

**MARINE MAMMAL COMMISSION**  
**4340 EAST-WEST HIGHWAY, ROOM 700**  
**BETHESDA, MD 20814-4447**

8 June 2009

Mr. P. Michael Payne, Chief  
Permits, Conservation, and Education Division  
Office of Protected Resources  
National Marine Fisheries Service  
1315 East-West Highway  
Silver Spring, MD 20910-3225

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 under section 101(a)(5)(D) of the Marine Mammal Protection Act. The applicant is seeking authorization to take small numbers of marine mammals by harassment incidental to conducting a marine seismic survey in the northeast Pacific Ocean during 2009. The Commission also has reviewed the National Marine Fisheries Service's 8 May 2009 *Federal Register* notice (74 Fed. Reg. 21631) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions.

The proposed survey is scheduled to take place from 17 August to 22 September 2009. Its purpose is to obtain information on the 3-D seismic structure of the crust and topmost mantle along an 80-km-long section of the Endeavor segment of the Juan de Fuca Ridge. The applicant would conduct the survey in the Exclusive Economic Zone of Canada, approximately 250 km southwest of Vancouver Island, British Columbia, within the Canadian Endeavour Marine Protected Area.

The applicant would use the R/V *Marcus G. Langseth* to tow a 36-airgun array (6,600 in<sup>3</sup>) as an energy source. The sound source output of the array is 265 dB re 1 $\mu$  Pa-m (peak-to-peak). The receiving system for the returning acoustic signals would consist of 64 ocean-bottom seismometers. In addition, the applicant would operate an 11.25–12.6-kHz multibeam echo sounder on a continuous basis and a sub-bottom profiler at selected times during the survey.

## **RECOMMENDATION**

The Marine Mammal Commission recommends that, before issuing the requested authorization, the National Marine Fisheries 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. At a minimum, such justification should (1) identify those species that it believes can be detected with a high degree of confidence using visual monitoring only and those species for which it is relying on the effectiveness of passive acoustic monitoring, (2) describe detection probability as a function of distance from the observer, (3) describe changes in detection probability at night, and (4) explain how close

- to the vessel marine mammals must be for observers to achieve the anticipated high nighttime detection rate;
- clarify the qualifier “when feasible” with respect to (1) using two marine mammal visual observers to monitor the exclusion zone for marine mammals during daytime operations and nighttime start-ups of the airguns and (2) using marine mammal visual observers during daytime periods to compare sighting rates and animal behavior during times when the seismic airguns are operating and times when they are not;
  - extend the monitoring period to at least one hour before initiation of seismic activities or the resumption of airgun activities after a power-down because of a marine mammal sighting within the safety zone; and
  - require that observations be made during all ramp-up procedures to gather the data needed to analyze and provide a report on the effectiveness of this method as a mitigation measure.

## RATIONALE

The Service has preliminarily determined that the proposed activities would result, at most, in temporary modification in the behavior of small numbers of up to 24 cetacean species and 1 pinniped species 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) given sufficient notice by means of slow ship speeds and ramp-up of the seismic array, marine mammals are expected to move away from an annoying sound source prior to its becoming potentially injurious; (2) temporary threshold shift is unlikely to occur, especially in odontocetes, until they are exposed to sound levels greater than 180 dB re 1 $\mu$  Pa (rms); (3) injurious levels of sound are only likely very close to the vessel; and (4) the monitoring program developed to avoid injury will be sufficient to detect (using visual detection and passive acoustic monitoring) with reasonable certainty all marine mammals within or entering the identified safety zones.

The Marine Mammal Commission recommends that, prior to granting the requested authorization, the National Marine Fisheries 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. At a minimum, such justification should (1) identify those species that it believes can be detected with a high degree of confidence using visual monitoring only and those species for which it is relying on the effectiveness of passive acoustic monitoring, (2) describe detection probability as a function of distance from the observer, (3) describe changes in detection probability at night, and (4) explain how close to the vessel marine mammals must be for observers to achieve the anticipated high nighttime detection rate. If such information is not available, the Service should undertake the studies needed to verify that the proposed monitoring program is likely to detect most marine mammals in or near those zones and/or to encourage development of alternative means of detecting marine mammals within the specified safety zones. Specifically, we note the following concerns.

