

### Preliminary Identification of Environmental Issues

A principal objective of the scoping and public input process is to identify potentially significant impacts to the human environment that should be analyzed in depth in the EIS. Council and NMFS staff conducted initial screening to identify potentially significant impacts resulting from the proposed action. These impacts relate to the likelihood that overfished stocks will rebuild and, generally, effects stemming from the need to constrain fishing in order to rebuild overfished groundfish stocks. Impacts to the following components of the biological and physical environment may be evaluated: (1) essential fish habitat and ecosystem; (2) protected species listed under the Endangered Species Act and Marine Mammal Protection Act and their critical habitat; and (3) the fishery management unit, including target and non-target fish stocks, and especially overfished groundfish stocks. Socioeconomic impacts are also considered in terms of the effect changes in projected harvests will have on the following groups of individuals: (1) those who participate in harvesting the fishery resources and other living marine resources; (2) those who process and market fish and fish products; (3) those who are involved in allied support industries; (4) those who consume fish products; (5) those who rely on living marine resources in the management area, either for subsistence needs or for recreational benefits; (6) those who benefit from non-consumptive uses of living marine resources; (7) those involved in managing and monitoring fisheries; and (8) fishing communities.

### Scoping

A public scoping meeting is scheduled for Sunday, November 2, 2003, from 3 p.m. to 5 p.m. This scoping session will coincide with the Council meeting and will occur at the same location, the Hilton San Diego/Del Mar, 15575 Jimmy Durante Blvd., Del Mar, CA 92014-1901 (858-792-5200). The primary purpose of the scoping meeting is to focus the analysis on the real issues and concerns of the public (see 40 CFR 1500.5(d) and 40 CFR 1501.7). Public comment also may be made during the November Council meeting (November 3-7, 2003), under the agenda when the Council will consider the proposed action. The agenda for this meeting will be available from the Council website or by request from Council offices in advance of the meeting (see **ADDRESSES**). The agenda will also identify the room in which the Sunday scoping meeting

will occur. Written comments on the scope of issues and alternatives may be submitted as described under **ADDRESSES**.

NMFS invites comments and suggestions on the scope of the analysis to be included in the environmental impact statement for Amendment 16-3. The scope includes the range of alternatives to be considered and potentially significant impacts to the human environment that should be evaluated in the EIS. In addition, NMFS is notifying the public that, in conjunction with the Council, it is beginning a full environmental analysis and decision-making process for this proposal so that interested or affected people may know how they can participate in the environmental analysis and contribute to the final decision.

A draft environmental impact statement (DEIS) will be prepared for comment later on in the process. The comment period on the DEIS will be 45 days from the date the Environmental Protection Agency's notice of availability appears in the **Federal Register**. It is very important that those interested in this proposed action participate at that time.

To be the most helpful, comments on the DEIS should be as specific as possible. Comments received during the scoping process, including the names and addresses of those who comment, will be considered part of the public record on this proposal and will be available for public inspection.

### Special Accommodations

These meetings are accessible to people with physical disabilities. Requests for sign language interpretation or other auxiliary aids should be directed to Carolyn Porter at 503-820-2280 at least five days prior to the scheduled meeting date.

**Authority:** 16 U.S.C. 1801 *et seq.*

Dated: September 5, 2003.

**Bruce C. Morehead,**

*Acting Director, Office of Sustainable Fisheries, National Marine Fisheries Service.*  
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## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

[I.D. 052803A]

### Taking Marine Mammals Incidental to Specified Activities; Oceanographic Surveys at the Storegga Slide, Norwegian Sea

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Notice of issuance of an incidental harassment authorization.

**SUMMARY:** In accordance with provisions of the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that an Incidental Harassment Authorization (IHA) to take small numbers of marine mammals, by harassment, incidental to conducting oceanographic surveys at the Storegga Slide off the west coast of Norway in the Norwegian Sea has been issued to Lamont-Doherty Earth Observatory (LDEO).

**DATES:** Effective from August 28, 2003, through August 27, 2004.

**ADDRESSES:** The application, a list of references used in this document, and/or the IHA are available by writing to the Acting Chief, Marine Mammal Conservation Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910-3225, or by telephoning the contact listed here.

**FOR FURTHER INFORMATION CONTACT:** Sarah C. Hagedorn, Office of Protected Resources, NMFS, (301) 713-2322, ext 117.

### SUPPLEMENTARY INFORMATION:

#### Background

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce to allow, upon request, the incidental, but not intentional, taking of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

Permission may be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the

availability of the species or stock(s) for subsistence uses and that the permissible methods of taking and requirements pertaining to the monitoring and reporting of such takings are set forth. NMFS has defined "negligible impact" in 50 CFR 216.103 as "...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival."

Subsection 101(a)(5)(D) of the MMPA established an expedited process by which citizens of the United States can apply for an authorization to incidentally take small numbers of marine mammals by harassment. Under Section 3(18)(A), the MMPA defines "harassment" as:

any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.

The term "Level A harassment" means harassment described in subparagraph (A)(i). The term "Level B harassment" means harassment described in subparagraph (A)(ii).

