



**National Science Foundation**  
Office of Polar Programs  
4201 Wilson Boulevard  
Arlington, Virginia 22230

## ENVIRONMENTAL DOCUMENT CONCURRENCE

**Activity:**

**Marine geophysical survey by the Coast Guard Cutter Healy Across The Arctic Ocean,  
August-September 2005**

**PGHE0501.FON**

I have read the attached document and concur with the findings and recommendation. I concur that the proposed activity can commence.

A handwritten signature in black ink, appearing to read "Karl Erb", written over a horizontal line.

Karl A. Erb  
Director, Office of Polar Programs  
National Science Foundation

A handwritten date in black ink, "June 7, 2005", written over a horizontal line.

Date



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**ENVIRONMENTAL DOCUMENT AND DETERMINATION UNDER THE NATIONAL  
ENVIRONMENTAL POLICY ACT (NEPA) AND EXECUTIVE ORDER 12114**

**Marine geophysical survey by the Coast Guard Cutter Healy Across The Arctic Ocean,  
August-September 2005**

**FINDING OF NO SIGNIFICANT IMPACT**

Tracking Number: **PGHE0501.FON**

Recommended:

Handwritten signature of Thomas Pyle in black ink, written over a horizontal line.

Thomas Pyle  
Section Head, Arctic Science Section  
Office of Polar Programs  
National Science Foundation

Handwritten date "6/7/05" in black ink, written over a horizontal line.

Date

Approved:

Handwritten signature of Polly Penhale in black ink, written over a horizontal line.

Polly Penhale  
Environmental Officer  
Office of Polar Programs  
National Science Foundation

Handwritten date "6-3-05" in black ink, written over a horizontal line.

Date



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### **Background:**

The National Science Foundation prepared a draft Environmental Impact Assessment (EA) of a marine geophysical survey by the Coast Guard cutter *Healy* across the Arctic Ocean, August-September 2005, and solicited public comments. The National Science Foundation has prepared this Finding of No Significant Impact (FONSI) based on the EA, in accordance with CEQ regulations §1500-1508 and 45 CFR 640. It was determined that the proposed activity would not result in a significant impact on the quality of the environment. Given the United States Arctic Program's mission to support polar research, the proposed action is expected to result in substantial benefits to science.

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

The University of Alaska Fairbanks (UAF), with research funding from the National Science Foundation (NSF) and the Norwegian Petroleum Directorate (NPD), plans to conduct a multi-institution marine seismic survey across the Arctic Ocean from northern Alaska to Svalbard during the period of approximately 5 August to 30 September 2005 (the preferred alternative). The survey will be conducted in the Exclusive Economic Zone and territorial waters of the United States, in adjacent international waters, and in the Exclusive Economic Zone of Norway. The survey will use different configurations of either one or two towed airguns, with a maximum nominal source level (peak to peak) of 241 dB re 1uPa. This project will be operated in conjunction with a sediment-coring project intended to collect paleoenvironmental and paleoceanographic evidence that will reveal information about the recent history of the Arctic Ocean and its climate during the last ten thousand years. The purpose of the seismic survey is to study the history of the ridges and basins of the Arctic Ocean.

One alternative to the proposed action is to conduct the project at an alternative time. However, the window of opportunity for a trans-Arctic-Ocean cruise is extremely narrow due to the dependence on ice conditions and migration timing of bowhead whales. A major scheduling consideration is the timing of bowhead whale migration in the Beaufort Sea, and the timing of the associated subsistence hunt for bowheads by Alaska Native whalers. The project's time frame has been constructed to avoid the westward and eastward bowhead migration. The whales typically pass through the Barrow area in May and June heading east and in September and October while returning west for winter. Subsistence bowhead hunting along the north shore of Alaska near Barrow typically takes place in spring from mid-May through June and in fall from mid-September through mid-October, although fall whaling could start earlier. The seismic survey has been scheduled to depart northward from Dutch Harbor, Alaska, in early August, and to be far beyond the migration corridor of bowhead whales by the time that the main migration period begins in September. A significant delay in the start of the cruise would reduce or eliminate the planned separation of the cruise from the bowheads (and bowhead hunt). An earlier departure could interfere with the spring migration and whale harvest. Late summer is by far the most suitable time, delaying the cruise could make it impractical and unsafe. An Arctic Ocean transect during another season could be impossible because of ice conditions.

Another alternative to conducting the proposed activities is the "No Action" alternative, i.e., do not issue an IHA and do not conduct the operations. If the planned geophysical research were not conducted, the "No Action" alternative would result in no disturbance to marine mammals attributable to the proposed activities, and no impacts of other types.



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The seismic data from the proposed seismic survey will be used to analyze the ridges and basins of the Amerasian Basin in the Arctic Ocean. This step is crucial in understanding the tectonic history of the Arctic Ocean and surrounding continents. The “No Action” alternative, through forcing cancellation of the planned seismic survey across the Arctic Ocean, would result in a loss of important scientific data and knowledge relevant to a number of research fields in marine geology, geophysics and past climate.

### **Summary of Environmental Consequences:**

The effects of sounds from airguns 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 effects. Given the small size of the source configurations planned for the proposed project, seismic effects are anticipated to be considerably less than would be the case with a large array of airguns. It is very unlikely that there would be any cases of temporary or especially permanent hearing impairment, or non-auditory physical effects. Also, behavioral disturbance is expected to be limited to relatively short distances.

