit-review
17 process. NSF awards approximately 11,000 grants
18 annually, which is approximately a 27 percent proposal
19 success rate. NSF's current budget is nearly
20 \$7 billion. NSF-funded researchers have made important
21 contributions to science and have received a multitude
22 of distinguished awards and honors; notably, more than
23 180 Nobel Prizes.

24 The USGS is a bureau within the Department of
25 the Interior. It's a scientific federal agency with no

1 regulatory responsibility. It has the largest U.S.
2 agency budget studying issues of water, earth, and
3 biological sciences. USGS also has responsibility for
4 all civilian mapping efforts. The USGS collects,
5 monitors, analyzes, and provides scientific
6 understanding about conditions, issues, and problems
7 associated with natural resources, hazards,
8 environments, and climate change.

9 The National Marine Fisheries Service is part
10 of the U.S. Department of Commerce's National Oceanic
11 and Atmospheric Administration. It's the lead federal
12 agency responsible for the stewardship of the nation's
13 offshore living marine resources and their habitat.

14 NMFS manages, conserves, and protects fish,
15 whales, dolphins, sea turtles, and other living ocean
16 creatures. NMFS's Office of Protected Resources works
17 to conserve, protect, and recover species under the
18 Endangered Species Act and Marine Mammal Protection Act.

19 The Draft Programmatic EIS examines the
20 potential environmental impacts that may result from
21 marine seismic research surveys that are funded by NSF
22 or conducted by the USGS.

23 The proposed action is for academic and U.S.
24 government scientists to conduct marine seismic research
25 from research vessels operated by academic institutions

1 and government agencies. The purpose of the proposed
2 action, however, is to study the earth beneath the ocean
3 using seismic data to reveal the underlying structure
4 and stratigraphy of the sediments and deeper crust.
5 This geologic information helps expand our understanding
6 of the intricate Earth and atmospheric processes, which
7 support the NSF and USGS missions, and benefits society.

8 As I just mentioned, the purpose is to
9 increase the scientific understanding of the earth
10 beneath the oceans. Data collected by seismic surveys
11 have been used by scientists in a variety of ways,
12 including hypothesizing, and subsequently demonstrating,
13 the validity of the theory of plate tectonics.

14 Seismic surveys can be used to directly image
15 the sea floor and subsurface features, such as submarine
16 volcanoes, magma chambers, and mid-ocean ridges.
17 Seismic data can provide images of ocean faults and
18 subduction zones, which are key to improving our
19 understanding of, and better planning for, natural
20 hazards such as earthquakes, landslides, and tsunamis.

21 NSF's mission of funding basic research has a
22 broader scientific scope than most mission agencies
23 have. NSF-funded marine seismic research is driven by
24 the scientific community -- scientists submit proposals
25 on a wide range of geologic topics of interest for

1 funding consideration and, as previously mentioned,
2 proposals are vetted through a peer-based, merit-review
3 process.

4 As a result of the broader scientific scope,
5 NSF-funded seismic surveys are globally ranging,
6 spanning domestic, international, and foreign
7 territorial waters. Typically surveys are conducted in
8 water deeper than 1000 meters or are conducted along
9 transects from shallow to deeper water. NSF funds
10 approximately four to seven surveys per year, each
11 lasting typically one to seven weeks.

12 The primary vessel used for high-energy
13 surveys is the "R/V Marcus G. Langseth." The vessel is
14 owned by NSF and operated under a Cooperative Agreement
15 with Columbia University's Lamont-Doherty Earth
16 Observatory. Other research vessels that are part of
17 the U.S. academic fleet are sometimes used for
18 NSF-funded low-energy surveys.

19 USGS mainly conducts low-energy surveys and
20 are mostly within five nautical miles of the shoreline.
21 They conduct approximately 8 to 12 surveys each year,
22 each of one to three weeks' duration. Surveys typically
23 are in water depths up to 1000 meters on the West Coast,
24 500 meters in the Gulf of Mexico, and 100 meters on the
25 East Coast.

1 USGS also conducts one to two high-energy
2 surveys per year, with potential for more frequent
3 surveys in the future. Surveys could last up to a few
4 weeks each and would likely be deep-water cruises
5 conducted both inside and outside the 200-nautical-mile
6 limit, the US EEZ boundary.

7 USGS Coastal and Marine Science objectives
8 include: Mapping to define the outer limits of the U.S.
9 extended continental shelf under Law of the Sea;
10 understanding the dynamic offshore environment for slope
11 failures, coastal erosion, faults, gas leaks, and other
12 features, and researching marine aspects of global
13 change and their impacts on society.

14 The Draft PEIS describes the different types
15 of marine seismic surveys which may potentially be
16 funded by NSF or conducted by USGS. The most common
17 include two-dimensional and three-dimensional reflection
18 and refraction surveys. Occasionally other types of
19 surveys, such as four-dimensional, vertical seismic
20 profiling, or surveys using ocean bottom cables are
21 employed by researchers. The type of marine seismic
22 survey that is conducted varies depending on the
23 scientific objectives identified by the researchers.

24 As depicted in this graphic, for reflection
25 surveys, seismic signals bounce off the sea floor and

1 discontinuities beneath the sea floor and are typically
2 collected by a towed hydrophone streamer. For
3 refraction surveys, seismic signals bend through the
4 layers of the earth and travel near horizontally to
5 recording instruments (ocean bottom seismometers) that
6 are commonly stationary on the sea floor. Signals
7 collected are then processed to construct an image or
8 map of the Earth's internal structure. The draft PEIS
9 includes further information on the types of surveys and
10 equipment illustrated here as well as other types of
11 equipment that are used during seismic surveys.

12 I mentioned earlier in my presentation "high
13 energy surveys" and "low energy surveys." Seismic
14 surveys were divided into these two categories in the
15 Draft PEIS. The groupings were based on analysis of a
16 variety of acoustic energy source types, such as GI or
17 G-guns, and configuration scenarios that took into
18 consideration source volume, tow depth, and airgun
19 spacing -- factors that influence sound propagation.

20 In general, experiments using four airguns or
21 less, boomers, sparker, water guns, or chirp systems are
22 likely to fall into the low-energy classification. As I
23 just noted, however, certain factors do influence sound
24 propagation and, therefore, there are exceptions to this
25 general rule of thumb. Appendix F of the Draft

1 Programmatic EIS provides further details about the
2 various configurations and scenarios that meet the
3 low-energy configuration parameters.

4 I'd like to now give a general overview of our
5 approach to analysis. Some items I will just touch on
6 briefly; however, I will discuss some items in slightly
7 more detail in subsequent slides. Further details on
8 all points, however, can be found in the Draft
9 Programmatic EIS.

10 First, five sites were selected to be analyzed
11 and modeled quantitatively. These were referred to as
12 the Detailed Analysis Areas or DAAs. Eight additional
13 areas were identified and were analyzed qualitatively
14 and were not modeled. These were referred to in the
15 Draft PEIS as QAAs, Qualitative Analysis Areas. DAAs
16 and QAAs were selected both with the consideration of
17 where future surveys are likely to occur and for
18 representing a variety of Longhurst biomes -- marine
19 areas that demonstrate similar ecological dynamics.
20 Survey seasons and source levels and configurations were
21 selected taking into consideration operational
22 constraints, such as weather, and likely scientific
23 goals.

24 For the DAAs, modeling was conducted to
25 predict take estimates of marine mammals. The Draft

1 PEIS includes monitoring and mitigation to minimize and
2 avoid potential effects of seismic operations on the
3 marine environment, such as marine mammals and sea
4 turtles.

5 The affected environment and environmental
6 consequences of the proposed action were evaluated for
7 the DAAs and QAAs. Impacts on the associated marine
8 resources, including marine invertebrates, fish, sea
9 turtles, sea birds, and marine mammals, were considered.
10 Additionally, the impacts to socioeconomic and cultural
11 resources, such as commercial fishing, recreational
12 activities, subsistence hunting and fishing, and
13 archeological sites, such as shipwrecks, were identified
14 and analyzed. The survey activities were then assessed
15 to determine the cumulative impacts.