Subsection 101(a)(5)(D) establishes a 45-day time limit for NMFS review of an application followed by a 30-day public notice and comment period on any proposed authorizations for the incidental harassment of marine mammals. Within 45 days of the close of the comment period, NMFS must either issue or deny issuance of the authorization.

### Summary of Request

On April 21, 2003, NMFS received an application from LDEO for the taking, by harassment, of several species of marine mammals incidental to conducting a seismic survey program within the Storegga slide area off the west coast of Norway, in the Norwegian Sea, between 80W and 70E and between 62 and 68N, during late August and September 2003. The Storegga slide was produced by colossal slope failures on the Norwegian continental margin in the late Quaternary period. The purpose of this survey is to determine whether submarine landslides can release methane from hydrate into the oceans and/or atmosphere. More specifically, the survey of the Storegga slide seeks to discover: (1) How much hydrate and free gas is present in the Storegga region and how it is distributed, (2) if methane escaped from the slide, and if so, how much, when and by what mechanisms,

and (3) if hydrate dissociation promotes and/or localizes submarine landslides. A coordinated seismic and coring study of the Storegga slide is proposed to obtain information on these subjects (the coring portion of the project will be completed in 2004). This study will help explain whether methane in gas hydrate reservoirs is mobile and can affect the earth's climate.

### Description of the Activity

The seismic survey will involve a single vessel, the *R/V Maurice Ewing*, which will conduct the seismic work. The *Maurice Ewing* will deploy an array of airguns as an energy source, plus a 6-km (3.2-nm) towed streamer containing hydrophones to receive the returning acoustic signals.

All planned geophysical data acquisition activities will be conducted by LDEO scientists, with the participation of scientists from the University of Wyoming. Water depths within the Storegga slide survey area will range from approximately 100 to 5,000 m (330 to 16,405 ft). The *Maurice Ewing* will initially deploy a 2-General Injector (GI) gun array for several survey lines, and then a 6-airgun array will be employed for several survey lines. Whichever array produces better data will be used for the rest of the cruise. The project will consist of 3,109 km (1,678 n.mi) of survey lines, of which approximately 2,596 km (1,402 n.mi) will be conducted in water depths greater than 1,000 m (3,280 ft), 504 km (272 n.mi) will be surveyed in depths 100–1000 m (330–3,280 ft), and 9 km (4.9 n.mi) will be surveyed in water less than 100 m (330 ft) deep. There will be additional operations associated with equipment testing, startup, line changes, and repeat coverage of any areas where initial data quality is sub-standard.

The procedures to be used for the 2003 seismic survey will be similar to those used during previous seismic surveys by LDEO, e.g., in the equatorial Pacific Ocean (Carbotte et al., 1998, 2000). The proposed program will use conventional seismic methodology with a towed airgun array as the energy source and a towed streamer containing hydrophones as the receiver system. The energy to the airgun array is compressed air supplied by compressors on board the source vessel. In addition, a multi-beam bathymetric sonar will be operated from the source vessel continuously throughout the entire cruise, and a lower-energy sub-bottom profiler will also be operated during most of the survey. Seismic surveys will likely commence on August 28, 2003, and continue until September 25, 2003,

for a total of 29 days of seismic surveying.

The *R/V Maurice Ewing* will be used as the source vessel. It will tow the airgun array (either the 2-GI gun or 6-gun array) and a streamer containing hydrophones along predetermined lines. The vessel will travel at 4–5 knots (7.4–9.3 km/hr), and seismic pulses will be emitted at intervals of approximately 20 seconds. The 20-sec spacing corresponds to a shot interval of about 50 m (164 ft). The 6-gun array will include six 2000 psi 1500C Bolt airguns ranging in chamber volume from 80 to 500 in<sup>3</sup>, with a total volume of 1,350 in<sup>3</sup>. These airguns will be spaced in an approximate rectangle with dimensions 12 m (39.4 ft) (across track) by 10 m (32.8 ft) (along track). The two 105 in<sup>3</sup> GI guns will be towed 7.8 m (25.6 ft) apart side by side and 37 m (121.4 ft) behind the vessel, with a total volume of 210 in<sup>3</sup>.

The dominant frequency components for both airgun arrays is 0 - 188 Hz. The 2-airgun array will have a peak sound source level of 237 dB re 1  $\mu$ Pa or 243 dB peak-to-peak (P-P). The 6-airgun array will have a peak sound source level of 243 dB re 1  $\mu$ Pa or 250 dB P-P. These are the nominal source levels for the sound directed downward, and represent the theoretical source level close to a single point source emitting the same sound as that emitted by the array of 2 or 6 sources. Because the actual source is a distributed sound source (2 or 6 guns) rather than a single point source, the highest sound levels measurable at any location in the water will be less than the nominal source level. Also, because of the downward directional nature of the sound from these airgun arrays, the effective source level for sound propagating in near-horizontal directions will be substantially lower.

Along with the airgun operations, two additional acoustical data acquisition systems will be operated during most or all of the cruise. The ocean floor will be mapped with an Atlas Hydrosweep DS-2 multi-beam 15.5-kHz bathymetric sonar, and a 3.5-kHz sub-bottom profiler will also be operated along with the multi-beam sonar. These mid-frequency sound sources are commonly operated from the *Maurice Ewing* simultaneously with the airgun array.