Visual and passive acoustic monitoring

As discussed in previous letters commenting on similar activities by this and other applicants, the Commission continues to be concerned about the adequacy of visual monitoring alone to detect all marine mammals within the specified safety area. As recognized by the Service in the *Federal Register* notice concerning 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.” A study by Barlow 1999 supports this conclusion. That study 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 *Federal Register* notice states that the applicant will conduct vessel-based passive acoustic monitoring 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. The effectiveness of passive acoustic monitoring will depend on the acoustic system and the ability of its operators to locate vocalizing cetaceans and to determine whether an acoustically detected cetacean is within the shutdown radius or in a position such that the ship’s movement will place it within the shutdown radius. Cetaceans that are on the trackline of the ship may be particularly difficult to detect but are of relatively greater concern because of their location.

The *Federal Register* notice states that at least three marine mammal observers will be onboard the *Langseth* and, “when feasible,” two marine mammal visual observers will monitor the exclusion zone for marine mammals during ongoing daytime operations and nighttime start-ups of the airguns. The term “when feasible” is not clear in this instance. Similarly, the notice states that “when feasible” marine mammal visual observers also will make observations during daytime periods when the seismic system is not operating “for comparison of sighting rates and animal behavior with vs. without airgun operations.” Here again, the term “when feasible” is not clear. The Marine Mammal Commission recommends that, before issuing the requested authorization, the Service clarify the meaning of qualifier “when feasible” with respect to (1) using two marine mammal visual observers to monitor the exclusion zone for marine mammals during daytime operations and nighttime start-ups of the airguns and (2) using marine mammal visual observers during daytime periods to compare sighting rates and animal behavior during times when seismic airguns are operating and times when they are not.

Duration of monitoring prior to initial start-up and resumption of airgun activity

The Service’s *Federal Register* notice states that the applicant will monitor the area for at least 30 minutes prior to the planned initiation 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. Several species of cetaceans for which the applicant is seeking incidental take authority remain

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submerged on most dives for more than 30 minutes. The Service's *Federal Register* notice states that "[s]perm whales undertake some of the longest and deepest-known dives among cetaceans...as deep as ~2 km and possibly deeper on rare occasions, for periods of over 1 h[our] (Tyack et al. 2006:4246)."

The application recognizes that Baird's beaked whales and Cuvier's beaked whales can stay submerged for up to 67 minutes (Kasuya 2002) and 58 minutes (Tyack et al. 2006), respectively. Accordingly, the Commission does not believe that monitoring for 30 minutes prior to the planned start or resumption of airgun operations is sufficient to allow detection of those species. Therefore, the Marine Mammal Commission recommends that the National Marine Fisheries Service extend the monitoring period to at least one hour before initiation of seismic activities or one hour before the resumption of airgun activities after a power-down because of a marine mammal sighting within the safety zone.

The Commission also notes that although the effectiveness of ramp-up is plausible, it 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.

In its 22 January 2009 letter (copy enclosed and incorporated by reference) regarding the applicant's survey in the South and East China Seas and the Philippines, the Commission noted that most of the issues raised here have been raised before, with apparently little having been done to resolve them. The Commission will be sending a letter of invitation to the National Marine Fisheries Service, the National Science Foundation, and the Lamont-Doherty Earth Observatory to meet to discuss (1) existing research plans and needs regarding monitoring and mitigation measures and mechanisms to ensure that the essential research is conducted and (2) possible procedural improvements (e.g., outreach) to ensure that potentially valuable comments from experts outside the United States are considered when research supported by the United States is conducted in foreign waters.

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

Enclosure

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22 January 2009

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1315 East-West Highway  
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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 South and East China Seas and the Philippines from late March to mid-July 2009. The Commission also has reviewed the National Marine Fisheries Service's 22 December 2008 *Federal Register* notice announcing receipt of the application and proposing to issue the authorization, subject to certain conditions (73 Fed. Reg. 78294).