16 This slide illustrates where the five DAAs and
17 eight QAAs are located around the globe and the
18 Longhurst biomes they represent. The DAAs are
19 highlighted with the red circles, and the QAAs, with the
20 green. These sites and associated environments are
21 described in detail in a Draft Programmatic EIS.

22 For a quantitative assessment of the potential
23 impacts of each exemplary marine seismic survey at a
24 DAA, the predicted (or modeled) seismic survey sound
25 fields were integrated with the expected distribution of

1 marine animals at each site. An Airgun Array Source
2 Model, or AASM, was used at each DAA to predict the
3 amount of sound that would be projected in each
4 direction from the proposed airgun configuration.

5 The Marine Operations Noise Model created by
6 JASCO then incorporated the AASM information and used it
7 to predict the received levels of airgun sound as a
8 function of bearing, distance, and depth in the water
9 column. This model takes into account the best
10 available site-specific environmental information that
11 would affect the propagation and attenuation of sound as
12 it travels outward from the airgun array.

13 Finally, the Acoustic Integration Model, or
14 AIM, developed by Marine Acoustics Inc. was applied to
15 estimate the number of marine mammals of each species or
16 species group that would potentially receive various
17 amounts of sound energy, and develop "take" estimates.
18 The model also took into account certain mitigation
19 strategies identified in the Draft Programmatic EIS,
20 such as shutdowns for species simulated entering the
21 180- and 190-dB isopleth Mitigation Zone and subsequent
22 shutdown period.

23 The modeling used in the Draft Programmatic
24 EIS incorporated the current NMFS "take" criterion for
25 pulsed sounds. However, the Draft Programmatic EIS also

1 incorporated the criterion recommended by the Noise
2 Criteria Group, identified by Southall, et al., in 2007,
3 and is viewed to be a more scientifically based
4 mitigation approach.

5 The Noise Criteria Group suggests that
6 auditory effects should be measured using the Sound
7 Exposure Level metric, or SEL, which is the total energy
8 contained within a pulse. This is different than the
9 existing NMFS guidance, which uses a metric of sound
10 pressure, referred to as "RMS."

11 The Noise Criterion Group also recommended the
12 use of M-weighting, which takes into account that marine
13 mammals have different sensitivities to sound.

14 M-weighting places greater emphasis on frequencies which
15 a species is deemed to be more sensitive to and less
16 emphasis on other frequencies. For example, baleen
17 whales are believed to be more sensitive to low
18 frequency sounds and less sensitive to higher frequency
19 sounds. A model which uses M-weighting would take this
20 sensitivity into consideration. Flat weighting does not
21 take into consideration species or group-specific
22 frequency sensitivities.

23 The Draft PEIS models calculated both
24 M-weighting and flat-weighting approaches. As
25 previously mentioned, the modeling software used in the

1 analysis also took into consideration site-specific
2 environmental context such as bathymetry, sub-bottom
3 conditions, and sound velocity profile -- conditions
4 which influence sound propagation.

5 Mitigation and monitoring strategies were
6 described in the Draft Programmatic EIS and include:
7 During pre-cruise planning, considering such factors as
8 to whether science objectives could be met with a
9 smaller source level; and cruise timing, taking into
10 consideration migratory patterns and periods of
11 anticipated high species density; visual monitoring;
12 Passive Acoustic Monitoring for high-energy surveys;
13 establishing Mitigation Zones; and using mitigation
14 strategies operations, such as airgun powerdowns and
15 shutdowns.

16 The agencies considered a number of Action
17 Alternatives. Some were considered but eliminated from
18 further analysis; however, two were carried forward for
19 analysis. The first is Alternative A and is considered
20 in detail in the Draft PEIS. Under Alternative A,
21 academic and U.S. Government scientists supported with
22 funds from NSF or USGS would conduct marine seismic
23 research using cruise-specific mitigation measures.
24 Under this scenario, for expected take situations the
25 Full Mitigation Zone (the 160 dB isopleth) and the

1 Mitigation Zone (the 180/190 dB isopleths) would be
2 calculated for both high- and low-energy sources.
3 However, for expected no-take situations, there would be
4 a standard fixed 200-meter Full Mitigation Zone.

5 Action Alternative B is our preferred
6 alternative. Under Alternative B, the academic and U.S.
7 government scientists supported with funds from NSF or
8 USGS would conduct marine seismic research using
9 cruise-specific mitigation measures. However, for
10 low-energy acoustic sources, generic mitigation measures
11 would be employed.

12 In this scenario, expected no-take situations
13 would remain the same as for Alternative A, with a
14 standard, fixed 200-meter Full Mitigation Zone. For
15 expected take situations, the Full Mitigation Zone for
16 high- and low-energy sources would be modeled. The
17 Mitigation Zone, the 180/190 dB isopleths, for
18 high-energy sources would also be modeled. However,
19 under Alternative B there would be a standard, fixed
20 100-meter Mitigation Zone for low-energy sources in
21 water deeper than 100 meters.

22 In addition to the Action Alternatives, the
23 No-Action Alternative was considered. In this
24 situation, NSF would not fund, and USGS would not
25 conduct, marine seismic research. Under this scenario,

1 NSF and USGS would not meet the purpose and need for the
2 proposed action in support of agencies' missions.

3 Geologic and geophysical data of great significance and
4 societal benefit would not be collected, and a segment
5 of our national academicians and would be unable to
6 perform experiments and expand the knowledge base of
7 Earth processes. Improvements to our knowledge and
8 national preparedness of a variety of natural hazards
9 would be foregone, as would be the potential prevention
10 of societal harm resulting from them.

11 Direct and indirect affects of the proposed
12 action are mainly a result of noise from the acoustic
13 energy sources (such as airguns). Potential impacts to
14 species are expected to be limited to short-term and
15 localized behavioral disturbances (such as Level B
16 harassment) and are not significant to populations.
17 Although noise modeling results for the DAAs indicate
18 that Level A injury impacts to marine mammals or
19 threatened and endangered species may occur, additional
20 mitigation measures would be added to the cruise
21 parameters to reduce and eliminate Level A impacts or
22 the potential for injury. In addition, the Draft
23 Programmatic EIS modeling analysis overestimates Level A
24 exposure because it does not account for characteristic
25 avoidance behavior expected by some species.

1 The results of the cumulative impacts analysis
2 indicate that there would not be any significant
3 cumulative effects of the affected environment from the
4 proposed NSF-funded or USGS-conducted marine seismic
5 research. The monitoring and mitigation measures
6 planned -- including pre-cruise planning efforts to
7 reduce impacts, consideration of other regional
8 activities which may influence the environment, and
9 operational actions such as powerdowns and shutdowns of
10 acoustic sources -- influence this conclusion.

11 When future surveys are identified, a
12 site-specific environmental analysis will be developed.
13 All future seismic surveys would be permitted according
14 to the rules and regulations of the applicable agencies
15 of U.S. federal, state, and foreign governments,
16 including the U.S. Marine Mammal Protection Act and
17 Endangered Species Act.

18 NSF will continue to consider incorporating
19 new or improved technologies to enhance the existing
20 mitigation and monitoring tools and equipment used
21 during seismic surveys and reduce potential for impacts.

22 Similarly, NSF will continue to evaluate
23 advances made to existing and alternative seismic energy
24 sources which result in the reduction of potential
25 environmental impacts, and meet the purpose and needs of

1 marine seismic research objectives, and will consider
2 them for future use.

3 So that basically concludes my presentation.
4 And I really want to thank, first of all, Scripps, for
5 allowing us to meet here and for hosting this. I'd also
6 like to thank you, our cooperating agencies, for all the
7 help they've put into the project, especially Candace
8 Nachman from NMFS and Carolyn Ruppel from USGS, who
9 can't be here but who will be at the Arlington public
10 hearing, and also, of course, John Diebold, who spent
11 quite a bit of time working on this with us. So thank
12 you very much.

13 I forgot to thank you all for coming,
14 especially the MLSOC, whom I encourage highly this
15 evening for coming out, and Woody also, for helping to
16 make these arrangements, and Bruce, wherever he is.