The Atlas Hydrosweep is mounted in the hull of the *R/V Maurice Ewing*, and it operates in three modes, depending on the water depth. The first mode is when water depth is <400 m (1312.3 ft). The source output is 210 dB re 1 Pa-m rms and a single 1-millisecond pulse or "ping" per second is transmitted, with a beamwidth of 2.67 degrees fore-aft and 90 degrees in beamwidth. The

beamwidth is measured to the 3 dB point, as is usually quoted for sonars. The other two modes are deep-water modes: The Omni mode is identical to the shallow-water mode except that the source output is 220 dB rms. The Omni mode is normally used only during start up. The Rotational Directional Transmission (RDT) mode is normally used during deep-water operation and has a 237 dB rms source output. In the RDT mode, each "ping" consists of five successive transmissions, each ensonifying a beam that extends 2.67 degrees fore-aft and approximately 30 degrees in the cross-track direction. The five successive transmissions (segments) sweep from port to starboard with minor overlap, spanning an overall cross-track angular extent of about 140 degrees, with tiny (<1 millisecond) gaps between the pulses for successive 30-degree segments. The total duration of the "ping", including all 5 successive segments, varies with water depth but is 1 millisecond in water depths <500 m (1640.4 ft) and 10 millisecond in the deepest water.

The sub-bottom profiler is normally operated to provide information about the sedimentary features and bottom topography that is simultaneously being mapped by the Hydrosweep. The energy from the sub-bottom profiler is directed downward by a 3.5-kHz transducer mounted in the hull of the *Maurice Ewing*. The output varies with water depth from 50 watts in shallow water to 800 watts in deep water. Sounds from the sub-bottom profiler are very short pulses, occurring for 1, 2 or 4 msec once every second. Pulse interval is 1 second but a common mode of operation is to broadcast five pulses at 1-s intervals followed by a 5-s pause. Most of the energy in the sound pulses emitted by this multi-beam sonar is at mid-frequencies, centered at 3.5 kHz. The beamwidth is approximately 30° and is directed downward.

Sound levels have not been measured for the sub-bottom profiler used by the *Maurice Ewing*, but Burgess and Lawson (2000) measured the sounds propagating more or less horizontally from a similar unit with similar source output (205 dB re 1  $\mu$ Pa-m). The 160 and 180 dB re 1  $\mu$ Pa (rms) radii, in the horizontal direction, were estimated to be near 20 m (66 ft) and 8 m (26 ft), respectively, from the source, as measured in 13 m (43 ft) water depth. The corresponding distances for an animal in the beam below the transducer would be greater, on the order of 180 m (591 ft) and 18 m (59 ft), assuming spherical spreading.

The sub-bottom profiler on the *Maurice Ewing* has a maximum source level of 204 dB re 1  $\mu$ Pa-m. Thus the

received level would be expected to decrease to 160 and 180 dB at about 160 m (525 ft) and 16 m (52 ft) below the transducer, respectively (assuming spherical spreading). Corresponding distances in the horizontal plane would be lower, given the directionality of this source (30° beamwidth) and the measurements of Burgess and Lawson (2000). Additional information on the airgun arrays, Atlas Hydrosweep, and sub-bottom profiler specifications is contained in the application, which is available upon request (see **ADDRESSES**).

### Comments and Responses

An earlier notice of an LDEO application and proposed IHA was published in the **Federal Register** on April 14, 2003 (68 FR 17909). That notice described, in detail, the characteristics of the *Ewing's* acoustic sources and, in general, the anticipated effects on marine mammals including masking, disturbance, and potential hearing impairment and other physical effects. In addition, another notice of receipt of an LDEO application and proposed IHA was published in the **Federal Register** on July 28, 2003 (68 FR 44291). That notice described in detail the proposed activity and the marine mammal species that may be affected by it. That information is not repeated here. During the 30-day public comment period, comments were received from the Marine Mammal Commission (Commission).

### Monitoring Concerns

*Comment 1:* The Commission believes that NMFS preliminary determinations are reasonable, provided NMFS is satisfied that the proposed mitigation and monitoring activities are adequate to detect marine mammals in the vicinity of the proposed operations and ensure that marine mammals are not being taken in unanticipated ways or numbers. In this regard, NMFS **Federal Register** notice and the application state that "[v]essel-based observers will monitor marine mammals near the seismic source vessel during all daylight airgun operations and during any nighttime startups of the airguns;" and that bridge personnel will watch for marine mammals during nighttime activities but that "[o]bservers will not be on duty during ongoing seismic operations at night. The **Federal Register** notice states that image-intensifier night-vision devices (NFDs) will be available for use at night, although past experience has shown that NFDs are of limited value for this purpose." Thus it is unclear that, for nighttime activities, the monitoring effort will be sufficient to determine that

no marine mammals are within the safety zones at start-up or will be an effective means of detecting when marine mammals enter the safety zones during operations such that activities are suspended before received levels of 180 and 190 dB (rms) are reached.