The National Science Foundation is funding the planned survey as part of the Taiwan Integrated Geodynamics Research program. The survey would consist of four legs and would be conducted in the Exclusive Economic Zones of Taiwan, China, Japan, and the Philippines (between 17°30' to 26°30'N and 113°30' to 126°E). The applicant would conduct the survey using the R/V *Marcus G. Langseth*, which would deploy a 36-airgun array (6,600 in<sup>3</sup>) as an energy source. The array output is 265 dB re 1μPa-m (peak-to-peak). In addition, the applicant would operate an 11.25–12.6 kHz multibeam echo sounder during airgun operations and a sub-bottom profiler continuously throughout the cruise. The applicant also would tow a passive acoustic monitoring hydrophone array up to 8 km in length and deploy 100 ocean-bottom seismometers.

## RECOMMENDATIONS

The Marine Mammal Commission recommends that, before issuing the requested authorization, the National Marine Fisheries 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. At a minimum, such justification should (1) identify those species that it believes can be detected with a high degree of confidence using visual monitoring only, (2) describe detection probability as a function of distance from the observer, (3) describe changes in detection probability at night, and (4) explain how close to the vessel marine mammals must be for observers to achieve the anticipated high nighttime detection rate;

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- clarify the qualifiers “when practical” and “when feasible” with respect to (1) using two marine mammal observers to monitor the exclusion zone for marine mammals during daytime operations and nighttime start-ups of the airguns, and (2) using marine mammal observers during daytime periods to compare sighting rates and animal behavior when the seismic airguns are operating and when they are not;
- consult with the applicant to clarify and describe the potential conditions that would render the use of passive acoustic monitoring impracticable for complementing the visual monitoring program;
- extend the monitoring period to at least one hour before initiation of seismic activities and at least one hour before the resumption of airgun activities after a power-down because of a marine mammal sighting within the safety zone;
- require that observations be made during all ramp-up procedures to gather the data needed to analyze and provide a report on their effectiveness as a mitigation measure;
- require the applicant to take all measures necessary to ensure that the proposed activities are not conducted near the Ryukyu Islands and Babuyan Islands during peak occurrence of the humpback whales in those areas (i.e., February through April);
- describe the reasons why and the conditions under which the applicant would need to conduct surveys closer than 8 to 10 km off the coast of Taiwan where threatened Indo-Pacific humpback dolphins are more likely to be exposed to sound pressure levels greater than 160 dB re 1  $\mu$ Pa (rms);

## **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 34 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) marine mammals are expected to move away from a noise source that is annoying before it becomes potentially injurious; (2) temporary threshold shift is unlikely to occur, especially in odontocetes, at levels below 180 dB re 1 $\mu$ Pa (rms); (3) injurious levels of sound are likely to occur only very close to the vessel; and (4) the monitoring program (visual detection and passive acoustic monitoring) developed to avoid injury would be sufficient to detect with reasonable certainty all marine mammals within or entering the identified safety zones.

## **Monitoring**

The Marine Mammal Commission recommends that, prior to granting the requested authorization, the National Marine Fisheries 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. At a minimum, such justification should (1) identify those species that it believes can be detected with a

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high degree of confidence using visual monitoring only, (2) describe detection probability as a function of distance from the observer, (3) describe changes in detection probability at night, and (4) explain how close to the vessel marine mammals must be for observers to achieve the anticipated high nighttime detection rate. If such information is not available, the Service should undertake the studies needed to verify that the proposed monitoring program is likely to detect most marine mammals in or near those zones and/or to encourage development of alternative means of detecting marine mammals within the specified safety zones. Specifically, we note the following concerns.

Vessel-based visual monitoring. As discussed in the Commission's previous letters commenting on similar activities by this and other applicants, visual monitoring alone is not adequate to detect all marine mammals within the safety area. As recognized by the Service in its previous *Federal Register* notices on similar requests, visual 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 one of the Service's own scientists (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 *Federal Register* notice states that at least three marine mammal observers will be onboard the *Langseth*, and at least one observer and, "when practical," two, will monitor the exclusion zone for marine mammals during ongoing daytime operations and nighttime start-ups of the airguns. The term "when practical" is not clear in this instance. Similarly, the notice states that "when feasible" marine mammal observers will also make observations during daytime periods when the seismic system is not operating "for comparison of sighting rates and animal behavior with vs. without airgun operations." Here again, the term "when feasible" is not clear. The Marine Mammal Commission recommends that before issuing the requested authorization, the Service clarify the qualifiers "when practical" and "when feasible" with respect to (1) using two marine mammal observers to monitor the exclusion zone for marine mammals during daytime operations and nighttime start-ups of the airguns, and (2) using marine mammal observers during daytime periods to compare sighting rates and animal behavior during times when seismic airguns are and are not operating.