17 Rick?

18 THE REPORTER: Could I have a moment, please?

19 (Recess taken.)

20 MR. SPAULDING: Thank you for your patience.
21 We're ready to begin.

22 Thank you, Holly, for your presentation.

23 Before we begin the public comment period, I'd
24 like to reiterate some of the guidelines we'll be using
25 tonight. The guidelines were presented to you back when

1 you walked in, but I want to reiterate those.

2 This is the part of the process that gives you
3 the opportunity to provide NSF and USGS with information
4 and to make statements for the record. This input
5 ensures that the decision-makers may benefit from your
6 knowledge of the issues and proposed activities and your
7 comments on the analysis. All of your comments, whether
8 written or oral, will be responded to in the Final EIS
9 and will be part of the public record.

10 Public officials that choose to speak will be
11 given an opportunity to speak first, then members of the
12 public will be called upon, in the order in which they
13 were received, from the cards that have been handed in
14 that indicate you wish to make a public comment.

15 Please speak only after I have recognized you,
16 and address your remarks to me. Speak clearly,
17 identifying yourself, stating your first name and your
18 address and the capacity in which you wish to appear if
19 you're representing anyone other than yourself. We need
20 this to ensure that the court reporter gets an accurate
21 record of what is said tonight.

22 Each person will be allowed three minutes to
23 speak. This time limit applies to everyone: Public
24 officials, spokespersons, and people representing
25 themselves. You do not have to speak for the full three

1 minutes; however, if you choose to speak for the full
2 three minutes, when you have only one minute remaining
3 to speak, a yellow card will be raised, and when your
4 time has expired, a red card will be raised.

5 Out of respect for others who would like to
6 make comments, I ask that you please honor any request
7 from me to stop speaking. If you think you have more
8 comments than you can present in the time allotted, make
9 the most appropriate comments first. If you do not get
10 a chance to voice all of your comments, you can and
11 should submit additional comments in writing at the end
12 of this hearing. If you have a written comment or
13 statement, you may simply hand it in or read it aloud
14 within the time limit or do both. This hearing is
15 scheduled to end at 7:00 p.m. If we have time, we may
16 give you another three minutes to expand on your remarks
17 or continue your remarks.

18 You may have noticed that the court reporter
19 will record everything that is said tonight. The
20 transcript of this proceeding will become a part of the
21 hearing and will be included in the Final Programmatic
22 EIS.

23 Finally, I would like to remind you to limit
24 your comments to the analysis presented in the Draft
25 Programmatic EIS. That is the purpose of this public

1 comment period. Also, I ask that you avoid repeating
2 what another speaker has said. There is nothing
3 inappropriate about agreeing with other speakers, but to
4 repeat the same thing just delays others in making their
5 comments. If you agree with a previous speaker on a
6 particular issue, you may just state your agreement.

7 We will start with comments from public
8 officials. Following their remarks, we will take oral
9 comments -- although no one filled in any cards -- we
10 will take them in the order in which we have received
11 them. Again, I wish to remind you of the three-minute
12 time limit on speaking.

13 As of now, we have no official cards submitted
14 for anyone wishing to make an oral comment. Is there
15 anybody that would wish to make a comment at this time
16 that did not fill out a card?

17 Okay. Yes, sir.

18 PROF. PURDY: Do I have to fill out a card?

19 MR. SPAULDING: No. Please stand and state
20 your name.

21 PROF. PURDY: My name is Mike Purdy. I'm a
22 Professor of Earth and Environmental Sciences at
23 Columbia University. I am Director of the
24 Lamont-Doherty Earth Observatory, and as such I
25 understand the imperative of accelerating our knowledge

1 of the processes that control the generation of
2 earthquakes and other hazards to humankind and also to
3 accelerate the rate at which we understand the forces
4 that are causing our climate to change. History shows
5 that a large percentage of all our knowledge on these
6 issues is based on the use of sound, widely varying
7 frequencies, especially in the oceanic regime, and as
8 such, certainly researchers at Columbia University
9 understand that we must continue to use sound in very
10 judicious ways to help us understand the processes that
11 control how the earth is evolving and the safety in
12 hazardous zones for humankind.

13 I see the development of this Programmatic EIS
14 as a very positive step forward in this regard. It will
15 provide important guidance for the academic research
16 community and allow us to balance the joint imperatives
17 of advancing our knowledge and protecting all life in
18 the oceans, which remains one of our key priorities.
19 And I'd like to acknowledge and thank the cooperative
20 nature of this effort between the cooperating agencies
21 and acknowledge the hard work that's gone into it.

22 Thank you.

23 MR. SPAULDING: Thank you very much.

24 Anybody else wish to make a comment at this
25 time? If not, we'll take a brief adjournment and you

1 can feel free to mingle around the posters, talk amongst
2 yourselves, ask questions of the EIS representatives,
3 and then we'll come back in, say, 10 minutes, and then
4 I'll ask if anybody else would like to make a comment.

5 (Recess taken.)

6 MR. SPAULDING: Excuse me, may I have your
7 attention?

8 Does anybody wish to make any comments at this
9 time?

10 If not, I will -- We will stay open until
11 7:00 o'clock, and if anybody wishes to make a comment,
12 please approach me, and we will convene and listen to
13 your comment.

14 (Recess taken from 6:40 - 7:00 p.m.)

15 MR. SPAULDING: Thank you all for coming
16 tonight. If you have any comments, please submit them
17 as written comments. All comments will be addressed in
18 the Final EIS.

19 I hearby call this meeting adjourned at 7:00
20 p.m.

21 ---o0o---

22

23

24

25

1 STATE OF CALIFORNIA)
2 COUNTY OF SAN DIEGO)

3

4 I, Katrina F. Burlason, a Certified Shorthand
5 Reporter for the State of California, do hereby certify:

6 That I reported stenographically the
7 proceedings held in the foregoing matter on the 25th day
8 of October, 2010; that my stenotype notes were later
9 transcribed into typewriting under my direction, and the
10 foregoing 29 pages contain a true and complete record of
11 the proceedings had at said hearing.

12 Dated at San Diego, California, on the 11th
13 day of November, 2010.

14

15

16

17

Katrina F. Burlason

18

Katrina F. Burlason
RPR, CSR No. 5898

19

20

21

22

23

24

25

Public Hearing on the Draft Programmatic EIS/OEIS:

Office of Marine Acoustics Inc. (MAI)

Arlington, VA – October 27, 2010

AFFIDAVIT OF PUBLICATION

AD# 14571075

DISTRICT OF COLUMBIA, ss,
Personally appeared before me, CHIZUKO CARTER,
a Notary Public in and for the District of Columbia,

CARL S. JOHNSON, who is being duly sworn according to law, an oath says that he is
an AUTHORIZED AGENT of THE WASHINGTON TIMES, L.L.C., publisher of

The Washington Times

Circulated daily, in the City of Washington, District of Columbia,
and that the advertisement, of which the annexed is a true copy,
was published in said newspaper 1 time(s) on the following dates:

2010 OCTOBER 26

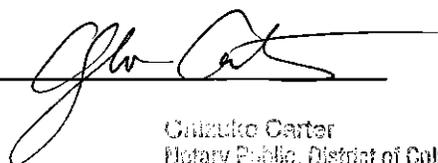
at the rate of \$ 2.91 per line

Total Cost \$ 458.33 Dollars



Subscribed and sworn to before me

OCTOBER 26, 2010

Notary Public 

Chizuko Carter
Notary Public, District of Columbia
My Commission Expires 7/31/2011

My Commission expires _____

The National Science Foundation (NSF) announces the notice of the availability of a Draft Programmatic Environmental Impact Statement/Overseas Environmental Impact Statement (Draft PEIS) for marine seismic research funded by NSF or conducted by the USGS and requests public review and comment on the document. NSF also provides notice of public hearings on the Draft PEIS. The Draft PEIS assesses the potential impacts of marine seismic research on the human and natural environment. Under the Proposed Action, a variety of acoustic sources used for research activities funded by NSF or conducted by the USGS would be operated from various research vessels operated by U.S. academic institutions or government agencies. The seismic acoustic sources would include various airgun configurations, as well as low-energy seismic and non-seismic acoustic sources. The Draft PEIS examines the potential impacts that may result from geophysical exploration and scientific research using seismic surveys that are funded by NSF or conducted by the USGS in non-Arctic waters.