*Response:* As part of the IHA, NMFS is requiring that if the airguns are started up at night, two marine mammal observers will monitor for marine mammals within the safety radii for 30 minutes prior to start up using night vision devices as described later (see Monitoring and Reporting). Airgun operations will be suspended when marine mammals are observed within or about to enter designated safety zones, and operations will not resume until the animal is outside the safety radius. Once the safety zone is clear of marine mammals, the observer will advise that seismic surveys can re-commence. The "ramp-up" procedure will then be followed. Because the sizes of the two airgun arrays to be used are small, the safety zones are relatively small, and there are no "power-down" procedures, ramp-up may not commence unless the entire safety radii is visible for 30 minutes prior to ramp-up in either daylight or nighttime. The combination of the two conditions ensures, to the greatest extent practicable, that no mammals will be within the appropriate safety zones whenever the airguns are turned on, either in daylight or nighttime.

However, it is noted that at times, pinnipeds and even some small cetaceans will approach a vessel during transmissions (the vessel itself moving forward at about 3–5 knots) from the side of the vessel or the stern, meaning that the animal is voluntarily approaching a noise source that is increasing in strength as the animal gets closer. Experience indicates that pinnipeds will come from great distances to scrutinize seismic-reflection operations. Seals have been observed swimming within airgun bubbles only 10 m (33 ft) away from active arrays. Also, Canadian scientists, who were using a high-frequency seismic system that produced sound frequencies closer to pinniped hearing than those used by the *Ewing*, describe how seals frequently approached close to the seismic source, presumably out of curiosity. Therefore, because at least pinnipeds indicated no adverse behavioral reaction to seismic noise, NMFS has concluded that the above-mentioned mitigation requirement is reasonable because the bridge-watch will be concentrating on marine mammals approaching the vessel from the bow. Also, the night-vision ability of

the trained bridge-watch staff will be better than observers elsewhere on the vessel where normal ship-board lighting is more likely. Finally, an observer is still required to be on standby, meaning he or she will be in the vicinity of the bridge and is not precluded from conducting observations during nighttime.

*Comment 2:* The Commission notes that there is no discussion on why nighttime operations are considered necessary.

*Response:* The daily cost to the Federal government to operate the Ewing is approximately \$33,000-\$35,000/day (Ljunngren, pers. comm. May 28, 2003), or approximately \$1,050,000 for this 30-day research cruise. If the Ewing is prohibited from operating during nighttime, the 30-day trip would require an additional 3–5 days, or up to \$105,000–175,000 more, depending upon average daylight at the time of the work.

Therefore, because NMFS has determined that the safety zone must be visible during ramp-up, and because once the Ewing is underway and ramp-up completed, mammals will have sufficient notice of a vessel approaching (at least one hour) to avoid the approaching array if the sounds are annoying, NMFS determined that it is neither practical nor necessary to limit seismic operations to daylight hours since marine mammals are unlikely to be injured.

*Comment 3:* The Commission notes that it is unclear whether vessel-based passive acoustic monitoring will be conducted as an adjunct to visual monitoring during daytime and particularly during nighttime operations to detect, locate, and identify marine mammals, and, if not, why not.

*Response:* The passive acoustical monitoring equipment that was used onboard the Ewing during the 2003 Gulf of Mexico (GOM) Sperm Whale Seismic Study (SWSS), is not the property of LDEO or the Ewing, and therefore is not available for the Norwegian Sea cruise. LDEO is presently evaluating the scientific results of the passive sonar from the SWSS trip to determine whether it is practical to incorporate it into future seismic research cruises. NMFS expects a report on this analysis shortly.

*Comment 4:* The Commission asks whether conducting monitoring for at least 30 minutes prior to the planned start of airgun operations during the day and at night is sufficient, particularly for detecting the presence of species that make long dives.

*Response:* NMFS believes it is unnecessary to lengthen this period

considering that the ramp-up period will increase SPLs at a rate no greater than 6 dB per 5–minutes for a total ramp-up duration of approximately 14 min for the 6 gun array. Also, while some whale species may dive for up to 45 minutes, it is unlikely that the ship's bridge watch would miss a large whale surfacing from its previous dive if it is within a mile or two of the vessel.

*Comment 5:* The Commission notes that there are several species of beaked whales in the Norwegian Sea, and states that “although the link between the Gulf of California strandings and the seismic (plus multi-beam sonar) survey is inconclusive, this....suggests a need for caution in conducting seismic surveys in areas occupied by beaked whales.” The Service's **Federal Register** notice, however, makes no reference to or requirement for any additional caution with respect to beaked whales.

*Response:* While NMFS shares the Commission's concern regarding the possible relationship between low-frequency seismic survey transmissions and the beaked whale strandings in the Gulf of California, NMFS believes that additional factors probably also influence whether beaked whales will be affected in ways other than possibly vacating the immediate vicinity of the noise similar to other marine mammal species. For example, beaked whales in the Gulf of Mexico have been exposed to seismic noise for several decades but mass stranding events similar to the 2000 event in the Bahamas do not appear in the stranding record. However, NMFS welcomes recommendations regarding additional practical mitigation measures to protect beaked whales from anthropogenic sounds. A notice of receipt of an LDEO application and proposed IHA was published in the **Federal Register** on July 28, 2003 (68 FR 44291).