Passive acoustic monitoring. The *Federal Register* notice states that the applicant will conduct vessel-based passive acoustic monitoring 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. The effectiveness of passive acoustic monitoring will depend on the ability of the acoustic system and its operators to locate vocalizing cetaceans and determine whether an acoustically detected cetacean is within the shutdown radius or in a position such that the ship's movement will place it within the shutdown radius. Cetaceans that are on the trackline of the ship may be particularly hard to detect but are of relatively greater concern because of their location. Further, the notice states that passive acoustic monitoring will take place to complement the visual monitoring program "if practicable." The notice does not



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describe the potential conditions that would render the use of passive acoustic monitoring impracticable. Therefore, the Marine Mammal Commission recommends that the Service consult with the applicant to clarify and describe the potential conditions that would render the use of passive acoustic monitoring impracticable for complementing the visual monitoring program.

Monitoring prior to initial start-up and resumption of airgun activity. The Service's *Federal Register* notice states that the applicant will monitor the area for at least 30 minutes prior to the planned initiation 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 and 30 minutes in the case of mysticetes and large odontocetes, including sperm, pygmy sperm, dwarf sperm, and beaked whales). 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 more than one hour. The application states that Blainville's beaked whales dive to considerable depths (> 1,400 m) and stay submerged for nearly an hour (Tyack et al. 2006, Baird et al. 2006). Accordingly, monitoring for 30 minutes prior to the planned start or resumption of airgun operations is not sufficient to allow detection of those species. Furthermore, the applicant states that the proposed survey area may be a "hotspot" for *Mesoplodon* beaked whales. Therefore, the Marine Mammal Commission recommends that the National Marine Fisheries Service extend the monitoring period to at least one hour before initiation of seismic activities and at least one hour before the resumption of airgun activities after a power-down because of a marine mammal sighting within the safety zone.

## Mitigation

Ramp-up procedures. These procedures frequently are presumed to be effective, but their effectiveness has yet to be verified empirically. In the Commission's opinion, the Service cannot continue to assume that ramp-up constitutes effective mitigation without empirical verification. Such verification is not a trivial task. It may require not only collecting opportunistic data but also designing and conducting studies directed at specific hypotheses regarding the utility of ramp-up procedures. In addition, the results may reveal variable responses depending on the species involved or other factors. For those reasons, the Marine Mammal Commission recommends that the National Marine Fisheries Service require that observations be made during all ramp-up procedures to gather the data needed to analyze and report their effectiveness as a mitigation measure. The Marine Mammal Commission would be pleased to discuss with the Service the collection of such data and the design of such experiments to promote a better understanding of the utility and shortcomings of ramp-up as a mitigation measure.

Temporal/spatial avoidance. The *Federal Register* notice states that, according to Perry et al. (1999), Acebes et al. (2007), and Calambokidis et al. (2008), North Pacific humpback whales winter and calve around the Ogasawara (formerly Bonin) and Ryukyu Islands in southern Japan and the Babuyan Islands in Luzon Strait in the northern Philippines, arriving in the area as early as

November and leaving in May or June, with peak occurrence during February through March or April. The notice states that the applicant "will attempt" to avoid these wintering areas at the time of peak occurrence, by surveying the lines near the Ryukyu Islands and Babuyan Islands as late as possible during each leg of the cruise. The application further notes that, according to Perrin et al. (2005), the waters off the Babuyan Islands, which may be the southernmost breeding area of this species, are being recommended as a humpback whale sanctuary. Therefore, the Marine Mammal Commission recommends that the Service require the applicant to take all measures necessary to ensure that the proposed activities are not conducted near the Ryukyu Islands and Babuyan Islands during peak occurrence of humpback whales in those areas (i.e., February through April).