NSF will conduct a public hearing to receive oral and written comments on the Draft PEIS. Federal, state, and local agencies and interested individuals are invited to be present or represented at the public hearings. The hearings will start with an open house session, followed by a presentation, and then the formal oral public comment period. The public hearings will be held on the following date and at the following locations:

- Wednesday, October 27, 2010, 5:00-7:00 p.m. at the National Science Foundation, 4201 Wilson Blvd., Room 110, Arlington, VA.
- Monday, October 25, 2010, 5:00 – 7:00 p.m. at Scripps Institution of Oceanography, University California-San Diego, Vaughn Hall, Room 100, Discovery Way, La Jolla, CA.

The Draft PEIS is available on NSF's website at: <http://www.nsf.gov/geo/oce/envcomp/index.jsp>. Electronic or printed copies of the Draft PEIS are also available upon request from: Holly Smith, National Science Foundation, Division of Ocean Sciences, 4201 Wilson Blvd., Suite 725, Arlington, VA 22230. Telephone: (703) 292-8583. Email: nepacomments@nsf.gov.

portion of this meeting, from 1 p.m. to 1:30 p.m. on December 2nd, will be open to the public for a policy discussion. The remainder of the meeting, from 9 a.m. to 6:30 p.m. on December 1st and from 9 a.m. to 1 p.m. and 1:30 p.m. to 5 p.m. on December 2nd, will be closed.

Literature (application review): December 3, 2010 in Room 730. This meeting, from 9 a.m. to 5 p.m., will be closed.

Arts Education (application review): December 6, 2010 in Room 730. This meeting, from 9 a.m. to 6 p.m., will be closed.

Museums (application review): December 6–8, 2010 in Room 716. This meeting, from 9 a.m. to 5:30 p.m. on December 6th, from 9 a.m. to 6 p.m. on December 7th, and from 9 a.m. to 4 p.m. on December 8th, will be closed.

Theater (application review): December 7–10, 2010 in Room 714. A portion of this meeting, from 9 a.m. to 10 a.m. on December 9th, will be open to the public for a policy discussion. The remainder of the meeting, from 9 a.m. to 5:30 p.m. on December 7th, from 9 a.m. to 6 p.m. on December 8th, from 10 a.m. to 6 p.m. on December 9th, and from 9 a.m. to 3 p.m. on December 10th, will be closed.

Media Arts (application review): December 8–10, 2010 in Room 730. This meeting, from 9 a.m. to 5:45 p.m. on December 8th, from 9 a.m. to 6 p.m. on December 9th, and from 9 a.m. to 4 p.m. on December 10th, will be closed.

Opera (application review): December 9–10, 2010 in Room 716. This meeting, from 9 a.m. to 6 p.m. on December 9th and from 9 a.m. to 2 p.m. on December 10th, will be closed.

Opera (application review): December 10, 2010 in Room 716. This meeting, from 3 p.m. to 3:45 p.m., will be closed.

Presenting (application review): December 14–16, 2010 in Room 714. This meeting, from 9 a.m. to 5:30 p.m. on December 14th and 15th and from 9 a.m. to 3:30 p.m. on December 16th, will be closed.

The closed portions of meetings are for the purpose of Panel review, discussion, evaluation, and recommendations on financial assistance under the National Foundation on the Arts and the Humanities Act of 1965, as amended, including information given in confidence to the agency. In accordance with the determination of the Chairman of November 10, 2009, these sessions will be closed to the public pursuant to subsection (c)(6) of section 552b of Title 5, United States Code.

Any person may observe meetings, or portions thereof, of advisory panels that

are open to the public, and if time allows, may be permitted to participate in the panel's discussions at the discretion of the panel chairman. If you need any accommodations due to a disability, please contact the Office of AccessAbility, National Endowment for the Arts, 1100 Pennsylvania Avenue, NW., Washington, DC 20506, 202/682-5532, TDY-TDD 202/682-5496, at least seven (7) days prior to the meeting.

Further information with reference to these meetings can be obtained from Ms. Kathy Plowitz-Worden, Office of Guidelines & Panel Operations, National Endowment for the Arts, Washington, DC, 20506, or call 202/682-5691.

Dated: November 8, 2010.

Kathy Plowitz-Worden,

*Panel Coordinator, Panel Operations,
National Endowment for the Arts.*

[FR Doc. 2010-28481 Filed 11-10-10; 8:45 am]

BILLING CODE 7537-01-P

NATIONAL SCIENCE FOUNDATION

Notice Regarding Changed Venue for Public Hearing On a Draft Programmatic Environmental Impact Statement/Overseas Environmental Impact Statement (PEIS)

AGENCY: National Science Foundation.
ACTION: Notice regarding changed venue for public hearing.

SUMMARY: The National Science Foundation (NSF) and the U.S. Geological Survey (USGS) held public hearings on the Draft Programmatic Environmental Impact Statement/Overseas Environmental Impact Statement for Marine Seismic Research Funded by the National Science Foundation or Conducted by the US Geological Survey (PEIS) on October 25, 2010 in San Diego, CA and October 27, 2010 in Arlington, VA. The Arlington, VA public hearing location was originally planned to be held at the NSF building located at 4201 Wilson Blvd. Unfortunately, due to a fire in the NSF building on the afternoon of October 27, 2010, the public hearing location was moved to Marine Acoustics Inc., located at 4100 Fairfax Drive (a building two blocks from NSF). Signs were posted on the outside doors of the NSF building announcing the new hearing location, and a security guard stationed at the main NSF entrance outside the meeting room directed hearing attendees who were unaware of the NSF emergency to the new hearing venue. NSF apologizes for any confusion or inconvenience that may have resulted from the emergency situation which prompted the change in public hearing venue. Should you have

any questions or concerns about the Public Hearing, or Draft PEIS, please contact Holly Smith, NSF, at 703-292-8583 or nepacomments@nsf.gov.

The presentation slides used by NSF at the public hearings are posted on the NSF Web site at: <http://www.nsf.gov/geo/oce/envcomp/index.jsp>. Please note, however, that if there is any perceived inconsistency between the presentation and the Draft PEIS, the language in the Draft PEIS controls. The public comment period will remain open until November 22, 2010.

FOR FURTHER INFORMATION CONTACT: For further information regarding the Draft PEIS contact: Holly Smith, National Science Foundation, Division of Ocean Sciences, 4201 Wilson Blvd., Suite 725, Arlington, VA 22230; telephone: (703) 292-8583; e-mail: nepacomments@nsf.gov.

Dated: November 8, 2010.

Suzanne H. Plimpton,

Reports Clearance Officer, National Science Foundation.

[FR Doc. 2010-28450 Filed 11-10-10; 8:45 am]

BILLING CODE 7555-01-P

NUCLEAR REGULATORY COMMISSION

[NRC-2010-0352]

Notice of Public Meeting

AGENCY: Nuclear Regulatory Commission (NRC).

ACTION: Notice of NRC/DOE joint public meeting.

SUMMARY: The NRC and the DOE announce their intent to conduct a public meeting to discuss agency interactions and activities in accordance with each agency's responsibilities under Section 3116 of the National Defense Authorization Act (NDAA) for Fiscal Year 2005. The meeting date, time, and location are listed below:

Date: Monday, November 15, 2010.

Time: 7 p.m. to 10 p.m.

Location: The Aiken Municipal Building Conference Center, 215 The Alley, Aiken, SC 29801, Phone: 803-642-7654.

Draft Agenda:

- 7-7:10 Introductions and Opening Remarks.
- 7:10-8 NDAA Section 3116 Process.
- 8-9 NDAA Section 3116 Challenges and Accomplishments.
- 9-10 Opportunity for Public Questions and/or Comment.

