comply with the regulations and terms of an APO is a violation which is subject to sanction.

We are issuing and publishing these amended final results in accordance with sections 751(h)of the Act and 19 C.F.R. § 351.224.

Dated: September 17, 2004.

James J. Jochum,

Assistant Secretary for Import Administration.

[FR Doc. 04–21840 Filed 9–28–04; 8:45 am]

BILLING CODE 3510–DS–S

DEPARTMENT OF COMMERCE

National Institute of Standards and Technology

Announcement of a Public Meeting on U.S. Technical Participation in the 12th Quadrennial Conference of the International Organization of Legal Metrology (OIML)

AGENCY: National Institute of Standards and Technology, Commerce.

ACTION: Meeting announcement and request for comments.

SUMMARY: The National Institute of Standards and Technology (NIST) will hold a public meeting to discuss U.S. technical participation in the 12th Quadrennial Conference of the International Organization of Legal Metrology (OIML). This pre-conference public meeting is open to all interested parties.

The principal focus will be on 20 OIML Recommendations on legal measuring instruments that will be presented for ratification by the Conference. These Recommendations and OIML-member nations' technical comments on them will be reviewed with interested parties who will be given an opportunity to present their views on the Recommendations and other relevant issues related to the Conference.

Participants with an expressed interest in particular topics may obtain copies of the OIML Conference technical agenda, including copies of the Recommendations to be ratified. Interested parties wishing to schedule an oral presentation at the pre-conference meeting should provide a written summary of comments to the NIST International Legal Metrology Group no later than 5 October 2004. Written comments from parties unable to attend the pre-conference public meeting are welcome at any time.

DATES: Pre-conference meeting at the National Institute of Standards and Technology: Tuesday, 12 October 2004 from 10 a.m. to 12 noon; Twelfth OIML International Conference of Legal Metrology in Berlin, Germany 24–29 October 2004.

ADDRESSES: Pre-conference meeting: National Institute of Standards and Technology (NIST North), Conference Room 152, 820 West Diamond Avenue, Gaithersburg, MD; International Conference: main venue is the Federal Ministry of Economics and Labor Conference Center in Berlin, Germany.

FOR FURTHER INFORMATION CONTACT: Mr. Ralph Richter, International Legal Metrology Group, Weights and Measures Division, National Institute of Standards and Technology, Gaithersburg, MD 20899–2600; telephone: (301) 975–4025; fax: (301) 926–0647; e-mail: *ralph.richter@nist.gov.*

SUPPLEMENTARY INFORMATION: The International Organization of Legal Metrology (OIML) is an intergovernmental treaty organization in which the United States and 59 other nations are members. Its principal purpose is to harmonize national laws and regulations pertaining to testing and verifying the performance of legal measuring instruments used for equity in commerce, for public and worker health and safety, and for monitoring and protecting the environment. The harmonized results promote the international trade of measuring instruments and products affected by measurement.

Twenty Recommendations will be presented for ratification by the Conference in the following two categories: (1) Those already approved by the International Committee of Legal Metrology (CIML) between 2001 and 2003; and (2) those that are expected to be submitted directly to the Conference for ratification. These Recommendations and the OIML-member nations holding the responsible secretariat for their development are listed below:

Category 1

R16 ''Non-invasive Sphygmomanometers. Part 1: Mechanical; Part 2: Automated'' (revision) (Austria);

R48 ''Tungsten ribbon lamps for calibration of radiation thermometers.'' (revision) (Russia);

R49–2 and R49–3 ''Water meters intended for metering cold potable water. Part 2: Test methods. Part 3: Test report format.'' (new documents) (UK);

R52 ''Hexagonal weights, ordinary accuracy class from 100 g to 50 kg.'' (revision) (US);

R61–1 and R61–2 ''Automatic gravimetric filling instruments, Part 1: Metrological and technical requirements—Tests.'' (revision) ''Part 2: Test report format.'' (new document) (UK);

R75–1 and R75–2 ''Heat meters. Part 1: General requirements. Part 2: Pattern approval and initial verification tests.'' (revision) (Germany);

R84 ''Platinum, copper and nickel resistance thermometers (for industrial use).'' (revision) (Russia)

R87 ''Net content in packages.'' (revision) (US);

R99 ''Instruments for measuring vehicle exhaust emissions (joint publication with ISO 3930).'' (amendment to document) (Netherlands);

R133 ''Liquid-in-glass thermometers.'' (new document) (US);

R134 ''Automatic instruments for weighing road vehicles in motion. Part A—Total vehicle weighing.'' (new document) (UK);

R135 ''Spectrophotometers for medical laboratories.'' (new document) (Germany)

Category 2

R51–1 and R51–2 ''Automatic catchweighing instruments. Part 1: Metrological requirements—Tests.'' (revision) ''Part 2: Test report format.'' (new document) (UK)

R111–1 and R111–2 ''Weights of classes E_1, E_2, F_1, F_2, M_1, M_{1-2}, M_2, M_{2-3}, and M_3. Part 1: Metrological and Technical Requirements. Part 2: Test Report Format.'' (revision) (US);

Draft Recommendation ''Instruments for measuring the areas of leathers. Part 1: Metrological requirements—Tests.'' (new document) (UK)

Dated: September 23, 2004.

Hratch G. Semerjian,

Acting Director.

[FR Doc. 04–21761 Filed 9–28–04; 8:45 am]

BILLING CODE 3510–13–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 051704A]

Small Takes of Marine Mammals Incidental to Specified Activities; Marine Seismic Survey in the Gulf of Alaska, Northeastern Pacific Ocean

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 seismic surveys in the Gulf of Alaska (GOA) has been issued to Lamont-Doherty Earth Observatory (L-DEO).

DATES: Effective from August 30, 2004 through August 29, 2005.