The *Federal Register* notice also states that "when possible," the applicant will conduct the survey at least 8 to 10 km (5 to 6.2 mi) from the Taiwanese coast to minimize the potential of exposing threatened Indo-Pacific humpback dolphins to sound pressure levels greater than 160 dB re 1  $\mu$ Pa (rms). The notice does not describe the reasons why or the conditions under which it would be impossible to avoid conducting surveys closer than 8 to 10 km off Taiwan. The Marine Mammal Commission recommends that the Service require the applicant to explain the reasons why or the conditions under which the applicant would need to conduct surveys closer than 8 to 10 km off the coast of Taiwan where threatened Indo-Pacific humpback dolphins are more likely to be exposed to sound pressure levels greater than 160 dB re 1  $\mu$ Pa (rms). We also note that it makes more sense to use a single distance, rather than a range, to prevent the survey from approaching the Taiwan coast too closely.

Finally, the handling of this application raises two additional concerns that the Commission believes can best be addressed jointly by the action agency (the National Science Foundation), the contractor (the Lamont-Doherty Earth Observatory), the authorizing agency (National Marine Fisheries Service), and the oversight agency (the Commission). The first concern is that most of the issues raised in this letter have been raised before and, to our knowledge, little is being done to resolve them. Seismic studies introduce a tremendous amount of acoustic energy into the marine environment. Although some efforts have been made to assess the potential effects on one species of odontocetes (e.g., the Minerals Management Service's Sperm Whale Seismic Study), existing data are not sufficient for describing potential effects on other species of cetaceans, and all involved parties remain relatively ignorant on this topic. Although we should expect such uncertainty initially, we should not perpetuate that ignorance if we are capable of reducing it through well-directed research. The Commission believes that the action agency and contractor should bear primary responsibility for carrying out the studies needed to reduce the existing uncertainty and that the authorizing and oversight agencies have a degree of responsibility as well.

The second concern involves the opportunity for scientists, conservationists, and other interested parties from other countries to comment on research activities to be conducted by U.S. organizations in foreign waters. The study under consideration in this letter has generated a considerable amount of legitimate concern regarding potential effects on marine mammal species in the South China Sea. Such concern is heightened for endangered or threatened species (e.g., the Indo-Pacific humpback dolphin, *Sousa chinensis*) and species that are poorly known but potentially vulnerable (e.g., the ginkgo-toothed beaked whale, *Mesoplodon ginkgodens*). Those scientists,

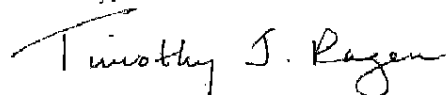
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conservationists, and others generally are unfamiliar with the procedures for permit review and authorization in the United States but may have a good understanding of the natural history and vulnerability of potentially affected species. The Commission believes that they should be provided with opportunities to contribute to the evaluation of the potential effects of seismic studies in the context of all other factors that may be affecting these species. If U.S. scientists and institutions are to engage in research activities in the waters of other countries, it stands to reason that our system of review should include sufficient opportunities for foreign parties to comment on potential effects. This might be accomplished in a number of ways, such as extending the comment period to give them additional time to comment and promoting interaction between the research organization and concerned parties from other countries. We recognize that such accommodations may complicate research efforts and that various mechanisms might have to be explored before suitable ones are found. Nonetheless, we believe such participation is appropriate and, in the long run, will facilitate international cooperation on conservation issues, more informed comments, and more risk-averse research methods and mitigation procedures.

With these concerns in mind, the Commission will send a separate letter of invitation to the National Marine Fisheries Service, the National Science Foundation, and the Lamont-Doherty Earth Observatory to discuss (1) existing research plans and needs regarding monitoring and mitigation measures and mechanisms to ensure that the essential research is conducted, and (2) possible procedural improvements (e.g., outreach) to ensure that potentially valuable comments from expertise outside the United States are considered when research supported by the United States is conducted in foreign waters.

Please contact me if you have questions about the Commission's recommendations and comments.