#### Mitigation

For the seismic operations in the Storegga slide area, LDEO will use 2 GI guns with a total volume of 210 in<sup>3</sup> and/or a 6-gun array with a total volume of 1350 in<sup>3</sup>. The airguns comprising these arrays will be spread out horizontally, so that the energy from the arrays will be directed mostly downward. The directional nature of the airgun arrays to be used in this project is an important mitigating factor, resulting in lower sound levels at any given horizontal distance than would be expected at that distance if the source were omnidirectional with the stated nominal source level. Because the actual seismic source is a distributed sound source (2 or 6 guns) rather than a single point source, the highest sound levels

measurable at any location in the water will be less than the nominal source level.

#### Safety Radii

Modeled results for the 2- and 6-gun arrays indicate received levels to the 180-dB re 1  $\mu$ Pa (rms) isopleth (the level for the potential for Level A harassment applicable to cetaceans) were estimated as 50 and 220 m (164 and 722 ft), respectively. The radii around the 2- and 6-gun arrays where the received level would be 190 dB re 1  $\mu$ Pa (rms), (the level for the potential for Level A harassment applicable to pinnipeds), were estimated as 15 and 50 m (49 and 164 ft), respectively. A calibration study was conducted prior this survey to determine the actual radii corresponding to each sound level. These actual radii will be implemented for this study. Until then, or if those measurements appear defective, LDEO will use a precautionary 1.5 times the 180-dB (cetaceans) and 190-dB (pinnipeds) radii predicted by the model as the safety radii. Under those circumstances, the safety radii for cetaceans are 75 and 330 m (246 and 1,083 ft), respectively, for the 2-GI gun and 6-gun arrays, and the proposed safety radii for pinnipeds are 23 and 75 m (75 and 246 ft), respectively.

#### Shutdown Procedures

Vessel-based observers will monitor marine mammals near the seismic vessel during daylight and for at least 30 minutes prior to start up during darkness throughout the program. Airgun operations will be suspended immediately when marine mammals are observed within, or about to enter, designated safety zones. The shutdown procedure should be accomplished within several seconds or a single seismic ping of the determination that a marine mammal is within or about to enter the safety zone.

#### Power-down Procedures

Vessel-based observers will monitor marine mammals near the seismic vessel during daylight and for 30 minutes prior to start up during darkness throughout the program. The same procedures for shut-down will be followed in the case that marine mammals are seen within, or about to enter, designated safety zones.

#### Ramp-up Procedure

A standard “ramp-up” (soft start) procedure will be followed when the airgun arrays begin operating after a period without any airgun operations as specified in this paragraph. From shut-down, ramp-up will begin with the

smallest gun in the 6-gun array (80 in3), and guns will be added in a sequence such that the source level of the array will increase in steps not exceeding 6 dB per 5-minute period over a total duration of approximately 14 min. Under normal operational conditions (vessel speed 4–5 knots), a ramp-up will be required after a “no shooting” period lasting 2 minutes or longer. At 4 knots, the source vessel would travel 247 m (810 ft) during a 2-minute period. If the towing speed is reduced to 3 knots or less, as sometimes required when maneuvering in shallow water, ramp-up will be required after a “no shooting” period lasting 3 minutes or longer. At towing speeds not exceeding 3 knots, the source vessel would travel no more than 277 m (909 ft) in 3 minutes. These guidelines would require modification if the normal shot interval were more than 2 or 3 min, but that is not expected to occur during the Storegga slide cruise. During the ramp-up procedures, the safety zone for the full gun array will be maintained. Ramp-up will not occur for the 2-GI gun array, since the total air discharge volume for this array is small (210 in3).

#### *Course Alteration*

If a marine mammal is detected outside the safety radius and, based on its position and relative motion, is likely to enter the safety radius, alternative ship tracks will be plotted against anticipated mammal locations. The vessel's direct course and/or speed will be changed in a manner that also minimizes the effect to the planned science objectives. The marine mammal activities and movements relative to the seismic vessel will be closely monitored to ensure that the marine mammal does not approach within the safety radius. If the mammal appears likely to enter the safety radius, further mitigative actions will be taken, i.e., either further course alterations or shutdown of the airguns. The Ewing is required to adopt this mitigation measure during the Norwegian Sea seismic survey program provided that doing so will not compromise operational safety requirements.