Several species of cetaceans and pinnipeds inhabit the Arctic Ocean. The increased underwater noise from the research may result in avoidance behavior by some marine mammals and fish, and other forms of disturbance, such as a temporary elevation of stress hormones in these organisms. An integral part of the planned survey is a monitoring and mitigation program to minimize impacts of the proposed activities on marine species present, and on fishing and subsistence activities, and to document the nature and extent of any effects. Injurious impacts to marine mammals have not been proven to occur near equipment proposed to be used in this research; however, the planned monitoring and mitigation measures would minimize the possibility of such effects should they otherwise occur.

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

Several mitigation measures are built into the planned seismic survey as an integral part of the activities. Those measures include the following: one or two dedicated marine mammal observers maintaining a visual watch 30 minutes before and during all airgun operations; power downs or shut downs will be implemented when mammals or sea turtles are detected in or about to enter designated safety zones. The small sizes and source levels of the energy sources for this project, as compared with typical seismic surveys, are another inherent and important mitigation measure that will greatly reduce the potential for effects relative to those that might occur with a large array of airguns. Also, most of the seismic survey is to be in deep water, where impact radii



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are least, and in the Arctic Basin, where marine mammal densities are low. Previous and subsequent analysis of potential impacts takes account of the planned mitigation measures.

Participants will board the *Healy* during its refueling stop in Dutch Harbor and proceed directly to the field area near the Northwind Ridge. During the transit north, the closest approach to any of the northern Alaskan communities represented by the Alaska Eskimo Whaling Commission (AEWC), except for passing Little Diomed in the narrow Bering Strait, will be greater than five miles, mitigating many concerns that may exist about interference with subsistence activities. Transit through the area will occur prior to the fall whale migration and hunt and stay well offshore, minimizing the possibility for interference with subsistence or other activities is very small. Multi-channel seismic operations on *Healy* will be shutdown if the ship is closer than three miles to any hunters or boats that are not participating in the research. The marine mammal observers will have access to acoustic data collected from the sonobuoys launched approximately every four hours while underway. It is anticipated that the data will be available in real-time through the ship's computer network. The marine mammal observers will be equipped with noise canceling headphones, a laptop computer and software to display, analyze and save acoustic samples near their observing station. The information that will be collected by the observers is unprecedented and may provide useful information about the under-ice activities of marine mammals in the Arctic.

The survey track of the summer 2005 Arctic Ocean seismic survey has been revised slightly. This is expected to reduce the impacts of the seismic survey on the wildlife resources in the area by staying farther off shore from Barrow. The conclusions of the original Environmental Assessment and IHA application still apply to the project with the described track change. Other than commencing up to 100 miles (161 km) farther off the coast of Alaska, the seismic operations are unchanged. Although no conflicts with subsistence hunting or fishing were anticipated with the original proposed survey track, the revised track starting farther offshore further mitigates that possibility.

Environmental consequences of the alternative to conduct the survey at a different time would likely be much higher than the preferred alternative, due to human safety concerns in the Arctic winter and conflicts with subsistence hunting and bowhead whale migration in spring and autumn. The "no action" alternative would not have any environmental consequences, although it would preclude important scientific research.

**Public Participation:**

The National Science Foundation prepared a draft Environmental Impact Assessment (EA) of a marine geophysical survey by the Coast Guard cutter *Healy* across the Arctic Ocean, August-September 2005, and solicited public comments over a 45-day period (Federal Register: April 11, 2005, Vol. 70, No. 68, Page 18431-18432; and April 27, 2005, Vol. 70, No. 80, Page 21819). Written comments and comments from a public stakeholder meeting were received. Several minor changes were made to the proposed action based on comments from the public and scientific needs. These changes were not considered significant; rather, they clarified mitigation measures described in the draft EA. The draft EA noted that seismic arrays would not



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be utilized near subsistence hunters. While the cruise path is not expected to encounter subsistence hunters which typically remain within 30-40 miles (48-64 kilometers) of the coast, clarification has been made that seismic arrays will not be used within 3 miles (4.8 kilometers) of subsistence hunting parties. The draft EA noted that the cruise would start at least 33 miles (53 kilometers) off the coast of Barrow, Alaska; a clarification has been made that the cruise will start at Dutch Harbor, Alaska, and will pass at least 125 miles (200 kilometers) off the coast of Barrow, Alaska. The draft EA noted that acoustic work in shallow water is a small part of the survey; a clarification has been made that no work will occur in water less than 330 feet (100 meters) deep.

The agency has consulted with both the National Marine Fisheries Service and the Fish & Wildlife Service regarding species within their respective jurisdictions potentially affected by this proposed activity. Data collected during this cruise will be shared with these management agencies.

Copies of the FONSI and the Environmental Assessment titled, An Environmental Assessment of a Marine Geophysical Survey by the Coast Guard Cutter *Healy* Across the Arctic Ocean, August-September 2005, are available upon request from: Dr. Polly A. Penhale, National Science Foundation, Office of Polar Programs, 4201 Wilson Blvd., Suite 755, Arlington, VA 22230. Telephone: (703) 292-8033 or at the agency's website at:

[http://www.nsf.gov/od/opp/arctic/arc\\_envir/healy\\_ea.pdf](http://www.nsf.gov/od/opp/arctic/arc_envir/healy_ea.pdf) and [http://www.nsf.gov/od/opp/arctic/arc\\_envir/healy\\_fonsi.pdf](http://www.nsf.gov/od/opp/arctic/arc_envir/healy_fonsi.pdf). The National Science Foundation invites interested members of the public to provide written comments on this FONSI during the 30-day review period.

**Conclusions:**

Based on the analyses in the Environmental Assessment, the implementation of the preferred alternative is not a major federal action that would have a significant effect on the human environment, within the meaning of the National Environmental Policy Act (NEPA) of 1969 or Executive Order 12114. An environmental impact statement is not required and thus will not be prepared, and the approved actions may be implemented at the end of the 30-day FONSI review period.