Sincerely,



Timothy J. Ragen, Ph.D.  
Executive Director

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RE: Incidental Takes of Marine Mammals During Specified Activities; Marine  
Geophysical Survey in the Northeast Pacific Ocean, August – October 2009

Dear Dr. Payne;

Thank you for the opportunity for Cetacean Society International (CSI) to comment on the Lamont-Doherty Earth Observatory (L-DEO) Incidental Harassment Authorization (IHA) application relating to the Endeavor Tomography (ETOMO) Study, scheduled to begin 17 August and end 17 October 2009. The process of conducting this research is contentious, and therefore deserving of careful review. It is expected that Canada will have consulted and commented on this proposal, and CSI respectfully requests a link to those documents for review.

While not relevant to the Marine Mammal Protection Act (MMPA), it should be noted that 12 species found nowhere else in the world have been identified at the Endeavour Hydrothermal Vents within Canada's Endeavour Sea Mount Marine Protected Area. Given that the potential for deleterious acoustic impacts on invertebrates from the L-DEO survey is almost totally unknown, CSI specifically requests that the Office of Protected Resources (OPR) require L-DEO and the National Science Foundation to support a survey of the site sufficient to document whether or not these extremely limited species were impacted by the experiment.

The fundamental flaw in the IHA process as conducted between L-DEO and OPR to date, including for this ETOMO study, is that the time between OPR's first awareness of an L-DEO application and the start of the scheduled survey does not allow for significant changes to the operation without extraordinary economic hardship on the applicant, and that creates pressure on OPR to authorize operations based on cost. Changes sufficient to require rescheduling of ship time and experts are likely to result in considerable cost overruns, loss of scientific opportunities, and negative effects on following surveys. CSI and others question whether this economic and practical pressure might influence OPR's final decision relating to an IHA; might a project be authorized to continue, despite a problem, because of the cost of fixing it?

The fault lies first with L-DEO for not contracting openly with regional authorities and experts during the initial planning and scheduling phase, thereby building the project around the "best science" available. This amplifies the importance of the public comment period beyond a mere statutory requirement. The fault also lies with OPR, for not processing the application fast enough so that necessary changes brought to light through the public comment period might be applied with less onerous scheduling and operational changes.

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CSI recognizes that OPR may be required to supplement an Application with a Section 7 consultation, Biological Opinion and Environmental Assessment, all of which take time. This ETOMO Application was received 11 February, the Federal Register Notice was published 8 May, and we doubt there is time between the 8 June close of public comments and the start date of 17 August for L-DEO to adjust to potentially required changes in an IHA brought to light within the comment period. From recent experience the IHA can be expected to be issued close to the start date, making changes even more onerous. In other words, will an IHA be authorized in spite of issues, because of the cost to make it right? *CSI is not accusing either OPR or L-DEO, but we are asking that even the appearance of the potential be removed.*

The solution CSI respectfully asks both OPR and NMFS for is a longer base time between application and start date. It is clear that L-DEO will be at this for a long time, and schedules must be set for 2010 and beyond.

L-DEO's current process depends almost entirely upon the validity of the assumptions and assessments from L-DEO's in-house and contracted analysis, which have been proven to be inadequate. Perhaps recognizing this, L-DEO requested consultations with the South Pacific Whale Research Consortium (SPWRC) before the Tonga survey, but demanded confidentiality, which SPWRC refused. L-DEO Tonga went on anyway, without that expert assistance.

The L-DEO process failed with the L-DEO Taiger survey in Southeast Asia, as public comments were received from concerned regional authorities and experts about several issues. One issue required an amended IHA, and the project was delayed accordingly, but the literally last minute public process should not have been the impetus. L-DEO would have precluded the issues by contracting with the well-known experts that were forced to express their concerns only during the public comment period. Taiwan's renewed, potentially threatening interest in the project only came about because the regional experts were seeking ways to have their concerns noted. Why not just hire the local experts and start earlier?

The ETOMO Application should not be "easy" because there are no systematically collected data on cetacean distribution and abundance in the proposed survey region. The absence of specific data elevates the value of Kristin Kaschner's PhD thesis, which maps suitable habitat for marine mammals around the world, ranking the Relative Environmental Suitability (RES) for each species. (Kaschner, K. (2004). *Modelling and mapping resource overlap between marine mammals and fisheries on a global scale*. <http://www.fisheries.ubc.ca/students/graduated.php>) . Kaschner shows that the Endeavour MPA offers highly suitable habitat for several species for which the daylight visual observation mitigation measures are inadequate. She predicts that the habitat is likely to support sei and sperm whales, which were caught in the region historically. She predicts that the habitat is likely to support poorly studied beaked whales (especially Cuvier's), which are thought to be susceptible to seismic survey impacts. And she predicts that the study area offers good quality habitat for species known to be recovering from 20<sup>th</sup> century commercial whaling, namely fin, humpback and sperm whales.