#### **Marine Mammal Monitoring**

LDEO will conduct marine mammal monitoring during its seismic program in the Norwegian Sea in order to verify that the taking of marine mammals, by harassment, incidental to conducting the seismic survey will have a negligible impact on marine mammal stocks and to ensure that these harassment takings are at the lowest level practicable. Up to three vessel-based observers will be stationed on the *R/V Maurice Ewing*

during seismic operations in the Storegga slide area. Vessel-based observers will monitor for marine mammals near the seismic source vessel for at least 30 minutes prior to and during all daylight ramp-up and airgun operations, and for at least 30 minutes before and during any nighttime startups of the airguns. At least one experienced marine mammal observer will be on duty aboard the seismic vessel, as well as a fisheries expert (as likely required by the Norwegian Petroleum Directorate (2003)) and possibly one qualified contract biologist. Observers (appointed by LDEO) will complete a training/refresher course on marine mammal monitoring procedures, given by a contract employee experienced in vessel-based seismic monitoring projects. The *Ewing* is a suitable platform for marine mammal observations. The observer's eye level will be approximately 11 m (36 ft) above sea level when stationed on the bridge (the highest practical vantage point on the vessel), allowing for good visibility within a 210° arc for each observer. Airgun operations will be suspended when marine mammals are observed within, or about to enter, designated safety zones. The observer(s) will continue to maintain watch to determine when the animal is outside the safety radius. Airgun operations will not resume until the animal is outside the safety radius. Once the safety zone is clear of marine mammals, the observer will advise that seismic surveys can re-commence. The “ramp-up” procedure will then be followed.

Observers will be on duty in shifts of duration no longer than 4 hours. Use of two simultaneous observers whenever possible will decrease the potential that marine mammals near the source vessel will be missed. Bridge personnel will also assist in detecting marine mammals and implementing mitigation requirements, and before the start of the seismic survey will be given proper instruction for observing and reporting marine mammals and sea turtles.

Observers will not normally be on duty during ongoing seismic operations at night; bridge personnel will watch for marine mammals during this period and will immediately call for the airguns to be shut-down or powered-down if marine mammals are observed in or about to enter the safety radii. A marine mammal observer will be on “standby” at night, in case bridge personnel see a marine mammal. If the airguns are started up at night, two marine mammal observers will monitor for marine mammals near the source vessel for 30 minutes prior to start up using night-vision devices. An image-intensifier

night-vision device (NVD) will be available for use at night, although NMFS notes that past experience has shown that NVDs are of limited value for this purpose. If the complete safety radii are not visible for at least 30 minutes prior to ramp-up in either daylight or nighttime, ramp-up may not commence unless the seismic source has maintained an SPL of at least 180 dB during the interruption of seismic survey operations.

The observer(s) will systematically scan the area around the vessel with 7 X 50 Fujinon reticle binoculars or with the naked eye during the daytime. At night, night vision equipment will be available (ITT F500 Series Generation 3 binocular image intensifier or equivalent). Laser rangefinding binoculars (Bushnell Lytespeed 800 laser rangefinder with 4 optics or equivalent) will be available to assist with distance estimation.

The vessel-based monitoring will provide data required to estimate the numbers of marine mammals exposed to various received sound levels, to document any apparent disturbance reactions, and thus to estimate the numbers of mammals potentially taken by Level B harassment. It will also provide the information needed in order to shut down the airguns at times when mammals are present in or near the safety zones. Results from the vessel-based observations will provide (1) the basis for real-time mitigation (airgun power-down); (2) information needed to estimate the number of marine mammals potentially taken by harassment, which must be reported to NMFS; (3) data on the occurrence, distribution, and activities of marine mammals in the area where the seismic study is conducted; (4) information to compare the distance and distribution of marine mammals relative to the source vessel at times with and without seismic activity; and (5) data on the behavior and movement patterns of marine mammals seen at times with and without seismic activity.

#### *Reporting*

When a marine mammal sighting is made, the following information about the sighting will be recorded: (1) Species, group size, age/size/sex categories (if determinable), behavior when first sighted and after initial sighting, heading (if consistent), bearing and distance from seismic vessel, sighting cue, apparent reaction to seismic vessel (e.g., none, avoidance, approach, paralleling, etc.), and behavioral pace; and (2) time, location, heading, speed, activity of the vessel (shooting or not), sea state, visibility,

cloud cover, and sun glare. The data listed under (2) will also be recorded at the start and end of each observation watch and during a watch, whenever there is a change in one or more of the variables.

All mammal observations and airgun shutdowns will be recorded in a standardized format. Data will be entered into a custom database using a laptop computer when observers are off-duty. The accuracy of the data entry will be verified by computerized validity data checks as the data are entered and by subsequent manual checking of the database. These procedures will allow initial summaries of data to be prepared during and shortly after the field program, and will facilitate transfer of the data to statistical, graphical or other programs for further processing and archiving.

A draft report will be submitted to NMFS within 90 days after the end of the seismic program in the Storegga slide area. The end of the Storegga slide program is predicted to occur on or about September 25, 2003. The report will cover the seismic surveys in the Storegga slide area and will be submitted to NMFS, providing full documentation of methods, results, and interpretation pertaining to all monitoring tasks. The report will summarize the dates and locations of seismic operations, sound measurement data, marine mammal sightings (dates, times, locations, activities, associated seismic survey activities), and estimates of the amount and nature of potential "take" of marine mammals by harassment or in other ways. The draft report will be considered the final report unless comments and suggestions are provided by NMFS within 60 days of its receipt of the draft report.

#### **Estimates of Take by Harassment for the Norwegian Sea Cruise**

As described previously (see 68 FR 17909, April 14, 2003) and in the LDEO application, animals subjected to sound levels  $\geq 160$  dB may alter their behavior or distribution, and therefore might be considered to be taken by Level B harassment.