ADDRESSES: The application and authorization are available by writing to Steve Leathery, Chief, Permits, Conservation and Education Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910–3225, by telephoning the contact listed here and are also available at: *http://www.nmfs.noaa.gov/prot_res/PR2/Small_Take/smalltake_info.htm#applications.*

FOR FURTHER INFORMATION CONTACT: Kenneth Hollingshead, Office of Protected Resources, NMFS, (301) 713–2055, ext 128.

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.''

Section 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. Except for certain categories of activities not pertinent here, 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 [Level A harassment]; 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 [Level B harassment].

Section 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 19, 2004, NMFS received an application from L-DEO for the taking, by harassment, of several species of marine mammals incidental to conducting a seismic survey program during a four-week period within a general time window from late July to October 2004. The purpose of the seismic survey is to locate sedimentary records of environmental change in the GOA, including Holocene climate variability, anthropogenic warming and glacier melting of the past century, and dynamics of erosion and deposition associated with glaciation. This research has important implications for understanding long-term variability of North Pacific ecosystems, with relevance towards managing fisheries, marine mammals and other species. Geophysical site survey and safety information will be used to optimally locate coring sites and to understand regional sedimentation patterns. The marine paleoclimatic record in this region has received relatively little study because very few suitable sediment cores have been taken. Nevertheless, enough basic knowledge of fjord sedimentation processes exists to support a strategy of targeting deep-silled basins of fjords with adequate connections to the open ocean, as well as shelf and slope sediments in the open ocean. Fjord basins likely contain a rich array of biogenic and sedimentologic evidence for regional climate change. Regions of turbidite sedimentation (i.e., coarse sediments transported down-slope in turbidity currents) will be documented using shipboard geophysical sensing and sedimentological proxies in recovered sediments and will be avoided during coring. However, if some isolated turbidites are present, this may present an opportunity to examine seismically triggered events that provide useful synchronous stratigraphic markers.

Description of the Activity

The proposed seismic survey will involve one vessel, the *R/V Maurice Ewing* (*Ewing*). The *Ewing* will deploy a pair of low-energy Generator-Injector (GI) airguns as an energy source (each with a discharge volume of 105 in^3). The energy to the airguns will be compressed air supplied by compressors on board the source vessel. Seismic pulses will be emitted at intervals of 6–10 seconds. This spacing corresponds to a shot interval of approximately 16–26 m (52–85 ft). The *Ewing* will also tow a hydrophone streamer that is up to 1500 m (4922 ft) long. As the airguns are operated along the survey lines, the hydrophone receiving system will receive and record the returning acoustic signals. In constrained fjord settings, only part of the streamer may be deployed, or a shorter streamer may be used, to increase the maneuverability of the ship.

The program will consist of approximately 1779 km (960 nm) of surveys, not including transits. Water depths within the seismic survey area are approximately 30 3000 m (98 9843 ft). There will be additional operations associated with airgun testing, start-up, line changes, and repeat coverage of any areas where initial data quality is sub-standard.

The GOA research will consist of four different stages of seismic surveys interspersed with coring operations in 4 general areas. The 4 different stages are outlined here in the order that they are currently planned to take place. Transit time between areas and between lines is not included in the estimates of survey time below, because the seismic source will not be operating during transits.

Stage 1–Prince of Wales Island. During this stage, 4 short seismic surveys will be completed in conjunction with 4 coring sites that will be sampled. Each of the 4 surveys, including seismic lines and coring, will take 9–14 hr and cover 17.7- 45.3 nm (32.9–83.8 km), for a total of 229 km (124 nm). All lines will be conducted in water depths less than 100 m (328 ft). A total of 13 lines will be shot around the 4 coring stations. Stage 1 will take approximately 50 hr of survey time over approximately 3 days to complete.

Stage 2–Baranof Island. During this stage, five short seismic surveys will be completed in conjunction with 6 coring sites that will be sampled. Each of the 5 surveys, including seismic lines and coring, will take approximately 6–17 hr and cover 4.1–54.5 nm (7.6–101.0 km), for a total of 109 km (59 nm) of which 25 km (13.5 nm) will be conducted in waters less than 100 m (328 ft) deep and 84 km (45 nm) will be in waters from 100 to 1000 m (328–3281 ft) deep. Stage 2 will take approximately 45 hr of survey time over approximately 4.5 days to complete.

Stage 3–Juneau (Southeast Alaska Inland Waters). During Stage 3, 3 short seismic surveys will be completed in conjunction with four coring sites that will be sampled. Each survey, including seismic lines and coring, will take approximately 8–21 hr and will cover 15.1–104.1 nm (27.7–192.9 km), for a total of 249 km (134 nm) conducted in water 100 m (328 ft) to 1000 m (3281 ft) deep. Stage 3 will take approximately 38 hr of survey time over 2.5 days to complete.

Stage 4–Glacier Bay, Yakutat Bay, Icy Bay, Prince William Sound, and GOA During Stage 4, 14 seismic surveys will be conducted in conjunction with 16 coring sites that will be sampled. Surveys during Stage 4, including seismic lines and coring, will range in length from 5.3 - 111.2 nm (9.8–205.9 km), for a total of 1192 km (644 nm) of which 382 km (206 nm) will be conducted in waters less than 100 m (328 ft) deep, 453 km (245 nm) will be in waters from 100 to 1000 m (328 -3281 ft) deep and 357 km (187 nm) will be in waters deeper than 1000 m (3281 ft). Stage 4 will take approximately 72 hrs of survey time over approximately 13 days to complete.

In the event that one or more of the planned sites are unavailable due to poor weather conditions, ice conditions, unsuitable geology (shallow sediments), or other reasons, contingency sites (alternative seismic survey and coring locations) will be substituted. Alternative research sites (see Fig. 6 in the L-DEO application) will only be undertaken by L-DEO as replacements for the planned sites, and their use will not substantially change the total length or duration of the proposed seismic surveys. Seismic survey lines have not been selected or plotted by L-DEO for some contingency core sites. However, L-DEO anticipates that each contingency core site would require approximately 40 km (22 nm) of seismic surveying to locate optimal coring locations. It is highly unlikely that all contingency sites will be used. To the extent that contingency sites are used, a similar number of ''primary'' sites will be dropped from the project.