But this data is not "real", and while science continues to search for ways to get the necessary data L-DEO and NSF will continue to believe that their seismic surveys have no significant effect. It is expected that NMFS will find "that the taking will have a negligible impact on the species or stock(s)" despite the lack of real information. The absence of proof of harm is not the same as proving that there is no harm.

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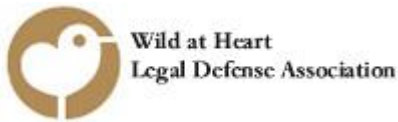
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Given the trends in research findings on anthropological acoustical impacts, it is likely that future reviewers of the chain of L-DEO surveys and OPR approvals will ask: "why didn't they just try harder?"

Sincerely,

A handwritten signature in black ink, appearing to read "William W. Rossiter". The signature is fluid and cursive, with a long horizontal line extending to the right.

William W. Rossiter  
President



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8 June 2009

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**Comments and recommendations regarding application for Incidental Harassment Authorization for marine seismic survey in NE Pacific Ocean from August to October, 2009 (74 FR 21631).**

Dear Mr Payne:

I am writing on behalf of Wild at Heart Legal Defense Association and all its members to express concern about the proposed marine seismic survey in the northeast Pacific Ocean for which Lamont-Doherty Earth Observatory (L-DEO) have applied for an Incidental Harassment Authorization (IHA) according to the notice in *74 FR 21631*.

First, it has not been adequately explained in the Draft Environmental Assessment



why the “No Action” alternative might be rejected in favour of the project, which, according to the proponent’s own assessment, has the potential to harass several thousand cetaceans, including eight species described in the notice as being listed as endangered under the U.S. Endangered Species Act. That the acquisition of data concerning one natural phenomenon (e.g. “the sub-seafloor structure of volcanic and hydrothermal features that form as a result of movements of the Earth’s plates” (DEA p2)) should increase the threat to the existence of another natural phenomenon (e.g. a species of whale) of equally great (if less generously funded) academic interest is an illogical and tragic course of action. It should be noted that it has not been proven that knowledge of the sub-seafloor structure is of **greater long-term importance** for the continuation of human life on Earth than the biodiversity upon which we are very much dependent.

In addition, the assessment carried out by LGL for this L-DEO project must be treated with caution given the very recent experience of the L-DEO seismic survey currently underway in the waters of southeast Asia, for which LGL prepared an Environmental Assessment that understated the numbers of cetaceans of certain species that might be exposed to airgun noise and the level of potential harassment, misquoted the status of at least one Critically Endangered population of cetaceans (the Eastern Taiwan Strait Indo-Pacific humpback dolphins) and resulted in transect lines running directly through the narrow habitat of the ETS humpback dolphins and the scheduling of surveys near the Philippines that coincided “spatially and temporally with the northward migration of mothers with neonatal and other young calves” (Anon, 2009), to cite a few of the concerns raised by scientists and NGOs during the comment period for that project (e.g.

[http://www.nmfs.noaa.gov/pr/pdfs/permits/taiger\\_comments.pdf](http://www.nmfs.noaa.gov/pr/pdfs/permits/taiger_comments.pdf)). As was then confirmed by the subsequent issuance of an IHA by the NMFS and the further compromises in terms of cetacean conservation measures that followed once the NMFS was made aware in April 2009 that its initial IHA conditions made part of the southeast Asia seismic survey geographically impossible, an additional, **independent** scientific review body is urgently needed in order to improve the quality of environmental assessment and recommended actions for this and all other seismic surveys.

Should the project be approved and an IHA granted despite the issues described above, there are several aspects of the existing impact mitigation strategies that need to be addressed.