Based on summer marine mammal density survey data collected by Sigurjonsson and Gunnlaugsson (1989), LDEO used its best estimate of density to compute a best estimate of the number of marine mammals that may be exposed to seismic sounds  $\geq 160$  dB re 1  $\mu$ Pa (rms) (NMFS' current criterion for onset of Level B harassment), except for bottlenose whales. Northern bottlenose whales are migratory and most leave the proposed seismic survey area before the end of June (Benjaminsen 1972;

Sigurjonsson and Gunnlaugsson 1990). Therefore, only a few, if any, bottlenose whales may be seen during the seismic survey in the study area during late August to September. For bottlenose whales, LDEO used 0.10x the observed average or maximum density to calculate the numbers that might be exposed to seismic sounds, but even this reduced number is likely a high estimate. For all other species, the average densities were then multiplied by the proposed survey effort (3109 km or 1678 n.mi) and twice the 160-dB safety radius around the 6-gun array to estimate the "best estimate" of the numbers of animals that might be exposed to sound levels  $\geq 160$  dB re 1  $\mu$ Pa (rms) during the proposed seismic survey program.

The estimates of takes by harassment are based on the number of marine mammals that might be found within the 160 dB isopleth radius and potentially disturbed by operations with the 6-airgun array planned for the project. If the 2-GI gun array is used for all or part of the survey, the numbers of marine mammals that might be affected by the proposed seismic survey would be lower than the estimates described below. The 160-dB radius for the 2-GI gun array is 520 m (1706 ft) or 19 percent of that of the 6-gun array. If only the 2-GI gun array is used, the numbers of animals that would encounter airgun sounds  $\geq 160$  dB re 1 (rms) would be about one-fifth of the number if only the 6-gun array were used.

Based on this method, Table 3 in LDEO (2003) gives the best estimates of densities for each species or species group of marine mammal that might be exposed to received levels  $>160$  dB re 1  $\mu$ Pa (rms), and thus potentially taken by Level B harassment, during seismic surveys in the proposed study area of the Norwegian Sea. Of these, 86 animals would be endangered species, primarily fin (42), humpback (22), and sperm whales (18). Delphinidae would account for 75 percent of the overall estimate for potential taking by harassment, with white-beaked dolphins (298) believed to account for about 90 percent of all delphinids in the area of the proposed seismic survey, and with killer whales (137) and long-finned pilot whales (302) accounting for most of the remaining 10 percent.

#### **Conclusions**

##### *Effects on Cetaceans*

Strong avoidance reactions by several species of mysticetes to seismic vessels have been observed at ranges up to 6 to 8 km (3.2 to 4.3 nm) and occasionally

as far as 20–30 km (10.8–16.2 nm) from the source vessel. Some bowhead whales avoided waters within 30 km (16.2 nm) of the seismic operation. However, reactions at such long distances appear to be atypical of other species of mysticetes, and even for bowheads may only apply during migration.

Odontocete reactions to seismic pulses, or at least those of dolphins, are expected to extend to lesser distances than are those of mysticetes. Odontocete low-frequency hearing is less sensitive than that of mysticetes, and dolphins are often seen from seismic vessels. In fact, there are documented instances of dolphins approaching active seismic vessels. However, dolphins as well as some other types of odontocetes sometimes show avoidance responses and/or other changes in behavior when near operating seismic vessels.

Taking account of the mitigation measures that are planned, effects on cetaceans are generally expected to be limited to avoidance of the area around the seismic operation and short-term changes in behavior, falling within the MMPA definition of "Level B harassment." In the cases of mysticetes, these reactions are expected to involve small numbers of individual cetaceans because few mysticetes occur in the area where seismic surveys are proposed. LDEO's best estimate is that 42 fin whales, or 0.5 percent of the estimated fin whale population in and adjacent to the study area, will be exposed to sound levels  $\leq 160$  dB re 1  $\mu$ Pa (rms) and potentially affected. Similarly, 22 humpback whales, or 0.8 percent, and 18 sperm whales, or 0.2 percent of their populations that occur in and adjacent to the proposed survey area, would receive seismic sounds  $>160$  dB. Numbers and impact would be even smaller if the 2-GI gun array is used for a substantial fraction of the survey project.

Larger absolute numbers of odontocetes may be affected by the proposed activities, but the population sizes of the main species are large and the numbers potentially affected are small relative to the population sizes. The best estimate of the total number of odontocetes that might be exposed to  $\geq 160$  dB re 1  $\mu$ Pa (rms) in the proposed survey area in the Norwegian Sea is 878. Of these, 770 are Delphinidae, and of these about 200 might be exposed to  $\geq 170$  dB. These figures are  $<0.1$  percent of the populations of these combined species that occur in the Northeast Atlantic. These potential takings of small numbers of marine mammals by short-term Level B harassment will have

a negligible impact on the affected species or stocks of cetaceans.

#### *Effects on Pinnipeds*

Very few if any pinnipeds are expected to be encountered during the proposed seismic survey in the Norwegian Sea. A maximum of 70 pinnipeds in the Storegga slide area may be affected by the proposed seismic surveys. If pinnipeds are encountered, the proposed seismic activities would have, at most, a short-term effect on their behavior and no long-term impacts on individual seals or their populations. Responses of pinnipeds to acoustic disturbance are variable, but usually quite limited. Effects are expected to be limited to short-term and localized behavioral changes falling within the MMPA definition of Level B harassment. These effects would have no more than a negligible impact on the affected species or stocks of pinnipeds.

