

MARINE MAMMAL COMMISSION
4340 East-West Highway, Room 700
Bethesda, MD 20814-4447

25 August 2008

Mr. P. Michael Payne
Chief, Permits Division
National Marine Fisheries Service
Office of Protected Resources
1315 East-West Highway
Silver Spring, MD 20910-3226

Dear Mr. Payne:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the application submitted by the Lamont-Doherty Earth Observatory seeking authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act to take small numbers of marine mammals by harassment. The taking would be incidental to conducting a marine seismic survey in the northeast Gulf of Alaska during 2008. The Commission also has reviewed the National Marine Fisheries Service's 5 August 2008 *Federal Register* notice announcing receipt of the application and proposing to issue the authorization, subject to certain conditions.

The purpose of the proposed survey, scheduled for approximately 18 days between 31 August and 23 September, is to examine crustal structure, fault patterns, and tectonic-climate geohistory offshore of the Saint Elias Mountains. The survey would occur in the territorial waters and Exclusive Economic Zone of the United States. It is being conducted under a cooperative agreement with the National Science Foundation as part of a five-year comprehensive study of tectonic and climate interactions in the Gulf of Alaska.

The survey would be conducted using the applicant's vessel, the R/V *Marcus G. Langseth*, which would deploy a 36-airgun array (6,600 in³) as an energy source. The sound source output of the array is 265 dB re 1 μ Pa-m (peak-to-peak). In addition, an 11.25–12.6 kHz multibeam echosounder would be operated continuously throughout the cruise, and a sub-bottom profiler would be operated during most of the survey. A single 8-km hydrophone streamer would be towed at times, and 42 ocean bottom seismometers would be deployed.

RECOMMENDATIONS

The Marine Mammal Commission recommends that, before issuing the requested authorization, the National Marine Fisheries Service—

- take steps to ensure that the planned monitoring program will be sufficient to detect, with reasonable confidence, all marine mammals within or entering the identified safety zones; such monitoring is essential for determining whether animals are being taken in unanticipated ways and unexpected numbers;
- extend the monitoring period to one hour before initiation of seismic activities and one hour before the resumption of airgun activities after a power-down; and

- require that observations be made during all ramp-up procedures to gather data regarding the effectiveness of ramp-up as a mitigation tool.

RATIONALE

The Service has preliminarily determined that the proposed activities would result, at most, in a temporary modification in the behavior of small numbers of up to 20 species of marine mammals and that any impact on the affected species is expected to be negligible. The Service also has preliminarily determined that no take of marine mammals by death or serious injury is anticipated and that the potential for temporary or permanent hearing impairment will be avoided through the incorporation of the proposed mitigation measures. The Service believes that these determinations are reasonable because, among other things, (1) when the full airgun array is in use, marine mammals would have to be closer than 6,000 m (3.7 mi) in deep water, 6,667 m (4.1 mi) at intermediate depths, and 8,000 m (4.9 mi) in shallow water to be exposed to the level of sound (i.e., 160 dB) believed to be capable of causing temporary threshold shift; and (2) there is a high likelihood that marine mammals would be detected by trained observers at those distances from the vessel.

As discussed in previous letters commenting on similar activities by this and other applicants, the Commission is concerned about the adequacy of visual monitoring alone to detect all marine mammals within the safety area. As recognized by the Service in the *Federal Register* notice accompanying this application and in previous notices on similar requests, “[v]isual monitoring typically is not effective during periods of bad weather or at night and, even with good visibility, is unable to detect marine mammals when they are below the surface or beyond visual range.” This conclusion is supported by a study by Barlow 1999, which found that “[a]ccounting for both submerged animals and animals that are otherwise missed by the observers in excellent survey conditions, only 23 percent of Cuvier’s beaked whales and 45 percent of *Mesoplodon* beaked whales are estimated to be seen on ship surveys if they are located directly on the survey trackline.”

The current application states that vessel-based passive acoustic monitoring will be conducted to augment visual monitoring during daytime operations and at night to help detect, locate, and identify marine mammals that may be present. However, as the Service acknowledges, such monitoring is useful only when marine mammals vocalize, and its value is limited by water depth and other environmental factors. Thus, the Marine Mammal Commission reiterates its previous recommendation that the Service provide additional justification for its preliminary determination that the planned monitoring program will be sufficient to detect, with a high level of confidence, all marine mammals within or entering the identified safety zones. Such justification should, at a minimum, (1) identify those species that it believes can be detected with a high degree of confidence using visual monitoring only, (2) describe sighting probability as a function of distance from the observer, (3) describe changes in sighting probability at night, and (4) explain how “close to the vessel” marine mammals must be to achieve the anticipated high nighttime detection rate. If such information is not available, the Service needs to encourage development of alternative means

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of detecting marine mammals within the specified safety zones or to verify that the proposed monitoring program is likely to detect most marine mammals in or near those zones.

The Service's *Federal Register* notice states that monitoring will be conducted for at least 30 minutes prior to the planned start of airgun operations. The notice also states that when airguns have been powered down because a marine mammal has been detected near or within the proposed safety zone, airgun activity will not resume until the marine mammal is outside the safety zone (i.e., the animal is visually observed to have left the safety zone or has not been seen or otherwise detected within the safety zone for 15 minutes in the case of small odontocetes or 30 minutes in the case of mysticetes and large odontocetes, including sperm, pygmy sperm, dwarf sperm, and beaked whales). The Commission notes that several species of cetaceans for which the applicant is seeking incidental take authority remain submerged on most dives for more than 30 minutes. Sperm whales and beaked whales, for example, can stay submerged for up to one hour. Accordingly, monitoring for 30 minutes prior to the planned start or resumption of airgun operations is not sufficient to allow detection of those species. Therefore, the Marine Mammal Commission recommends that the monitoring period in such instances be extended to one hour before airgun activities can be initiated or resumed.

The Commission also notes that the effectiveness of ramp-up, although theoretically sound, has yet to be verified empirically. For that reason, the Marine Mammal Commission recommends that observations be made during all such procedures to gather data on its effectiveness as a mitigation measure. In the Commission's opinion, the Service cannot continue to assume that ramp-up constitutes an effective mitigation without empirical verification.

Please contact me if you or your staff has questions about the Commission's comments and recommendations.

Sincerely,



Timothy J. Ragen, Ph.D.
Executive Director

Literature Cited:

Barlow, J. 1999. Trackline detection probability for long-diving whales. Pages 209–221 *in* G.W. Garner, S C. Amstrup, J.L. Laake, B.F.J. Manly, L.L. McDonald, and D.G. Robertson (eds.), *Marine Mammal Survey and Assessment Methods*. Balkema, Rotterdam, The Netherlands.