As noted in the FR notice, the safety radii for this project are used to decide how close a marine mammal may approach an operating sound source before a power-down or shut down is required. With detection of marine mammals being dependent upon the success of visual and acoustic monitoring, it is clearly essential that both forms of monitoring are carried out in such a way as to *maximize* the potential of detection. However, the description of the monitoring plans described in the FR notice suggest once again that worryingly *minimal* efforts to detect cetaceans will be made.

With a minimum of only one MMVO being required to be on duty during all daytime airgun operations, and only two observers being required to be on duty for only thirty minutes before and during ramp-ups (“and when possible at other times” (DEA p.3)) is clearly not a commitment) the chances of detecting cetaceans in the area (including the exclusion zone) within which they may be harassed (including level A and level B harassment) will be limited. Neither one nor two pairs of eyes will be capable of *effectively* scanning all areas around the R/V *Marcus G. Langseth* simultaneously for cetaceans and turtles – that is, if the aim of this measure truly is to attempt to minimize impacts on cetaceans and turtles. There should at least be a sufficient number of qualified, experienced visual observers to simultaneously cover all areas of water within the safety radii on duty during all periods of use of noise-generating seismic survey equipment (including before and during ramp-ups and at all other times of use).

Similarly, the idea that passive acoustic monitoring (PAM) should be used during the day and night “when practicable” (DEA p. 3) again suggests a reluctance to commit to applying these measures to their greatest capability, and a level of leniency that leaves room for almost unlimited exceptions. If L-DEO is serious about carrying out this seismic survey at the risk of harassing more than thirty marine mammal species and intends to attempt to mitigate potential impacts to the (already extremely limited) extent that it can, it should at least be committed to use PAM at all times during the survey, with no exceptions. (The operators’ need for rest, food or other activities can be dealt with by increasing the number of (qualified and experienced) staff on duty and should not be used as a justification for lower effort to detect cetaceans using PAM).

More worrying still is the fact that there appears, once again, to be no restriction against using the seismic survey equipment in the dark or “at night”. Wild at Heart Legal Defense Association, the Eastern Taiwan Strait *Sousa* Technical Advisory Working Group (ETSSTAWG), Humane Society International and other groups and

individuals expressed our concerns on this matter in letters to the National Marine Fisheries Service earlier this year in connection with the L-DEO seismic survey in the waters of southeast Asia, and the same concerns apply to this project; the effectiveness of MMVOs will be severely compromised if not utterly eliminated in the dark. The continuation of seismic survey activity outside of daylight hours severely reduces the already limited possibility of detecting cetaceans in the vicinity, and effectively reduces monitoring efforts to the use of PAM, which will obviously not detect cetaceans when they are not vocalizing and will at certain times only be used “when practicable”. It is strongly recommended that no seismic survey activity be carried out outside of daylight hours during which the entire safety radii are visible.

The suggestion in the DEA that “additional research studies planned on the vessel for 2009 and beyond” should be a major deciding factor in whether the survey can be rescheduled (which was also used as an argument to support night-time surveys for the SE Asia seismic survey) is not considered a scientifically sound or otherwise reasonable justification for reducing already limited impact mitigation measures. Scheduling should be based on the necessary impact mitigation measures, not vice versa.

Our recommendations are as follows:

- The NMFS should actively seek reviews and recommendations for this IHA application by independent cetacean experts familiar with the cetaceans in the region.
- Should the project go ahead, PAM and visual monitoring should be applied simultaneously **at all times** before and during of noise-generating seismic survey equipment (i.e. there should be no exceptions for meal times, rest or other human needs).
- There should be no use of noise-generating seismic survey equipment outside of daylight hours or during any other periods during which visual observation of the entire exclusion zone is not possible.
- The NMFS should consult with experts on cetaceans in the area to establish and demand the appropriate level of manpower to carry out marine mammal visual observation to the extent that the entire exclusion zone is covered at all times before and during the use of noise-generating seismic survey equipment.
- The above recommendations should be applied to all subsequent seismic survey proposals/IHA applications.

- The advice of independent cetacean and other marine wildlife experts should always be sought at the earliest stages of the planning process for such a project.

Please feel free to contact Wild at Heart at any time regarding this matter.

Yours sincerely,

Christina MacFarquhar

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#### References:

Anon. 2009. Review of proposed L-DEO seismic surveys in SE Asia (FR 78294). 30 pp.

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