#### **Determinations**

Based on the information contained in the LDEO application, the NSF EA, the July 28, 2003, proposed authorization notice (68 FR 44291) and this document, NMFS has determined that conducting a seismic survey by the *Ewing* at the Storegga Slide in the Norwegian Sea in the fall of 2003 by LDEO would result in the harassment of small numbers of marine mammals; would have no more than a negligible impact on the affected marine mammal species or stocks; and would not have an unmitigable adverse impact on the availability of stocks for subsistence uses. This activity will result, at worst, in a temporary modification in behavior by affected species of marine mammals. While behavioral modifications may be made by these species as a result of seismic survey activities, this behavioral change is expected to result in no more than a negligible impact on the affected species. Also, while the number of actual incidental harassment takes will depend on the distribution and abundance of marine mammals in the vicinity of the survey activity, the number of potential harassment takings is estimated to be small. In addition, no take by injury and/or death is anticipated, and the potential for temporary or permanent hearing impairment is low and will be avoided through the incorporation of the mitigation measures mentioned in this document and required under the IHA. For these reasons therefore, NMFS has determined that the requirements of section 101(a)(5)(D) of the MMPA have been met and the authorization can be issued.

#### **Endangered Species Act**

NMFS has concluded consultation under section 7 of the ESA on NMFS' issuance of an IHA to take small numbers of marine mammals, by harassment, incidental to conducting an oceanographic seismic survey in the Norwegian Sea by LDEO. The consultation concluded with a biological opinion that this action is not likely to jeopardize the continued existence of marine species listed as threatened or endangered under the ESA. No critical habitat has been designated for these species in the equatorial Pacific Ocean; therefore, none will be affected. A conservation recommendation was made to ensure that the safety zone is clear of sea turtles prior to ramp up. This recommendation has been implemented through the IHA to LDEO. A copy of the Biological Opinion is available upon request (see ADDRESSES).

#### **National Environmental Policy Act (NEPA)**

On May 1, 2003, the NSF made a determination, based on information contained within its EA that implementation of the subject action is not a major Federal action having significant effects on the environment within the meaning of Executive Order 12114. NSF determined therefore, that an environmental impact statement would not be prepared. On July 28, 2003 (68 FR 44291), NMFS noted that the NSF had prepared an EA for the Norwegian Sea survey and that this EA was available upon request. In accordance with NOAA Administrative Order 216-6 (Environmental Review Procedures for Implementing the National Environmental Policy Act, May 20, 1999), NMFS has reviewed the information contained in NSF's EA and determined that the NSF EA accurately and completely describes the proposed action alternative, reasonable additional alternatives, and the potential impacts on marine mammals, endangered species, and other marine life that could be impacted by the preferred alternative and the other alternatives. As a result, NMFS has determined that it is not necessary to issue either a new EA, supplemental EA or an environmental impact statement for the issuance of an IHA to LDEO for this activity. Therefore, based on this review and analysis, NMFS is adopting the NSF EA under 40 CFR 1506.3. A copy of the NSF EA for this activity is available upon request (see ADDRESSES).

#### **Authorization**

NMFS has issued an IHA to take small numbers of marine mammals, by harassment, incidental to conducting a seismic survey by the *Ewing* at the Storegga Slide in the Norwegian Sea to LDEO for a 1-year period, provided the mitigation, monitoring, and reporting requirements described in this document and the IHA are undertaken.

Dated: August 28, 2003.

**Laurie K. Allen,**

*Acting Director, Office of Protected Resources,  
National Marine Fisheries Service.*

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#### **DEPARTMENT OF COMMERCE**

#### **National Oceanic and Atmospheric Administration**

**[I.D. 090503A]**

#### **Endangered Species; File No. 1429**

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce

**ACTION:** Receipt of application for modification

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**SUMMARY:** Notice is hereby given that the Southeast Fisheries Science Center, National Marine Fisheries Service, 75 Virginia Beach, Miami, FL 33149, has requested a modification to scientific research Permit No. 1429.

**DATES:** Written or telefaxed comments must be received on or before October 14, 2003.

**ADDRESSES:** The modification request and related documents are available for review upon written request or by appointment in the following office(s): Permits, Conservation and Education Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Room 13705, Silver Spring, MD 20910; phone (301)713-2289; fax (301)713-0376; and Southeast Region, NMFS, 9721 Executive Center Drive North, St. Petersburg, FL 33702-2432; phone (727)570-5301; fax (727)570-5320.

Written comments or requests for a public hearing on this request should be submitted to the Chief, Permits, Conservation and Education Division, F/PR1, Office of Protected Resources, NMFS, 1315 East-West Highway, Room 13705, Silver Spring, MD 20910. Those individuals requesting a hearing should set forth the specific reasons why a hearing on this particular modification request would be appropriate.

Comments may also be submitted by facsimile at (301)713-0376, provided