

**National Science Foundation  
Geosciences Directorate  
Division of Ocean Sciences  
Arlington, Virginia**

**FINDING OF NO SIGNIFICANT IMPACT (FONSI)  
PURSUANT TO THE NATIONAL ENVIRONMENTAL POLICY ACT (NEPA),  
42 U.S.C. 4321, *et seq.*  
and DECISION DOCUMENT**

**Marine Seismic Survey in the Atlantic Ocean off New Jersey, 2014**

**OCE 1260237**

**Principal Investigators/Institution:** Gregory Mountain, Rutgers University

**Project Title:** Collaborative Research: Community-Based 3D Imaging That Ties Clinoform Geometry to Facies Successions and Neogene Sea-Level Change

**COLLABORATIVE PROPOSAL:**

**OCE 1259135**

**Principal Investigators/Institution:** Craig Fulthorpe, James Austin, Mladen Nedimovic, University Texas at Austin

A Final Environmental Assessment (Final EA) was prepared for a collaborative research proposal received by the National Science Foundation (NSF) entitled, "Community-Based 3D Imaging That Ties Clinoform Geometry to Facies Successions and Neogene Sea-Level Change." Dr. Gregory Mountain of Rutgers University is the scientific lead for the proposed project, making Rutgers the lead institution. Drs. Fulthorpe, Austin, and Nedimovic of University of Texas at Austin (UT) are collaborators on the proposed project with Dr. Mountain; therefore, UT is a collaborating institution.

The collaborative research proposal includes a marine seismic survey proposed to be conducted on board the research vessel *Marcus G. Langseth* (R/V *Langseth*) in the Atlantic Ocean off of New Jersey. This Final EA entitled, "Environmental Assessment of a Marine Geophysical Survey by the R/V *Marcus G. Langseth* in the Atlantic Ocean off New Jersey, July – Mid August 2014" (Report # TA8349-1) (Attachment 1), was prepared by LGL Limited environmental research associates (LGL) on behalf of NSF and analyzed the potential impacts on the human and natural environment associated with the proposed marine geophysical survey. The Final EA tiers to the 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 (June 2011) and the Record of Decision (June 2012) (jointly referred to as PEIS). The conclusions from the Final EA were consistent with the conclusions of the PEIS and were used to inform the Division of Ocean Sciences (OCE) management of potential environmental impacts of the cruise. OCE has reviewed and concurs

with the Final EA findings. The Final EA is incorporated into this Finding of No Significant Impact (FONSI) by reference as if fully set forth herein.

### **Public Involvement and Coordination with Other Agencies and Processes**

NSF posted a Draft Environmental Assessment (Draft EA) on the NSF website for a 30 day public comment period, but received no direct public comments during the open comment period. As the Draft EA included information regarding marine mammals and threatened and endangered species in the proposed survey area, it was used for consultations with other regulatory agencies. Additionally, when preparing the Final EA, NSF took into consideration public comments (Attachment 1, Appendix G) received by the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) during a 60 day public comment period for the Incidental Harassment Authorization (IHA) process. After consideration of public comments received during the NMFS IHA public comment period and discussions during MMPA and ESA consultations with NMFS, refinements to the information about fisheries were made in the NSF Final EA, and additional material was included, such as a summary of scientific literature published since the PEIS was issued in 2011 and information regarding shipwrecks and self contained underwater breathing apparatus (SCUBA) diving. The new information included in the NSF Final EA, however, did not alter the overall conclusions of the Draft EA and remained consistent with the PEIS.

#### *Endangered Species Act (ESA)*

NSF engaged in formal consultation with NMFS and informal consultation with U.S. Fish and Wildlife Service (USFWS), pursuant to Section 7 of the Endangered Species Act (ESA). NSF received concurrence with USFWS that the proposed activities "may affect" but "are not likely to adversely affect" species under their jurisdiction (Attachment 1, Appendix F). NMFS issued a Biological Opinion and an Incidental Take Statement for the proposed activities and consultation was concluded (Attachment 1, Appendix C).

#### *Marine Mammal Protection Act (MMPA)*

Columbia University's Lamont-Doherty Earth Observatory (LDEO) submitted to NMFS an IHA application pursuant to the Marine Mammal Protection Act (MMPA). NMFS issued an IHA on July 1, 2014 (Attachment 1, Appendix D).

#### *NMFS Marine Mammal Stranding Program*

Although marine mammal strandings are not anticipated as a result of the proposed activities, during ESA Section 7 and MMPA consultation with NMFS it was recommended that the NMFS Greater Atlantic Regional Fisheries Office Marine Mammal Response Coordinator be contacted regarding the proposed activity. Both NMFS and NSF made contact with the NMFS Greater Atlantic Regional Fisheries Office Marine Mammal Response Coordinator. Should any marine mammal strandings occur during the survey, per the IHA, NMFS and the NMFS Greater Atlantic Regional Fisheries Office Marine Mammal Response Coordinator would be contacted.