Background

On October 9, 2004, the Ronald W. Reagan National Defense Authorization



PUBLIC HEARING SIGN-IN SHEET

National Science Foundation (NSF) – U.S. Geological Survey (USGS) Marine Seismic Research Draft Programmatic EIS/OEIS

Location: Arlington, VA

Date: October 27, 2010

Name	Mailing/E-mail Address (please print clearly)	I would like a copy of the Final EIS/OEIS
ROGER GENTRY	Roger.gentry@comcast.net	+
BRUCE TACKETT	BYRON MOBIL	YES
BILL LANG	southmecc@yahoo.com	yes
MEAGHAN CUMMINGS	cummingm@LDEO.columbia.edu	NO
HOWIE GOLDSTEIN	HOWARD.GOLDSTEIN@NOAA.GOV	YES
Jeannine Cody	jeannine.cody@noaa.gov	yes
Ben Laws	benjamin.laws@noaa.gov	yes
Jon Childs	jchilds@usgs.gov	no
Jennifer Dorton	dortonj@uncw.edu	
JUSAN BANAHAN	JBANAHAN@OCEANLEADERSHIP.ORG	NO, THANK YOU

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

NATIONAL SCIENCE FOUNDATION

PUBLIC HEARING ON THE

DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

FOR MARINE SEISMIC RESEARCH

4100 North Fairfax Drive
Suite 730
Arlington, Virginia
Wednesday, October 27, 2010

The hearing was convened, pursuant to notice, at
5:00 p.m.

1 posted all along the hallway to direct members of the
2 public to the location of the hearing.

3 The hearing commenced on schedule at 5:00 p.m.
4 and the open house took place.

5 Thank you.

6 (Recess from 5:24 p.m. to 5:38 p.m.)

7 MS. SMITH: I appreciate your patience with our
8 situation today. The NSF Building had a transformer blow
9 on the second floor of the parking garage about maybe
10 1:00, 1:15, 1:15, right after I sent an email out to some
11 of our audience members. So we were evacuated from the
12 building and we haven't been able to get back inside and
13 there's no power.

14 Fortunately, MAI, about an hour before we
15 thought we were going to cancel, allowed us to meet in
16 their conference room. So we're very appreciative to MAI.

17 Thank you very much for hosting tonight.

18 I also want to thank you all for coming. I know
19 you have plenty of things to do.

20 This hearing's going to be in three parts:
21 first, I'm just going to welcome you; and after I do that,
22 Rick Spaulding from TEC is going to take over and describe

1 some of the format of the hearing. Then I am going to
2 give a brief overview of our presentation -- brief
3 presentation of the document, an overview.

4 Then, you members of the public and team are
5 welcome to give public comments. They will be official
6 and you will direct them to TEC and our Court Reporter,
7 who will record them.

8 I should mention that this hearing is being held
9 in accordance with the provisions of the National
10 Environmental Policy Act, or NEPA, and the regulations
11 that are published by the Council on Environmental
12 Quality.

13 The purpose of this hearing is to receive public
14 comments on the draft programmatic EIS. The USGS and the
15 National and Atmospheric Administration, or NOAA, are
16 cooperating agencies on this effort.

17 You may have met some of us already, but we are
18 going to introduce the members of the team right now. As
19 I mentioned, I'm Holly Smith and I'm the project manager
20 for NSF for this effort. I'm going to turn to the rest of
21 the team.

22 MR. SPAULDING: My name is Rick Spaulding. I

1 work for TEC. I'm the project manager for the preparation
2 of the EIS, the contractor project manager.

3 MR. FRANKEL: My name is Adam Frankel. I'm an
4 acoustic biologist and I did some of the animal modeling
5 for the EIS.

6 MS. BLANCO: I'm Caroline Blanco. I'm assistant
7 general counsel in charge of environmental matters at NSF.

8 MR. HUNT: I'm Jim Hunt. We're the local office
9 of TEC. Sarah Murray is here with us.

10 MS. MURRAY: Sarah Murray with TEC.

11 MR. CHILDS: I'm Jon Childs with the U.S.
12 Geological Survey at Menlo Park, a reflection seismology
13 geophysicist.

14 MS. ENG: Esther Eng with the Geological Survey,
15 and I'm with the Environmental Management Branch.

16 MR. DEVINE: I'm James Devine, U.S. Geological
17 Survey, and I'm the senior approving officer for the NEPA
18 documents.

19 MS. RUPPEL: I'm Carolyn Ruppel. I'm a research
20 geophysicist at the U.S. Geological Survey, and I along
21 with Debbie Hutchinson were the primary technical people
22 from the U.S. Geological Survey involved in the

1 preparation of our components of this EIS.

2 MS. NACHMAN: Candace Nachman from NOAA
3 Fisheries, primary technical reviewer for fisheries.

4 MS. SMITH: I think that's it -- oh, so sorry.

5 MR. HOLMES: Topher Holmes, NOAA Fisheries, NEPA
6 coordination with the EIS.

7 MR. SPAULDING: When you're speaking, whether
8 now or when you're making comments, please speak up loudly
9 so the court reporter can hear you and record everything.
10 Thank you.

11 MS. SMITH: Caroline, anything else to add?

12 MS. BLANCO: No.

13

14 MS. SMITH: So, just so you know, the team
15 members will remain here for the duration of the hearing,
16 so until 7:00 p.m. So you're welcome to approach any of
17 us, ask any questions if you like. However, formal
18 questions or comments should be directed to TEC and the
19 court reporter.

20 You're going to talk about the forms?

21 So thank you again.

22 MR. SPAULDING: Thank you, Holly.

1 As Holly said, my name is Rick Spaulding. I'm
2 the project manager for this EIS, and I'm here to kind of
3 introduce the format for the meeting before Holly gives a
4 brief presentation on the proposed action. My role is to
5 ensure that we have a fair, orderly, and impartial hearing
6 and that all who wish to be heard have an opportunity to
7 speak.

8 Throughout this hearing, I ask that you keep in
9 mind that this public hearing is not a debate, nor is it a
10 popularity vote on the analysis presented in the draft
11 programmatic EIS, nor is it designed as a question and
12 answer session, although legitimate clarifying questions
13 as part of your comments may be asked and recorded for
14 clarification in the final programmatic EIS.

15 This hearing is about the adequacy of the
16 analysis presented in the draft programmatic EIS.
17 Concerns about non-environmental issues should not be
18 raised at this hearing. They will not add anything to the
19 record and will simply take away from others' opportunity
20 to comment on the draft programmatic EIS.

21 When you came in, you should have been presented
22 or had the opportunity to fill out a speaker card. This

1 card you fill out, and then at the time of the oral
2 comment period I will call them up in the order in which
3 they were received. If you have not filled out a card and
4 still do wish to make a public comment, an oral comment,
5 you may do so at any time, and please step to the back and
6 fill out a card, and you can stand up and make an oral
7 comment later.

8 Should you wish to submit comments in writing,
9 this would be the appropriate place. So if you want to
10 comment on the draft programmatic EIS, but do not want to
11 speak tonight, or if you do speak tonight but still want
12 to make additional comments in writing, you may elect to
13 provide written comments tonight. There are comment
14 sheets in the back with a -- and here's the comment
15 reception box (indicating).

16 You can provide comments by email or mail at a
17 later date. At the end of the hearing, the addresses will
18 be up. Some of your materials have the
19 NEPAcomments@nsf.gov email address that you can send
20 comments in to. We also have the mailing address if you
21 wish to mail in comments. You can also present your
22 comments orally to the court reporter if you wish to do

1 that.

2 It's important to remember that all your
3 comments will be made part of the administrative record
4 and will be addressed and responded to in the final EIS.

5 Written comments submitted by mail will be
6 accepted until November 22, 2010, at the address shown in
7 your hearing materials. All comments made at the hearing
8 or provided in writing will be given equal consideration.

9 So whether they're email, written, or oral, they'll all
10 receive equal consideration.

11 Now, at this time I'd like to have Holly come
12 back and do her presentation.

13 MS. SMITH: I'm shutting off my cellphone, so
14 I'm going to ask everyone else, if you don't mind, to
15 please shut off your cellphones.