General-Injector Airguns

Two GI-airguns will be used from the *Ewing* during the proposed program. These 2 GI-airguns have a zero to peak (peak) source output of 237 dB re 1 microPascal-m (7.2 bar-m) and a peak-to-peak (pk-pk) level of 243 dB (14.0 bar-m). However, these downward-directed source levels do not represent actual sound levels that can be measured at any location in the water. Rather, they represent the level that would be found 1 m (3.3 ft) from a hypothetical point source emitting the same total amount of sound as is emitted by the combined airguns in the array. The actual received level at any location in the water near the airguns will not exceed the source level of the strongest individual source. In this case, that will be about 231 dB re 1 microPa-m peak, or 237 dB re 1 microPa-m pk-pk. Actual levels experienced by any organism more than 1 m (3.3 ft) from either GI gun will be significantly lower.

Further, the root mean square (rms) received levels that are used by biologists as impact criteria for marine mammals (see Richardson et al., 1995) are not directly comparable to these peak or pk-pk values that are normally used by acousticians to characterize source levels of airgun arrays. The measurement units used to describe airgun sources, peak or pk-pk decibels, are always higher than the rms decibels referred to in biological literature. For example, a measured received level of 160 decibels rms in the far field would typically correspond to a peak measurement of about 170 to 172 dB, and to a pk-pk measurement of about 176 to 178 decibels, as measured for the same pulse received at the same location (Greene, 1997; McCauley et al. 1998, 2000). The precise difference between rms and peak or pk-pk values depends on the frequency, content, and duration of the pulse, among other factors. However, the rms level is always lower than the peak or pk-pk level for an airgun-type source.

The depth at which the sources are towed has a major impact on the maximum near-field output, because the energy output is constrained by ambient pressure. The normal tow depth of the sources to be used in this project is 3 m (9.8 ft), where the ambient pressure is 3 decibars. This also limits output, as the 3 decibars of confining pressure cannot fully constrain the source output, with the result that there is loss of energy at the sea surface. Additional discussion of the characteristics of airgun pulses was provided in the notice of proposed authorization to L-DEO for this activity (see 69 FR 34996, June 23, 2004) and is not repeated here. Reviewers are encouraged to read this earlier document for additional information.

For the 2 GI-airguns, the sound pressure field has been modeled by L-DEO in relation to distance and direction from the airguns, and in relation to depth. Table 1 shows the maximum distances from the airguns where sound levels of 190-, 180-, 170- and 160–dB re 1 microPa (rms) are predicted to be received. Empirical data concerning the 180, 170 and 160 dB distances have been acquired based on measurements during an acoustic verification study conducted by L-DEO in the northern Gulf of Mexico from 27 May to 3 June 2003 (Tolstoy et al., 2004). Although the results are limited, the data showed that radii around the airguns where the received level would be 180 dB re 1 microPa (rms), NMFS' current injury threshold safety criterion applicable to cetaceans (NMFS, 2000), varies with water depth. Similar depth-related variation is likely in both the 190–dB distances applicable to pinnipeds and the 160–dB distance where NMFS' criteria consider Level B (behavioral harassment) to occur. The proposed L-DEO study area will occur in water approximately 30 3000 m (98 9843 ft).

The empirical data indicate that, for deep water (>1000 m (3281 ft)), the L-DEO model tends to overestimate the received sound levels at a given distance (Tolstoy et al., 2004). However, to be precautionary pending acquisition of additional empirical data, safety radii during airgun operations in deep water will be the values predicted by L DEO's model (see Table 1). The 180- and 190–dB radii were not measured for the 2 GI-airguns operating in shallow water (<100 m (328 ft)). However, the measured 180 dB radius for the 6–airgun array operating in shallow water was 6.8x that predicted by L-DEO's model for operation of the 6–airgun array in deep water. This conservative correction factor is, therefore, applied to the model estimates to predict the radii for the 2 GI guns in shallow water. Empirical measurements were not conducted for intermediate depths (100–1000 m (328–3281 ft)). On the expectation that results will be intermediate between those from shallow and deep water, a 1.5x correction factor is applied to the estimates provided by the model for deep water situations. This is the same factor that was applied to the model estimates during L-DEO cruises in 2003.

TABLE 1. ESTIMATED DISTANCES TO WHICH SOUND LEVELS ≥190, 180, 170 AND 160 DB RE 1 μPA (RMS) MIGHT BE RECEIVED FROM TWO 105 IN^3 GI GUNS THAT WILL BE USED DURING THE SEISMIC SURVEY IN THE GOA DURING 2004. DISTANCE ESTIMATES ARE GIVEN FOR OPERATIONS IN DEEP, INTERMEDIATE, AND SHALLOW WATER. THE 180- AND 190-DB DISTANCES ARE THE SAFETY RADII TO BE USED DURING THE SURVEY.

Water depth	Estimated Distances at Received Levels (m)			
	190 dB	180 dB	170 dB	160 dB
>1000 m	17	54	175	510
100-1000 m	26	81	263	765
<100 m	250	400	750	1500

Bathymetric Sonar, Sub-bottom Profiler, and Pinger

In addition to the 2 GI-airguns, a multibeam bathymetric sonar and a low-energy 3.5–kHz sub-bottom profiler will be used during the seismic profiling and continuously when underway. While on station for coring, a 12–kHz pinger will be used to monitor the depth of coring devices relative to the sea floor.