#### *Magnuson Stevens Act - Essential Fish Habitat (EFH)*

The Magnuson Stevens Act requires that a Federal action agency consult with NMFS for actions that "may adversely affect" Essential Fish Habitat (EFH). Although adverse effects on EFH, including a reduction in quantity or quality of EFH, were not anticipated as a result of the

proposed activities, NSF contacted the EFH Regional Coordinator of the NMFS Greater Atlantic Regional Fisheries Office regarding the program. The EFH Regional Coordinator concluded, however, that the proposed activities may have an adverse affect on EFH. No project specific EFH conservation recommendations were provided and consultation was concluded (Attachment 1, Appendix H).

#### *Coastal Zone Management Act*

National Oceanic and Atmospheric Administration's Office of Ocean and Coastal Resource Management (OCRM) concluded in its letter dated June 18, 2014 in response to a request from New Jersey to seek consistency review of the proposed project, that the project falls under Subpart F of the regulations implementing CZMA and that New Jersey's request for review was untimely (Attachment 1, Appendix L). As such, NSF has no obligations under CZMA and no further action is required by NSF.

#### **Project Objectives and Context**

The purpose of the proposed activities is to collect data across existing Integrated Ocean Drilling Program (IODP) Expedition 313 drill sites on the inner-middle shelf of the New Jersey continental margin to reveal the arrangement of sediments deposited during times of changing global sea level from roughly 60 million years ago to present (Attachment 1, Chapter 1 and Appendix B). Features such as river valleys cut into coastal plain sediments, now buried under a kilometer of younger sediment and flooded by today's ocean, cannot be identified and traced with existing 2-D seismic data, despite their existence being clearly indicated in sediment cores recovered during IODP Expedition 313. These and other erosional and depositional features would, under the proposed project, be imaged using 3-D seismic data, enabling follow-on studies to identify the magnitude, time, and impact of major changes in sea level.

The project is proposed to be a collaborative research effort, supporting scientists and graduate students.

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#### **Summary of Proposed Action and Alternatives**

The proposed survey procedures would be similar to those used during previous seismic surveys by LDEO, using conventional seismic methodology. The survey location is in the Atlantic Ocean off the coast of New Jersey, within the Exclusive Economic Zone of the U.S. and outside of state waters (Attachment 1, Figure 1). The seismic survey would consist of approximately (~) 4900 km of transect lines (including turns) in water depths of ~30 m to 75 m deep. The survey would involve the R/V *Langseth* as the source vessel which is proposed to deploy an array of 4 or 8 airguns with a total discharge volume of ~700 in<sup>3</sup> or ~1400 in<sup>3</sup>. The receiving system is proposed to consist of hydrophone streamers. As the airgun array is towed along the survey lines, the hydrophone streamers would receive the returning acoustic signals and transfer the data to the on-board processing system. In addition to the operations of the airgun array, a multibeam echosounder (MBES), sub-bottom profiler (SBP), and acoustic Doppler current profiler are proposed to be operated from the R/V *Langseth* continuously throughout the cruise, but not during transit. The proposed survey is proposed to be an ~35 day survey, taking place during the period allowable under the IHA, July 1, 2014 to August 17, 2014. Seismic operations would be carried out for ~30 days, with the balance of the cruise occupied in transit (~ 2 days) and equipment set-up and retrieval (~3 days). Some deviation in the length of the survey may be

required, depending on logistics and weather; however, seismic operations would only occur during the timeframe allowable under the IHA.

One alternative to the proposed action would be to conduct the survey at an alternative time. Constraints for vessel operations and availability of equipment (including the vessel) and personnel would need to be considered for alternative cruise times. Additionally, weather constraints would inhibit vessel operations during certain times of year, such as winter. Avoiding critical time periods for sensitive species, such as North Atlantic right whale migration period, is another factor for consideration in survey timing. Limitations on scheduling the vessel include the additional research studies planned on the vessel for 2014 and beyond. Other activities, including research activities, planned within the region also would need to be considered if the survey were scheduled for an alternative time.

Another alternative to conducting the proposed activities would be the “No Action” alternative, i.e. do not issue an IHA and do not conduct the operations. If the planned research were not conducted, the “No Action” alternative would result in no disturbance to marine species attributable to the proposed activities, but geological data of considerable scientific value and relevance increasing our understanding of sea level rise and the project objectives as described above would not be met.

#### **Summary of environmental consequences**

The potential effects of sounds from airguns on marine species, mammals and sea turtles of particular concern, are described in detail in Attachment 1 (Chapter IV and PEIS Chapters 3 & 4) and might include one or more of the following: tolerance, masking of natural sounds, behavioral disturbance, and at least in theory, temporary or permanent hearing impairment, or non-auditory physical or physiological effects. It is unlikely that the proposed action would result in any cases of temporary or especially permanent hearing impairment, or any significant non-auditory physical or physiological effects. Some behavioral disturbance is expected, if animals are in the general area during seismic operations, but this would be localized, short-term, and involve limited numbers of animals. The potential effects from the other proposed acoustic sources were also considered, however, they would not be likely to have a significant effect on the environment (Attachment 1, Chapter IV and PEIS Sections 3.4.7, 3.6.7, and 3.7.7).