16 Adam Frankel is just going to make an
17 announcement about some logistics for this meeting space.

18 MR. FRANKEL: Again, thank you for coming to the
19 impromptu location. If anyone needs, there are restrooms
20 out the door. Just out that door, turn left. If you go
21 out to the restroom, you need to come back around to the
22 door you came back in, and just knock on the door or ring

1 the bell and someone will let you back in. That's all.

2 MS. SMITH: So I guess we'll begin the
3 presentation.

4 (Screen.)

5 The preparation of this programmatic EIS was
6 initiated in 2005, with NSF as the lead agency and the
7 National Oceanic and Atmospheric Administration's National
8 Marine Fisheries Service, or NMFS, as the cooperating
9 agency because of their regulatory oversight. And USGS
10 joined the effort several years ago and is an official
11 cooperating agency as well. Both NSF and USGS are action
12 agencies, whereas NMFS is involved as a regulating agency.

13 Next slide.

14 (Screen.)

15 NSF is an independent federal agency and was
16 created in 1950 "to promote the progress of science." NSF
17 funds approximately 20 percent of the federally supported
18 basic research at U.S. colleges and universities. We
19 receive approximately 40,000 proposals each year for
20 research, education, and training projects, which are
21 judged by a rigorous merit review process. NSF awards
22 approximately 11,000 grants annually, which is

1 approximately a 27 percent proposal success rate.

2 NSF's current annual budget is \$7 billion.
3 NSF-funded researchers have made important contributions
4 to science and have achieved a multitude of distinguished
5 awards and honors, notably more than 180 Nobel Prizes.

6 (Screen.)

7 The USGS is a bureau within the U.S. Department
8 of Interior. It is a scientific federal agency with no
9 regulatory responsibility. It has the largest -- it is
10 the largest U.S. agency studying issues of water, earth,
11 and biological sciences. The USGS also has responsibility
12 for all civilian mapping efforts.

13 The USGS collects, monitors, analyzes, and
14 provides scientific understanding about conditions,
15 issues, and problems associated with the natural
16 resources, hazards, environments, and climate change.

17 (Screen.)

18 The National Marine Fisheries Service is part of
19 the U.S. Department of Commerce's National Oceanic and
20 Atmospheric Administration. It is the lead federal agency
21 responsible for the stewardship of the nation's offshore
22 living marine resources and their habitat. NMFS manages,

1 conserves, and protects fish, whales, dolphins, sea
2 turtles, and other living ocean creatures. NMFS' Office
3 of Protected Resources works to conserve, protect, and
4 recover species under the Endangered Species Act and the
5 Marine Mammal Protection Act.

6 The draft programmatic EIS examines the
7 potential environmental impacts that may result from
8 marine seismic research surveys that are funded by NSF or
9 conducted by USGS.

10 The proposed action is for academic and U.S.
11 government scientists to conduct marine seismic research
12 from research vessels operated by academic institutions
13 and government agencies.

14 The purpose of the proposed action, however, is
15 to study the Earth beneath the ocean, using seismic data
16 to reveal the underlying structure and stratigraphy of the
17 sediments and deeper crust. This geologic information
18 helps expand our understanding of intricate Earth
19 processes and atmospheric processes, which support the NSF
20 and USGS missions and benefit society.

21 (Screen.)

22 As I just mentioned, the purpose is to increase

1 scientific understanding of the Earth beneath the oceans.

2 Data collected by seismic surveys have been used
3 by scientists in a variety of ways, including
4 hypothesizing and subsequently demonstrating the validity
5 of the theory of plate tectonics.

6 (Screen.)

7 Seismic surveys can be used to directly image
8 the seafloor and sub-surface features, such as submarine
9 volcanoes, magma chambers, and mid-ocean ridges.

10

11 (Screen.)

12 Seismic data can provide images of ocean faults
13 and subduction zones, which are key to improving our
14 understanding of and better planning for natural hazards
15 such as earthquakes, landslides, and tsunamis.

16 (Screen.)

17 NSF's mission of funding basic research has a
18 broader scientific scope than most research agencies have.

19 NSF-funded marine seismic research is driven by the
20 scientific community. Scientists submit proposals on a
21 wide range of geologic topics of interest for funding
22 consideration. And, as previously mentioned, proposals

1 are vetted through a peer-based, merit review process.

2 As a result of the broader scientific scope,
3 NSF-funded seismic surveys are globally ranging, spanning
4 domestic, international, and foreign territorial waters.

5 Typically, surveys are conducted in water deeper
6 than 1,000 meters or are conducted along transects from
7 shallow to deeper water.

8 NSF funds approximately four to seven surveys
9 per year, each lasting one to seven weeks.

10 The primary vessel used for high-energy surveys
11 is the R/V MARCUS G. LANGSETH. The vessel is owned by NSF
12 and operated by Columbia University's Lamont Doherty Earth
13 Observatory. Other research vessels that are part of the
14 U.S. academic fleet are sometimes used for NSF-funded low-
15 energy seismic surveys.

16 (Screen.)

17 USGS mainly conducts low-energy surveys and are
18 mostly within five nautical miles of the shoreline. The
19 conduct approximately 8 to 12 surveys per year, each of 1
20 to 3 weeks' duration. Surveys typically are in waters of
21 up to 1,000 meters on the West Coast, 500 meters in the
22 Gulf of Mexico, and 100 meters on the East Coast.

1 USGS also conducts one to two high-energy
2 surveys per year, with potential for more frequent surveys
3 in the near future.

4 Surveys could last up to a few weeks each and
5 would likely be deepwater cruises conducted inside and
6 outside the 200 nautical mile limit of the U.S. EEZ
7 boundary.

8 USGS coastal and marine science objectives
9 include: mapping to define the outer limits of the U.S.
10 extended continental shelf under the Law of the Sea;
11 understanding the dynamic offshore environment for slope
12 failures, coastal erosion, faults, gas seeps, and other
13 features; and researching marine aspects of global change
14 and their impacts on society.

15 (Screen.)

16 The draft PEIS describes the different types of
17 marine seismic surveys which may potentially be funded by
18 NSF or conducted by USGS. The most common include two-
19 dimensional and three-dimensional reflection and
20 refraction surveys. Occasionally other types of surveys,
21 such as four-dimensional, vertical seismic profiling, or
22 surveys using ocean bottom cables, are employed by

1 researchers. The types of marine seismic surveys that are
2 conducted vary depending on the science objectives
3 identified by the researchers.

4 (Screen.)

5 As depicted in this graphic, for reflection
6 surveys seismic signals bounce off the seafloor and
7 discontinuities beneath the seafloor, and are typically
8 collected by a towed hydrophone streamer. For refraction
9 surveys, seismic signals bend through the layers of the
10 Earth and travel near-horizontally to recording
11 instruments, ocean bottom seismometers, that are commonly
12 stationary on the seafloor.

13 Signals collected are then processed to
14 construct an image or map of the Earth's internal
15 structure.

16 The draft PEIS includes further information on
17 the types of surveys and equipment illustrated here, as
18 well as other types of equipment that are used during
19 seismic surveys.

20 (Screen.)

21 I mentioned earlier in my presentation high-
22 energy surveys and low-energy surveys. Seismic surveys

1 were divided into these two categories in the draft PEIS.

2 The groupings were based on analysis of a variety of
3 acoustic energy source types, such as GI or G-guns, and
4 configuration scenarios that took into consideration
5 source volume, tow depth, and airgun spacing, factors that
6 influence sound propagation.

7 In general, experiments using four airguns or
8 less, boomers, sparkers, or waterguns are likely to fall
9 into the low-energy classification. As I just noted,
10 however, certain factors do influence sound propagation
11 and therefore there are exceptions to this general rule of
12 thumb.

13 Appendix F of the draft programmatic EIS
14 provides further details about the various configurations
15 and scenarios that meet the low-energy categorization
16 parameters.

17 (Screen.)

18 I'd now like to give a general overview of our
19 approach to analysis. Some items I will touch on briefly.

20 However, I will discuss some items in slightly more
21 detail in subsequent slides. Further details on all
22 points, however, can be found in the draft programmatic

1 EIS.

2 First, five sites were selected to be analyzed
3 and modeled quantitatively. These are referred to as the
4 detailed analysis areas, or DAAs. Eight additional areas
5 were identified and were analyzed qualitatively and were
6 not modeled. These are referred to in the draft
7 programmatic EIS as qualitative analysis areas, or QAAs.