Bathymetric Sonar-Atlas Hydrosweep- The 15.5–kHz Atlas Hydrosweep sonar is mounted on the hull of the *Ewing*, and operates in three modes, depending on the water depth. There is one shallow-water mode and two deep-water modes: an Omni mode (similar to the shallow-water mode but with a source output of 220 dB (rms)) and a Rotational Directional Transmission (RDT) mode. The 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 less than 3 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 small (much less than 1 millisec) gaps between the pulses for successive 30–degree segments. The total duration of the ''ping'' including all five successive segments, varies with water depth, but is 1 millisec in water depths less than 500 m (1640.5 ft) and 10 millisec in the deepest water. For each segment, ping duration is ⅕ of these values or ⅖ for a receiver in the overlap area ensonified by two beam segments. The ''ping'' interval during RDT operations depends on water depth and varies from once per second in less than 500 m (1640.5 ft) water depth to once per 15 seconds in the deepest water. During the proposed project, the Atlas Hydrosweep is planned to be used in waters greater than 800 m (2624.7 ft), but whenever water depths are less than 400 m (1312 ft) the source output is 210 dB re 1 microPa-m (rms) and a single 1–ms pulse or ''ping'' per second is transmitted.

Bathymetric Sonar-EM1002 Portable Sonar - The EM1002 is a compact high-resolution multibeam echo sounder that operates at a frequency of 92 to 98 kHz in water depths from 10 to 800 m (33 2625 ft). The EM1002 will be used instead of the Atlas Hydrosweep in waters less than 800 m (2625 ft) deep. The EM1002 will be pole mounted on the *Ewing*, either over the side of the vessel or through a well inside the ship. The system operates with one of three different pulselengths: 0.2, 0.7 and 2 ms. Pulselength increases with increased water depth. Overall angular coverage of the transmitted beam is 3 degrees along the fore-aft axis and 150 degrees (7.4 times the water depth) along the cross-track axis when operating in the shallowest mode. Maximum ping rate is 10/sec (in shallow water) with the ping rate decreasing with increasing water depth. Maximum output using long pulses in 800 m (2624.7 ft) water depth is 226 dB re 1 microPa, although operations in shallower depths, including most of the work in these surveys, will use significantly lower output levels.

Sub-bottom Profilers - The sub-bottom profiler is normally operated to provide information about the sedimentary features and the bottom topography that is simultaneously being mapped by the Hydrosweep. The energy from the EDO Corporation's (EDO) sub-bottom profiler is directed downward by a 3.5–kHz transducer mounted in the hull of the *Ewing*. The output varies with water depth from 50 watts (W) in shallow water to 800 W in deep water. Pulse interval is 1 second (s) but a common mode of operation is to broadcast five pulses at 1–s intervals followed by a 5–s pause. The beamwidth is approximately 30° and is directed downward. Maximum source output level is 204 dB re 1 microPa (rms) (800 W) and a nominal source output is 200 dB re 1 microPa (500 W). Pulse duration will be 4, 2, or 1 ms, and the bandwith of pulses will be 1.0 kHz, 0.5 kHz, or 0.25 kHz, respectively.

An ODEC Bathy 2000P ''chirp'' sonar may be used instead of the EDO sub-bottom profiler. This sonar transmits a 50–ms pulse during which the frequency is swept from 4 to 7 kHz. The transmission rate is variable from 1 to 10 seconds, and the maximum output power is 2 kW. This sonar uses a transducer array very similar to that used by the 3.5 kHz sub-bottom profiler.

Although the sound levels have not been measured directly for the sub-bottom profilers used by the *Ewing*, Burgess and Lawson (2000) measured sounds propagating more or less horizontally from a sub-bottom profiler similar to the EDO unit with similar source output (i.e., 205 dB re 1 microPa m). For that profiler, the 160 and 180 dB re 1 microPa (rms) radii in the horizontal direction were estimated to be, respectively, near 20 m (66 ft) and 8 m (26 ft) 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) respectively, assuming spherical spreading. Thus the received level for the EDO sub-bottom profiler would be expected to decrease to 160 and 180 dB 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 (300 beamwidth) and the measurements of Burgess and Lawson (2000).

12 kHz Pinger - A 12–kHz pinger will be used only during coring operations, to monitor the depth of the coring apparatus relative to the sea floor. The pinger is a battery-powered acoustic beacon that is attached to a wire just above the corehead. The pinger produces an omnidirectional 12 kHz signal with a source output of 193 dB re 1 microPa-m. The pinger produces a 2–ms pulse every second.

Comments and Responses

A notice of receipt and request for 30–day public comment on the application and proposed authorization was published on June 23, 2004 (69 FR 34996). During the 30–day public comment period, comments were received from the Center for Biological Diversity (CBD).

Marine Mammal Concerns

Comment 1: The CBD believes NMFS has not demonstrated that the LDEO project will take only small numbers of marine mammals.

Response: NMFS believes that the small numbers requirement has been satisfied. The U.S. District Court for the Northern District of California held in *NRDC* v. *Evans* that NMFS' regulatory definition of ''small numbers'' improperly conflates it with the ''negligible impact'' definition. Even if that is the case, in the proposed IHA notice and in this document, NMFS has made a separate determination that the takes of the affected marine mammal species will be small. The species most likely to be harassed during the seismic survey is the Dall's porpoise, with a ''best estimate'' of 3354 animals being exposed to sound levels of 160 dB or greater. Although it may be argued that the absolute number of Dall's porpoise behavioral harassment numbers may not be small, it is relatively small, representing less than 1 percent of the regional population of that species. Moreover, this does not mean that 3354 Dall's porpoises will be taken by Level B harassment. Dall's porpoise have their best hearing at high frequencies, not the low frequencies used by seismic and may not even hear seismic sounds. If in fact, some Dall's porpoise cannot hear the low-frequency seismic sounds, then no taking of this species will occur. Finally, we note that during this project, only the humpback whale stock exceeds 1 percent of its stock being potentially subject to Level B harassment with a best estimate of about 67 animals being exposed to low-frequency noise.

Comment 2: The CBD believes that the proposed authorization and L-DEO application neglect to provide sufficient analysis of the additional impacts to marine mammals resulting from the project's nearshore and inland location.

