

**DEPARTMENT OF THE INTERIOR
US Geological Survey**

**Finding of No Significant Impact
Pursuant to the National Environmental Protection Act (NEPA)
42 U.S.C. 4321, *et seq.***

Geophysical Survey of Parts of the Arctic Ocean, August–September 2010

AGENCY: US Geological Survey, Interior.

ACTION: Environmental Assessment and Finding of No Significant Impact

Summary

This constitutes a final environmental assessment (EA) by the U.S. Geological Survey (USGS) for a marine geophysical survey of parts of the Arctic Ocean for August – September, 2010 involving the United States Coast Guard Cutter (USCGC) *Healy* and the Canadian Coast Guard Ship (CCGS) *Louis S. St-Laurent*. This EA is based, in part, on an Environmental Assessment report prepared by LGL Limited Environmental Research Associates (LGL) on behalf of USGS, entitled “Draft Environmental Assessment for a Geophysical Survey of parts of the Arctic Ocean, August-September, 2010,” (LGL Document P1122-1) and published as USGS Open File Report 2010-1117. As the result of public comments received, the draft report has been modified into final form (Attachment A). The comments did not substantively alter the conclusions from the original draft EA. Attachment A was used to inform USGS management of potential environmental impacts of the proposed activities. USGS has reviewed Attachment A and concurs with its findings. Accordingly, Attachment A is incorporated into this EA by reference as if fully set forth herein.

Project Objectives and Context

The project seeks to better understand the geologic framework and sedimentary thickness of the Arctic Basin beneath the Beaufort Sea, with the intent of establishing the limits of the US and Canadian extended continental shelves under the provisions of Article 76 of the UN Convention on the Law of the Sea. The United States has an inherent interest in knowing, and declaring to others, the extent of its sovereign rights with regard to the U.S. extended continental shelf. Certainty and international recognition are important in establishing the necessary stability for management or conservation of these areas. Sedimentary thickness is a critical factor in the determination of the limits of the extended continental shelf in the Arctic Ocean, and Article 76 stipulates that these thicknesses should be measured using seismic reflection profiling methods.

Much of the potential extended continental shelf of the U.S. overlaps with that of Canada, providing a mutual interest in working together with common bathymetric and seismic approaches. Seismic data collection within the US 200-nmi limit in 2010 with the Canadian seismic vessel is designed to satisfy one of the requirements of the Commission guidelines for determining the extended continental shelf, that sediments are continuous from the outer limit points to the so-called foot of the slope on the continental margin. Prior to the UNCLOS effort, only one seismic transect extended from the Alaska margin to the 200-nmi limit. The 2010 cruise will add three more lines, all in water depths greater than ~1900 m. The partnership with Canada results in more safe, more economical, and more successful data acquisition by having the two icebreakers work together to collect coincident data in remote and ice-covered regions of the Arctic.

Summary of Proposed Action and Alternatives

The activity that the USGS is funding and undertaking in both the US waters (maritime zones) and the high seas is to collect multibeam, associated chirp subbottom data, and possibly sediment and rock samples both within and outside the 200-nmi limit utilizing *USCGC Healy*, as well as to break ice for *CCGS Louis S. St-Laurent* during operations in ice-covered areas. The proposed activity also includes *CCGS Louis S. St-Laurent* collecting seismic reflection and refraction data along ~900 km (485 nmi) for about 6 days within the US 200-nmi limit using a three-airgun array of 1150 cu.in. total volume, towed approximately 11 m below the sea surface. The airgun array creates a seismic pulse at approximately 20-second intervals continuously during the survey. Water depths in the survey area are no shallower than 1900 meters, and the closest approach of the survey to the Alaskan coastline is approximately 108 km (58 nm). The portion of the overall program within the US EEZ survey is scheduled to be completed near the outset of the mission.

One alternative to the action is to conduct the survey at an alternative time. However, ice conditions in the Arctic and ship schedules constrain the possible time window to July through September. In addition, scheduling the survey for periods of 24-hour daylight/twilight facilitate observations of marine wildlife. Postponement or delay of the 2010 survey would result in a lost opportunity for the U.S. to collaborate with the Canadian data acquisition program and therefore would result in a lost opportunity to meet data collection goals critical to defining the extended continental shelf. After 2010, *Louis S. St. Laurent* will be moved to other parts of the Canadian continental margin for surveying; hence she will not be available for work in the Canada Basin. Given the limited weather window and the proposed location and timing of the activity to minimize interactions with bowhead whales, altering the timing of the proposed project would result in no net benefits.

Another alternative to conducting the seismic survey is the "No Action" alternative, i.e., do not conduct the operations. If the planned research were not conducted, the "No Action" alternative would result in no disturbance to marine

mammals attributable to the activities, and no environmental impacts of other types. The no action alternative for the 2010 season would likely result in negating the memorandum of agreement between the US and Canada for conducting joint operations, sharing data types, and collecting information that is important for determining the seaward limit of each nation's continental shelf. While Canada would still collect seismic data independently outside of the US 200-nmi limit, the US would need to also collect seismic and other data independently that will allow a complete and accurate submission to delineate the outer limits of its ECS consistent with international law. Hence, the no-action alternative would result in no impact in 2010, but the cumulative impact would ultimately be greater because two separate cruises would be collecting – in places – redundant data.

Summary of environmental consequences

The potential effects of sounds from airguns are described in detail in Appendix E of the EA 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 very unlikely that the project will result in any cases of temporary or especially permanent hearing impairment, or any significant non-auditory physical or physiological effects. Some behavioral disturbance may be expected, but would be localized and short-term.

The EA addresses the possible disturbance to the sea ice cover in the survey region. The total area of ice that may be disturbed by icebreaking activity is negligibly small and transitory (tens of hours) in duration.

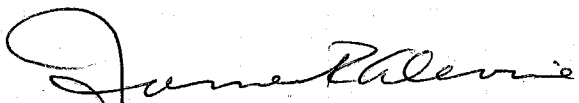
The activity will include a mitigation protocol to minimize impacts on marine mammals that may be present during the conduct of the research to a level of insignificance. As detailed in the Incidental Harassment Authorization application, mitigation measures that will be adopted include: ramp ups, a minimum of two dedicated observer maintaining a visual watch during all airgun operations, 30 minutes of observations before and during ramp ups during the day and at night, shut downs when marine mammals are detected in or about to enter designated exclusion zones, shut downs if bowhead are sighted at any distance from the source vessel (given their special status), and avoidance of concentrations of humpback whales and narwhal, and seals

With the planned monitoring and mitigation measures, unavoidable impacts to each species of marine mammal that could be encountered are expected to be 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 are expected on individual marine mammals, or the populations to which they belong, or on their habitats.

The project will have little impact on fish resources. Any effects on essential fish habitat (EFH) would consist of short-term disturbance that could lead to temporary relocation of EFH species or their food. Impacts of seismic sounds on birds are possible, although none are expected to be significant to their populations.

Conclusions

USGS has reviewed the draft LGL environmental assessment report, modified it (Attachment A) and has concluded that implementation of the activity will not have a significant impact on the environment. An environmental impact statement will not be prepared. Consequently, implementation of the activity is not a major federal action having a significant impact on the environment within the meaning of the National Environmental Policy Act (NEPA). Therefore, on behalf of USGS, I authorize the issuance of a Finding of No Significant Impact for the geophysical survey in parts of the Arctic Ocean, August – September, 2010.



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2 August 2010
Date

AUTHORITY: 40 CFR 1506.6, 40 CFR 1506.10