8 DAAs and QAAs were selected both with the
9 consideration of where future surveys are likely to occur
10 and for representing a wide variety of Longhurst biomes,
11 marine areas that demonstrate similar ecological dynamics.

12 Survey seasons and source levels and configurations were
13 selected taking into consideration operational
14 constraints, such as weather, and likely scientific goals.

15 For the DAAs, modeling was conducted to predict take
16 estimates of marine mammals.

17 The draft PEIS includes monitoring and
18 mitigation to minimize and avoid potential effects of
19 seismic operations on the marine environment, such as
20 marine mammals and sea turtles.

21 The affected environment and environmental
22 consequences of the proposed action were evaluated for the

1 DAAs and QAAs. Impacts on the associated marine
2 resources, including marine invertebrates, fish, sea
3 turtles, seabirds, and marine mammals, were considered.

4 Additionally, the impacts to socioeconomic and
5 cultural resources, such as commercial fishing,
6 recreational activities, subsistence hunting and fishing,
7 and archaeological sites, such as shipwrecks, were
8 identified and analyzed.

9 The survey activities were then assessed to
10 determine the cumulative impacts.

11 (Screen.)

12 This slide illustrates where the five DAAs and
13 QAAs are located around the globe and the Longhurst biomes
14 that they represent. The DAAs are highlighted by the red
15 circles and the QAAs with the green circles. These sites
16 and associated environments are described in detail in the
17 programmatic EIS.

18 (Screen.)

19 For a quantitative assessment of the potential
20 impacts of each exemplary marine seismic survey at a DAA,
21 the predicted or modeled seismic survey sound fields were
22 integrated with the expected distribution of marine

1 mammals at each site. An Airgun Array Source Model, or
2 AASM, was used at each DAA to predict the amount of sound
3 that would be projected in each direction from the
4 proposed airgun configuration.

5 The Marine Operations Noise Model created by
6 JASCO then incorporated the AASM information and used it
7 to predict the received levels of airgun sound as a
8 function of bearing, distance, and depth in the water
9 column. This model takes into consideration the best
10 available site-specific environmental information that
11 would affect the propagation and attenuation of sound as
12 it travels outward from the airgun array.

13 Finally, the Acoustic Integration Model, or AIM,
14 developed by Marine Acoustics Inc. was applied to estimate
15 the number of marine mammals of each species or species
16 group that would potentially receive various amounts of
17 sound energy and develop take estimates. This model also
18 took into account certain mitigation strategies identified
19 in the draft programmatic EIS, such as shutdowns for
20 species simulated entering the 180/190dB isopleth
21 Mitigation Zone and subsequent shutdown period.

22 (Screen.)

1 The modeling used in the draft programmatic EIS
2 incorporated the current NMFS "take" criterion for pulsed
3 sounds. However, the draft programmatic EIS also
4 incorporated the criterion recommended by the Noise
5 Criteria Group, identified by Southall et al. in 2007, and
6 is viewed to be a more scientifically based mitigation
7 approach.

8 The Noise Criteria Group suggests that auditory
9 effects should be measured using the sound exposure level
10 metric, or SEL, which is the total energy contained within
11 a pulse. This is different than the existing NMFS
12 guidance, which uses a metric of sound pressure referred
13 to as "rms."

14 The Noise Criterion Group also recommended the
15 use of M-weighting, which takes into account that marine
16 mammals have different sensitivities to sound. M-
17 Weighting places greater emphasis on frequencies which a
18 species is deemed to be more sensitive to and less
19 emphasis on other frequencies. For example, baleen whales
20 are believed to be more sensitive to low-frequency sounds
21 and less sensitive to higher-frequency sounds. A model
22 which uses M-Weighting would take this sensitivity into

1 consideration.

2 Flat weighting does not take into consideration
3 species or group-specific frequency sensitivities.

4 The draft PEIS models calculated both M-
5 Weighting and flat weighting approaches. As previously
6 mentioned, the modeling software used in the analysis also
7 took into consideration site specific environmental
8 context, such as bathymetry, sub-bottom conditions, and
9 sound velocity profile, conditions which influence sound
10 propagation.

11 (Screen.)

12 Monitoring and mitigation strategies were
13 described in the draft programmatic EIS and include:

14 During pre-cruise planning, considering such
15 factors as whether science objectives could be met with a
16 smaller source level; and cruise timing, taking into
17 consideration migratory patterns and periods of
18 anticipated high species density;

19 Visual monitoring;

20 Passive Acoustic Monitoring for high-energy
21 surveys;

22 Establishing mitigation zones;

1 And using mitigation strategies during
2 operations, such as airgun powerdowns and shutdowns.

3 (Screen.)

4 The agencies considered a number of action
5 alternatives. Some were considered but eliminated from
6 further analysis. However, two were carried forward for
7 analysis.

8 The first is Alternative A and is considered in
9 detail in the draft programmatic EIS. Under Alternative
10 A, academic and U.S. government scientists supported with
11 funds from NSF or USGS would conduct marine seismic
12 research using cruise-specific mitigation measures. Under
13 this scenario, for expected take situations the full
14 mitigation zone, the 160dB isopleth, and the mitigation
15 zone, the 180-190dB isopleth, will be calculated for both
16 high and low-energy sources. However, for expected
17 no-take situations there would be a standard, fixed 200-
18 meter full mitigation zone.

19 Action Alternative B is our preferred
20 alternative. Under Alternative B, academic and U.S.
21 government scientists supported with funds from NSF or
22 USGS would conduct marine seismic research using cruise-

1 specific mitigation measures. However, for low-energy
2 acoustic sources generic mitigation measures would be
3 employed.

4 In this scenario, expected no-take situations
5 would remain the same as for Alternative A, with a
6 standard, fixed 200-meter full mitigation zone. For
7 expected take situations, the full mitigation zone for
8 high and low energy sources would be modeled. The
9 mitigation zone, the 180/190dB isopleths, for high-energy
10 sources would also be modeled. However, under Alternative
11 B there would be a standard, fixed 100-meter mitigation
12 zone for low-energy sources in water deeper than 100
13 meters.

14 In addition to the action alternatives, the no-
15 action alternative was considered. In this situation, NSF
16 would not fund and USGS would not conduct marine seismic
17 research. Under this scenario, NSF and USGS would not
18 meet the purpose and need of the proposed action in
19 support of the agencies' missions. Geologic and
20 geophysical data of great significance and societal
21 benefit would not be collected and a segment of our
22 national academics would be unable to perform experiments

1 and expand the knowledge base of Earth processes.
2 Improvements to our knowledge and national preparedness of
3 a variety of natural hazards would be foregone, as would
4 the potential prevention of societal harm resulting from
5 them.

6 (Screen.)

7 Direct and indirect effects of the proposed
8 action are mainly a result of the noise from the acoustic
9 energy sources, such as airguns. Potential impacts to
10 species are expected to be limited to short-term and
11 localized behavioral disturbances, such as Level B
12 Harassment, and are not significant to populations.

13 Although noise modeling results for the DAAs
14 indicate that Level A injury impacts to marine mammals or
15 threatened and endangered species may occur, for actual
16 surveys additional mitigation measures would be added to
17 technology cruise parameters to reduce and eliminate Level
18 A impacts or the potential for injury.

19 In addition, the draft PEIS modeling analysis
20 overestimates Level A exposure because it does not account
21 for characteristic avoidance behavioral expected by some
22 species.

1 The results of the cumulative impact analysis
2 indicate that there would not be any significant
3 cumulative effects to the affected environment from the
4 proposed NSF-funded or USGS-conducted marine seismic
5 research. The monitoring and mitigation measures planned,
6 including pre-cruise planning efforts to reduce impact,
7 consideration of other regional activities which may
8 influence the environment and operational actions, such as
9 powerdowns and shutdowns of acoustic sources, influence
10 this conclusion.