Response: NMFS believes that the L-DEO application and the National Science Foundation's (NSF) Environmental Assessment (EA) provide the necessary information and analyses needed for NMFS to make a determination on whether or not the proposed incidental harassment takings will be small and have no more than a negligible impact on marine mammals. These documents provide detailed analyses on the impacts on the affected marine mammal species including when they are in the nearshore environment and calculate conservative estimates for sound source ranges due to sound attenuation rates for the seismic source in shallow water.

The LDEO application describes how seismic sounds can be received in the ocean. This is important for estimating impacts. Seismic sound received at any given point will arrive via a direct path, indirect paths that include reflection form the sea surface and bottom, and often indirect paths including segments through the bottom sediments. Sound propagating via indirect paths travel longer distances and often arrive later than sounds arriving via a direct path. These variations in travel time have the effect of lengthening the duration of the received pulse, reducing the potential for impacting marine mammals.

As mentioned in the L-DEO application, received levels of low-frequency underwater sounds diminish close to the surface because of pressure-release and interference phenomena that occur at and near the surface (Urick, 1983; Richardson et al., 1995). Paired measurements of received airgun sounds at depths of 3 m (9.8 ft) vs 9 m (29.5 ft) or 18 m (59 ft) have shown that received levels are typically several decibels lower at 3 m (Greene and Richardson, 1988). This results in lowered SPLs at the surface than at depth, essentially providing protection for surface-inhabiting marine species. However, when establishing 180–dB and 190–dB safety zones, NMFS and L-DEO calculated safety zones by using the greatest 180/190 dB SPL distance at depth from the source. This results in higher (more conservative) estimates of take since most marine mammals, such as the dolphins, are expected to be in the near-surface zone of the ocean most of the time.

During a 2003 study in the northern Gulf of Mexico, LDEO obtained measurements of received sound levels as a function of distance from LDEO's airgun arrays. The calibration measurements indicate that received levels in shallow water (30 m) diminish less rapidly, as noted previously in this document. This is what would be expected in inland waters and has been taken into consideration when establishing conservative safety zones to protect marine mammals from injury. Further discussion on this subject will be presented in response to comment (RTC) 9 later in this document.

Comment 3: The CBD believes that NMFS' analyses of small numbers and negligible impact are flawed, because NMFS uses ''North Pacific Ocean'' to define the geographical limits of the ''regional'' populations that form the basis of its analyses instead of providing an analysis of impacts on stocks or more localized populations that overlap with the project area. The CBD believes that the appropriate geographic scale should be populations and stocks inhabiting the survey area and not the entire North Pacific.

Response: NMFS agrees that impacts should be assessed on the population or stock unit whenever possible. L-DEO's application (see especially Table 3) provides information on stock abundance in Alaska (when available) and larger water bodies (such as the North Pacific Ocean). The data source for each stock estimate is provided. NMFS believes that these data are the best scientific information available for estimating impacts on marine mammal species and stocks. However, information on marine mammal stock abundance may not always be satisfactory. When information is lacking to define a particular population or stock of marine mammals then impacts are assessed with respect to the species as a whole (54 FR 40338, September 29, 1989).

Comment 4: The CBD believes that the appropriate geographical scale is particularly critical for species, such as the Northern Resident, Gulf of Alaska Transient, and the ''depleted'' AT1 stocks of the killer whale. NMFS does not even mention the impacts of the proposed authorization on these stocks of killer whales in the proposed authorization, rendering the analysis wholly useless. The take of even one killer whale from these stocks will have more than a negligible impact on the stock and the species.

Response: Information on the killer whale stocks was provided on pages 20 and 21 of the L-DEO application and in NMFS' proposed authorization (see 69 FR 34996 (June 23, 2004) especially Table 2). It was not separated out for additional discussion in NMFS' notice since, as noted later, the killer whale is less likely to be impacted than most other species and, therefore, did not warrant additional analysis. For clarification in calculating killer whale density, L-DEO used the survey data of Waite (2003). This estimate is based on eight killer whale sightings during 2242 km (1210.6 nm) of survey effort. In calculating density an allowance is given for prorating some unidentified animals to killer whales based on the ratio of identified animals of the same grouping, which includes small whales or any less precise grouping which

includes small whales, such as unidentified whale. The final density in the table of 0.0136/sq km has been adjusted upward from the raw density of 0.0125 based on only the 8 killer whale sightings.

Referencing Agliss and Lodge (2002), L-DEO notes that the best scientific information currently available indicates that the minimum population size of killer whales in Alaskan waters is 1069, which includes minimum population (P_{min}) estimates of 723 Eastern North Pacific (ENP) Resident and 346 ENP Transient killer whales. A P_{min} estimate is considered to be conservative. On June 3, 2004 (69 FR 31321), NMFS published a final rule designating the AT1 killer whale group as a depleted stock under the MMPA. This group currently has 9 or fewer whales and was part of the ENP Transient stock prior to this designation.

Since there is insufficient information to indicate which of these stocks, if any, might be within the relatively small impact area at the same time the *Ewing* is conducting seismic, the proper method is either to combine these population stock estimates or divide the estimated incidents of harassment between the current three stocks. Since this species is unlikely to be in the vicinity of the *Ewing* at the time seismic is operating (L-DEO, 2004), and is highly visible to observers, no killer whales will be injured or killed (i.e., no removals from the species or stock) as a result of the *Ewing's* seismic operations. Therefore, the only potential taking might be by Level B harassment. As indicated in Table 2 in this document, L-DEO estimates that approximately 42 killer whales might be within the 160–dB (rms) isopleth and, therefore, presumed to be harassed. This is 0.2 percent of the regional killer whale population. If subdivided according to stock size, NMFS estimates that about 28 ENP Resident, 13 ENP Transient and significantly less than 1 AT1 animal would be within the 160 dB isopleth. Moreover, since the killer whale's optimum hearing range is not in the low frequency used by seismic sources, this number should not be interpreted as the number being ''taken'' by Level B harassment, only the number that might be exposed to that noise. Therefore, NMFS does not believe that the effect of any taking will be more than negligible.