The action includes an extensive monitoring and mitigation program to further minimize potential impacts on the environment. Mitigation efforts include pre-cruise planning activities and operational activities (Attachment 1, Chapters II and IV). Pre-cruise planning mitigation activities included consideration of energy source optimization/minimization; survey timing (i.e. environmental conditions: seasonal presence of animals and weather; and, scientific personnel and equipment availability); and calculation of mitigation zones. The operational mitigation program would further minimize potential impacts to marine species that may be present during the conduct of the research to a level of insignificance. As detailed in Attachment 1 (Chapters II and IV) and the IHA (Attachment 1, Appendix D) operational monitoring and mitigation measures would include: ramp ups; a minimum of one, but typically two dedicated observers maintaining a visual watch during all daytime airgun operations; two observers for 30 minutes before and during ramp-ups during the day and at night; passive acoustic monitoring (PAM) during the day and night to complement visual monitoring (unless the system and back-up

systems are damaged during operations); and, power downs (or, if necessary, shut downs) when marine mammals or sea turtles are detected in or about to enter designated exclusion zones. The fact that the small airgun array, as a result of its design, directs the majority of the energy downward, and less energy laterally, would also be an inherent mitigation measure.

With the planned monitoring and mitigation measures, unavoidable impacts to marine species that could be encountered would be expected to be minimal, and limited to short-term, localized changes in behavior and distribution near the seismic vessel. At most, effects on marine mammals may be interpreted as falling within the U.S. Marine Mammal Protection Act (MMPA) definition of “Level B Harassment” for those species managed by NMFS. No long-term or significant effects would be expected on individual marine mammals, sea turtles, seabirds, fish or the populations to which they belong or on their habitats.

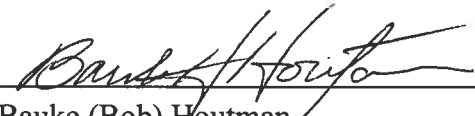
Recreational and commercial fisheries activities would not be precluded in the survey area. Similar past research seismic surveys in the proposed survey area (2002, 1998, 1996, 1990) did not result in noticeable effects on commercial or recreational fish catches, based on a review of multi-year NMFS fish catch data in the months when seismic surveys were undertaken. LDEO would coordinate with local SCUBA diving organizations and shops to avoid space-use conflicts. LDEO would also issue Notices to Mariners to coordinate and provide updates on operations in the area. It would be unlikely that the proposed seismic survey would have any impact on marine mammal tour boat activities due to the distance from the proposed survey site to the typical locations for those types of activities. Given the short duration of the survey and the temporary nature of potential environmental impacts, impacts to the local economy, such as to fisheries, SCUBA diving industry, and marine mammal tour boats would not be anticipated.

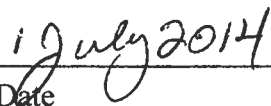
A survey at an alternative time would result in few net benefits. Marine mammals and sea turtles are expected to be found throughout the proposed survey area and throughout the time during which the project would occur. Some marine mammal species are expected to occur in the area year-round, so altering the timing of the proposed project likely would result in no net benefits for those species. Some migratory species are expected to be farther north at the time of the survey, such as the North Atlantic right whale, so the survey timing is beneficial for those species. Weather (i.e. operational safety of crew and vessel when deploying seismic gear) and availability of vessel, equipment, and personnel are also factors that need to be considered when scheduling the activities.

The “no action” alternative would remove the potential of the limited direct and indirect environmental consequences as described. However, it would preclude important scientific research from going forward that has distinct potential to address important environmental concerns related to sea level change in nearshore environments. The “No Action” alternative would result in a lost opportunity to obtain important scientific data and knowledge relevant to a number of research fields and to society in general. The collaboration, involving PIs and students from Rutgers and UT, would be lost along with the collection of new data, interpretation of these data, and introduction of new results into the greater scientific community and applicability of this data to other similar settings. Loss of NSF support often represents a significant negative impact to the academic infrastructure. The “no action” alternative would not meet the purpose and need of the proposed action.

**Conclusion and Decision**

NSF has reviewed and concurs with the conclusions of the Final EA (Attachment 1) that implementation of the proposed activity will not have a significant impact on the environment. Consequently, implementation of the proposed activity will not have a significant direct, indirect or cumulative impact on the environment within the meaning of the National Environmental Policy Act (NEPA). Because no significant environmental impacts will result from implementing the proposed action, an environmental impact statement is not required and will not be prepared. Therefore, no further study under NEPA is required. NSF's compliance with the Marine Mammal Protection Act, Endangered Species Act, Coastal Zone Management Act, and Essential Fish Habitat under the Magnuson Stevens Act has been completed. Accordingly, on behalf of NSF, I authorize the issuance of a Finding of No Significant Impact for the marine seismic survey proposed to be conducted on board the research vessel *Marcus G. Langseth* in the Atlantic Ocean off New Jersey during the effective time period of the IHA and hereby approve the Proposed Action to commence.

  
Bauke (Bob) Houtman  
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Date