11 When future surveys are identified, a site-
12 specific environmental analysis will be developed. All
13 future seismic surveys would be permitted according to the
14 rules and regulations of the applicable U.S. federal,
15 state, and foreign governments, including the U.S. Marine
16 Mammal Protection Act and the Endangered Species Act.

17 NSF will continue to consider incorporating new
18 or improved technologies to enhance the existing
19 mitigation and monitoring tools and equipment used during
20 seismic surveys and reduce potential for impacts.

21 Similarly, NSF will continue to evaluate
22 advances made to existing and alternative seismic energy

1 sources which result in the reduction of potential
2 environmental impacts and meet the purpose and needs of
3 the marine seismic research objectives, and will consider
4 them for future use.

5 (Screen.)

6 I want to thank you all for listening to the
7 presentation. I'd like to thank MAI again for hosting us
8 at this last-minute hour and for enabling us to proceed
9 with this public hearing.

10 I'd also again like to thank Scripps for hosting
11 the public hearing that was held on Monday at their
12 campus. I'd also like to thank USGS for their wonderful
13 contributions over the past several years, especially
14 Carolyn Ruppel, who was able to join us this evening, as
15 well as the USGS NEPA folks, and Jon Childs as well for
16 his participation both at the San Diego-La Jolla public
17 hearing and this one as well.

18 And NMFS; we can't forget NMFS, for their
19 wonderful participation over the years. Many thanks to
20 Candice Nachman and Topher Holmes and other members of the
21 NMFS team who are actually present today and those that
22 were unable to come today.

1 I'd also like to thank publicly John Diebold for
2 his hard work over the years to push this through, and
3 it's quite unfortunate he was not able to see this to its
4 fruition. So again, many thanks to John and Lamont for
5 their support.

6 So that concludes my presentation. I'm going to
7 turn it back to Rick to begin the next portion of the
8 public hearing.

9 MR. SPAULDING: Thank you, Holly.

10 As Holly said, this is now the beginning of the
11 actual public comment period. This is part of the process
12 that gives you the opportunity to provide NSF and USGS
13 with information and to make statements for the record.
14 This input ensures that the decisionmakers may benefit
15 from your knowledge of the issues and proposed activities
16 and your comments on the analysis.

17 Public officials that choose to speak will be
18 given an opportunity to speak first. Then members of the
19 public will be called upon in the order that they are
20 received from the cards that have been handed in to
21 indicate your desire to speak. Please speak only after I
22 have recognized you and please address your remarks to me.

1 Please speak clearly, state your first name, your
2 address, and your capacity in which you appear if you are
3 representing anyone other than yourself. State your
4 affiliation if that is appropriate. We need this to
5 ensure that the court reporter gets an accurate record of
6 what is said tonight.

7 Keep in mind that all comments, whether written
8 or oral or emails, will be addressed in the final EIS and
9 that all responses will be provided in the EIS as an
10 appendix.

11 Each person will be allowed three minutes to
12 speak. This time limit applies to everyone -- public
13 officials, spokespersons, and individuals speaking for
14 themselves. You do not have to speak for the full three
15 minutes. However, if you choose to speak for the full
16 three minutes, when you have one minute remaining a yellow
17 card will be shown. This means you have two minutes left
18 -- you have one minute left. Then when your time has
19 expired, a red card will be shown.

20 Out of respect for others who would like to make
21 comments, I ask that you please honor any request to stop
22 speaking. If you think you have more comments than you

1 can present in the time allotted, make the most important
2 comments first. If you do not get a chance to voice all
3 of your comments, you can either submit them in writing,
4 submit them by email, or, if you have a written statement,
5 you can add that to the written comments after your
6 presentation.

7 This hearing is scheduled to end at 7:00 p.m.
8 If we have time, we may give you another three minutes
9 opportunity to expand on your remarks later after all
10 others have been heard.

11 You may have noticed that the court reporter
12 records everything that is said tonight. The transcript
13 of these proceedings will become part of the public record
14 of the hearing and be included in the final programmatic
15 EIS.

16 Finally, I would like to remind you to limit
17 your comments to the analysis presented in the draft
18 programmatic EIS. That is the purpose of this public
19 comment period. Also, I ask you to avoid repeating what
20 other speakers have said. There is nothing inappropriate
21 about agreeing with other speakers, but to repeat the same
22 thing just takes away from the ability for other speakers

1 to speak.

2 We will start with comments from public
3 officials. Following their remarks, we will take oral
4 comments from those of you who have filled in cards in the
5 order in which they were received.

6 Again, I wish to remind you of the three-minute
7 limit on speaking.

8 I'd now like to begin the oral comment period.
9 We have no signed, filled-in cards as of yet. Does
10 anybody wish to make an oral comment at this time? I want
11 to encourage you, whether it's a pro, con -- any comment
12 at all, even in support of the process is valuable for the
13 public record and for the entire analysis.

14 So, would anybody like to make an oral statement
15 or comment at this time?

16 (No response.)

17 MS. SMITH: Again, I'd like to just insert and
18 just welcome anyone to make a comment. If it goes on too
19 long, I'll break in. But I don't think we need to worry
20 too much about that. So I'd just like to welcome some
21 people to go ahead and speak if they're moved. Go ahead,
22 even if you haven't filled out the card. It's fine. So

1 anyone is welcome. Feel free. Raise a hand.

2 Otherwise, you're welcome to start milling
3 around. Feel free to look at the posters further. You
4 can go ahead and ask any members of the team some
5 questions, informal questions. But we will remain here
6 for the full time of the hearing, which goes until 7:00.
7 But you're not required to stay for it, but the team
8 members will be here for it.

9 MR. SPAULDING: We'll remain, and if during this
10 time you wish to make a comment, just approach one of us
11 and we will sort of take a pause and have you make your
12 comment so the court reporter can record it. But
13 otherwise, feel free to mill around, ask questions, fill
14 out a comment sheet, drink some water, eat some cookies.

15 Thank you.

16 (Recess from 6:46 p.m. to 6:47 p.m.)

17 MR. SPAULDING: Excuse me. We have a member of
18 the public who wishes to make an oral comment.

19 MS. BANAHAN: It'll be brief.

20 MR. SPAULDING: If you would state your name and
21 affiliation.

22 MS. BANAHAN: Susan Banahan, with the Consortium

1 for Ocean Leadership. The comment I just wanted to make
2 was I did look through the draft PEIS. I thought it was a
3 very comprehensive treatment. I thought it addressed
4 actually all the questions, first order questions I would
5 have about seismic research in the proposed areas. So job
6 well done.

7 That's it. Thank you.

8 MR. SPAULDING: Thank you, Sue.

9 Does anybody else have any comment at this time?

10 (Pause.)

11 MR. GENTRY: I do have a comment, but I'll write
12 it down.

13 MR. SPAULDING: Yes, written comments are fine,
14 and the address and the various ways you may submit
15 comments are up on the board right now, mail, email, oral,
16 or written.

17 Thank you.

18 (Recess from 6:47 p.m. to 7:00 p.m.)

19 MR. SPAULDING: I would like to thank everyone
20 who came tonight for attending this public hearing for the
21 draft programmatic EIS. It is now 7:00 o'clock. I
22 officially adjourn this hearing. Thank you again.

1 (Whereupon, at 7:00 p.m., the hearing was
2 adjourned.)

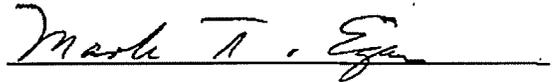
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

CERTIFICATE OF REPORTER

UNITED STATES OF AMERICA) ss.:

COMMONWEALTH OF VIRGINIA)

I, **MARK T. EGAN**, the officer before whom the foregoing deposition was taken, do hereby certify that the witness whose testimony appears in the foregoing deposition was duly sworn by me; that the testimony of said witness was taken by me to the best of my ability and thereafter reduced to typewriting under my direction; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this deposition was taken, and further that I am not a relative or employee of any attorney or counsel employed by the parties thereto, nor financially or otherwise interested in the outcome of the action.



*Notary Public in and for
the Commonwealth of Virginia*