Comment 5: The CBD states, furthermore, that while some 16 other pods inhabit or visit SE Alaskan waters and Prince William Sound, they are not formally recognized as ''stocks.'' Scientifically many of these pods warrant recognition as such and must be analyzed under both the MMPA and the National Environmental Policy Act (NEPA).

Response: L-DEO has used the best scientific information available regarding killer whale stock structure (and the stock structure for other species). For killer whales and other species, NMFS and L-DEO used stock structure information provided in Angliss and Lodge (2002) and other documents referenced in the L-DEO application and NSF EA. Since the CBD has not provided additional information that indicates this information is invalid, NMFS must base its determinations on this information.

Comment 6: The CBD states that the proposed authorization notice neglects to explain how the population estimates provided in L-DEO's application and NSF's EA correspond to populations or stocks or how L-DEO/NMFS use this information for take estimates. For example, the application and EA estimate the SE Alaskan population of humpback whales to be 404 individuals. However, the proposed authorization states that 67 individuals will be exposed to sound levels greater than 160 dB, which it concludes represents only 1.1 percent of the ''regional population.'' However, 67 individuals represents 17 percent of the SE Alaskan population, which is the proper geographic scope of the take analysis.

Response: L-DEO clearly states that it uses the ''regional population estimates'' that are given in Table 3 of the EA and corresponding table of the IHA application, not the ''local population estimates'' which CBD suggests are ''the appropriate numbers to use''. In some cases, L-DEO/NSF can sum the estimates for specific stocks but in most cases there is no specific stock information for the survey area. In situations where there is specific information for the survey area there is rarely information for all adjacent survey areas. Including this point, there are a several additional points that apply to most L-DEO projects.

1. The stocks (local populations) considered by NMFS for management purposes (involving lethal takes or removals from the population by commercial fishing or other activities) often do not include all of the animals that inhabit that area over the year, or even during the same season or year. Local stock estimates frequently include only the animals that are present at the time of a particular marine mammal survey and thus substantially underestimate the number that use the area over a longer time period. For example, the Oregon stock of Pacific white-sided dolphins (see 69 FR 31792, June 7, 2004) includes animals that can be found in California at one time of year and perhaps British Columbia or SE Alaska at another time, and the number of different animals that are found in Oregon waters over the year is many times the number that occur there at any one time. Thus, in most cases, estimates of stock size for local populations are minimum estimates with no realistic estimate of the upper bound of the population size.

2. For many species there is a great deal of year-to-year movement by marine mammals to take advantage of resources. Animals that normally inhabit one area are not restricted to that area. When, for example, food is scarce in an area animals will temporarily move into other areas to take advantage of abundant food in those areas. Definitions of local stocks do not consider this flexibility.

3. Telemetry and photo-id studies reveal that there is interchange between what are considered to be discrete stocks. There are many examples of between-stock movements of humpback and southern right whales. Most recently large numbers of right whales seen off of southern Brazil appear to be immigrants from Peninsula Vades, Argentina (Groch et al., 2004), which until recently was thought to be a separate stock. Local stocks are thus overly conservative and a low estimate of the populations that use an area. While these estimates may be warranted when considering limits on lethal takes, in order to ensure that populations continue to grow, they are overly conservative when considering effects of behavioral disturbance, which are not expected to have any demographic consequences to the populations.

Therefore, in SE Alaska, NMFS and L-DEO believe there are no good ''local'' population estimates for any cetacean species in SE Alaska, perhaps with the exception of harbor porpoises and Pacific white-sided dolphins. The surveys that provided the density estimates (Waite, 2003) were conducted in the GOA (which is only partially relevant to SE Alaska) and only a few surveys of harbor porpoises and Pacific white-sided dolphins have actually been conduced in SE Alaska.

In regard to the humpback whale, although there are estimated to be greater than 6000 humpback whales in the North Pacific, only about 1200 are accounted for by estimates of numbers in the feeding areas because all surveys of summering areas are incomplete. Thus Straley et al.'s (1995) estimate of the 404 humpbacks using SE Alaska waters is some unknown fraction of the total number there. Therefore, NMFS

and L-DEO believe that, until more complete data are obtained, the North Pacific humpback whale estimate is the best data available for use here.

Comment 7: The CBD states that surveys should be conducted prior to authorizing the IHA for those species for which the Alaskan marine mammal populations are not known, asserting that any analysis of small numbers and negligible impact cannot be conducted independently of this more detailed information.

Response: NMFS disagrees. As noted previously, when information is unavailable on a local population size, NMFS uses either stock or species information on abundance. Since NMFS uses the best information that is available, estimating impacts on marine mammals in this manner is appropriate. Therefore, additional surveys are unnecessary.

Comment 8: CBD states that there is insufficient disclosure of the compounded impact of the 2 GI-airgun array's seismic output along with the other data acquisition systems, the bathymetric sonar, sub-bottom profiler and pinger. Despite the fact that the sonar and pinger will be operating continuously during the voyage, NMFS assumes there will be no additional take from the sonar, profiler, and pinger individually or from all three sources collectively. Therefore, NMFS must address instances when all sources may not be operating simultaneously and also provide a substantiated explanation why it assumes there is no enhanced impact of multiple acoustic sources operating together.

Response: This information is provided in detail in the L-DEO application and NSF EA. The multibeam sonars and sub-bottom profilers have anticipated radii of influence significantly less than that for the airgun array. NMFS has stated previously that marine mammals close enough to be affected by the multibeam sonar or sub-bottom profiler would already be affected by the airguns when they are both working. Since NMFS considers all marine mammals to be affected equally by underwater sound and does not determine which species are low-frequency hearing specialists and therefore more affected by seismic (a low-frequency source) and which species are mid- or high-frequency specialists and therefore more likely to be affected by the sonars, NMFS does not consider it is necessary to conduct an analysis on the enhancement of effects for animals that might be affected by these sonars. In other words, the acoustic source with the largest zone of influence is used to determine incidental take levels.

Also, estimates of incidental take by harassment for times when the multibeam sonar and/or sub-bottom profiler are operated without airguns are not necessary because the 160–dB and 180–dB isopleths of the sub-bottom profiler and multibeam are either too small or the acoustic beams are very narrow, making the duration of the exposure and the potential for taking marine mammals by harassment small to non-existent. As provided in the L-DEO application, the 160–dB and 180–dB radii in the horizontal direction for the sub-bottom profiler are estimated to be near 20 m (66 ft) and 8 m (26 ft), respectively. In the vertical direction, the 160–dB and 180–dB radii are 160 m (525 ft) and 16 m (52 ft) directly below the hull-mounted transducer. With the *Ewing's* beam at 14.1 m (46.25 ft) little noise is, therefore, likely to exist at the water surface beyond the immediate vicinity of the *Ewing* from this hull-mounted sonar. As a result, it is unlikely that marine mammals would be affected by sub-bottom profiler signals whether operating alone or in conjunction with other acoustic devices since the animals would need to be swimming immediately adjacent to the vessel or directly under the vessel. This is unlikely to occur during the *Ewing* cruise since the vessel is likely to be in transit mode when not coring or towing seismic, and will therefore be traveling at about 10–11 knots (18.5–20.4 km/hr) at the time.

For the Hydrosweep there is minimal horizontal propagation, as these signals project downward and obliquely to the side at angles up to approximately 70 degrees from the vertical, but not horizontally. For the deep-water mode, under the *Ewing* these 160- and 180–dB zones are estimated to extend to 3200 m (10500 ft) and 610 m (2000 ft), respectively. However, the beam width of the Hydrosweep signal is only 2.67 degrees fore and aft of the moving vessel, meaning that a marine mammal diving (not on the surface) could receive at most 1 to 2 signals from the Hydrosweep. Also, because NMFS treats behavioral harassment or injury from pulsed sound as a function of total energy received, the actual harassment or injury threshold for Hydrosweep signals (approximately 10 millisec in duration) would be at a much higher dB level than that for longer duration pulses such as seismic or military sonar signals. As a result, NMFS believes that marine mammals are unlikely to be harassed or injured from the multibeam sonar or the Hydrosweep sonar due to the short duration and only 1 to 2 pulses received. In addition, at 95–kHz, the sounds from the EM1002 bathymetric sonar would not even be audible to pinnipeds and baleen whales.

Finally, the 12–kHz pinger has a weak signal compared to other acoustic sources (at 193 dB its signal is weaker than even most off-the-shelf commercial (e.g., fish-finder) sonars used by recreational and commercial boaters) and will be used only when on-station for coring to monitor the depth of the apparatus relative to the sea floor. Therefore, the 12–kHz pinger is unlikely to be used in conjunction with other acoustic devices. Since the vessel is stationary at the time of coring, a marine mammal would need to approach the *Ewing* on its own and essentially swim under the vessel to be exposed to sound levels greater than 160 dB. As a result, NMFS does not believe that incidental takings will occur from this acoustic device.

Mitigation Concerns

Comment 9: The CBD believes that NMFS' discussion of measures to ensure the least practicable impact is lacking. For example, NMFS provides no analysis of why larger safety radii were not practicable or why additional correction factors were not provided for nearshore and inland water locations of the seismic activities and the possible enhanced impacts these locations could produce.

Response: Safety zones were established and are monitored closely to ensure, to the greatest extent practicable, that no marine mammals would be injured by the proposed activity. While extending safety zones to reduce Level B behavioral harassment would, in theory, result in reducing ''takes'' further, monitoring larger safety zones results in lower effort directed to the area of greatest concern, the area for potential injury. This lower effort might result in missed animals. For that reason, NMFS has determined that safety zones should be established and monitoring at 180 dB for cetaceans and 190 dB (rms) for pinnipeds.

Additional correction factors for calculating safety zones are necessary based on attenuation due to water depth, not because of distance to shore (although in most cases the two are related). Underwater seismic sounds are subject to spherical spreading to a distance approximately 1.5 times water depth. This is essentially what occurred in the Gulf of Mexico seismic study (see RTC 2 in this document). These additional correction factors were applied for L-DEO seismic activities taking place in water depths less than 1000 m (3281 ft) as described elsewhere

in this document. However, NMFS has some concerns regarding propagation in very shallow water and has determined that for water depths less than 100 m (328 ft), L-DEO will establish a safety zone at 170 dB as shown in Table 1.

Comment 10: The CBD states that NMFS has not provided an acceptable justification for allowing L-DEO to abandon use of passive acoustic monitoring (PAM). They assert that despite any alleged limitations of PAM on their voyage, it still constitutes a meaningful mitigation measure that is necessary to ensure least practicable impacts to marine mammals and this must be required.

Response: It must be noted that the 180–dB safety radius for the 2–GI airgun array is 54 m (177 ft) in deep water, 81 m (266 ft) in intermediate-depth waters; the 170–dB safety zone in shallow water is 750 m (2461 ft). Because of the relatively small safety zones in intermediate and deep water, locating vocalizing marine mammals to determine presence within the safety zone is not possible. Also, while detecting vocalizing marine mammals to determine presence simply alerts observers to their presence and does not initiate shutdown because the PAM cannot determine distance to the vocalizing animal, at these short distances and slow vessel speed, a trained marine mammal observer should not have difficulty locating them visually without the PAM. Of the 1776 km (959 nm) of seismic lines for this survey, the major portion (1143 km (617 nm)) will be in intermediate or deep water where the safety zones are small. In shallow water, where the safety zone will be larger, the PAM has proven inefficient due to signal propagation loss and reflection characteristics in shallow water. For these reasons, NMFS is not requiring L-DEO to use the PAM during the GOA research program.

Comment 11: The CBD states that NMFS' analysis of mitigation measures to ensure least practicable impact is flawed because the notice fails to require dedicated observers at night.

Response: Unlike most seismic surveys, the GOA work will involve about 29 separate surveys with each one followed by 9–14 hours of coring operations and transit times to the next coring/seismic station. These periods will allow the observers onboard the *Ewing* to rest and/or sleep. However, for this operation NMFS is also requiring use of either the *Ewing* during its return to the coring site or its small boat during coring (if safety concerns can be met) to look for marine mammals on the vessel track. This will require one observer to be available during the coring operation, but leave two observers time to rest. In addition, to the maximum extent possible, NMFS is requiring seismic work to be conducted during daytime when in the fjords so night-time seismic work will be very limited (essentially to those times when darkness arrives at the end of a seismic leg). Therefore, due to the shortness of each seismic leg, for this research cruise observers will be available to conduct night-time observations when working in offshore waters and crew members will only assist the observers.

Comment 12: The CBD states that there is no discussion or consideration of additional monitoring or mitigation measures, such as aerial surveys during operations to search for animals that may be affected, as well as to search nearby remote beaches for possible stranded animals. Without requiring such additonal measures, or at a minimum discussing why they are not practical, NMFS cannot lawfully issue the requested authorization.

Response: Prior to issuing an IHA, NMFS thoroughly investigates all measures that might be practical to reduce the incidental taking of marine mammals by an activity to the lowest level practicable. Some of these mitigation measures were summarized in RTC 11. Additional mitigation measures are discussed later in this document (see Mitigation). Mitigation measures, such as aerial overflights or support vessels to look for marine mammals prior to an animal entering a safety zone, are generally given consideration if the safety zone cannot be adequately monitored from the source vessel. Additional consideration must be given, however, to aircraft/vessel availability and access to nearby airfields and aircraft flight duration. There are serious safety issues regarding aircraft flights over water that must be considered prior to requiring aerial overflights. Additional consideration must be given to the potential for aircraft to also result in Level B harassment since a plane or helicopter would need to fly at low altitudes to be effective. Because the safety zones for this proposed activity are small and can be easily monitored from the *Ewing*, use of aircraft for mitigation purposes is not warranted.

If aircraft are not necessary or feasible to monitor a safety zone, then one needs to see if aircraft might be needed to monitor shorelines (presumably for strandings related to the activity). NMFS has carefully weighed the suggestion of aerial monitoring of beaches and shorelines for standings and has determined that for this GOA survey, using the *Ewing's* small boat or the *Ewing* itself would be more effective in locating marine mammals in and near the *Ewing's* track than would an aircraft. An aircraft would be seriously constrained by altitude and a lack of ability to determine whether the mammal had been affected by seismic or was a natural stranding. That the stranding is related to the activity requires verification and verification can only be done in this area by a vessel or a land-based team. Verification is important because marine mammal stranding is a phenomenon that precedes the introduction of anthropogenic noises into the oceans and the vast majority of all strandings world-wide are unrelated to anthropogenic noise. Considering the topography, inaccessibility of the shoreline and the short-duration of each coring leg, a land-based team is not practical, leaving only the *Ewing* or its boat for verification. This is the alternative chosen by NMFS.

Endangered Species Act (ESA) Concerns

Comment 13: The CBD states that L-DEO's proposed project may affect 9 species listed as endangered under the ESA. As a result, consultation under section 7 of the ESA must occur prior to authorization of the project. NMFS has not yet complied with its (ESA) duties, and thus may not issue a small take authorization for the LDEO project.

Response: NMFS has completed consultation under section 7 of the ESA for both NMFS and the U.S. Fish and Wildlife Service (FWS) species. The biological opinion resulting from that consultation concluded that this action is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.

NEPA Concerns

Comment 14: The CBD believes that the EA is insufficient and that an Environmental Impact Statement(EIS) is required. The CBD states that NSF and NMFS have never prepared a comprehensive EIS that fully analyzes the environmental impacts of its seismic surveys, either individually or collectively, as well as provide the public with the critical opportunity to participate in the decision making process as required by NEPA for actions of this magnitude. The CBD believes that NMFS must prepare an EIS prior to approving this project.

Response: NMFS disagrees. In its review of NSF's EA for this action and previous L-DEO actions that were analyzed under individual EAs, NMFS has determined that the proposed L-DEO actions are dispersed

geographically (Bermuda, Norway, Mid-Atlantic, Gulf of Mexico, Caribbean Sea, Eastern Pacific) and/or time-wise (Hess Deep, 2003 and Blanco Fracture, 2004). As a result, there are no cumulative effects because there are no removals from any marine mammal population, Level B harassment would only affect widely disbursed marine mammal populations and those affects would not impact animals at the population level and, therefore, would be negligible. Also, NMFS announced the availability of this NSF EA on June 23, 2004 (69 FR 34996), as it does all NSF EAs.

Comment 15: Prior to approving this project, NMFS must prepare an EIS. An EIS is required if ''substantial questions are raised as to whether a project...may cause significant degradation of some human environmental factor.'' (*Idaho Sporting Congress* v. *Thomas*, 137 F.3d 1146, 1149–50 (9th Circ. 1998) citing *Greenpeace Action* v. *Franklin*, 14 F.3d 1146, 1149–1150 (9th Cir. 1998). The CBD states that one need not show that significant effects will in fact occur; rather, raising substantial questions whether a project may have a significant environmental effect is sufficient. In this case, an EIS is required because substantial questions have been raised as to each of the factors found in 40 CFR 1508.27(b)), a few of which are discussed in greater detail (see RTCs 16–20).

Response: NMFS believes that the NSF EA provides an in-depth discussion on aspects of the impacts of seismic and sonar sounds on marine life, particularly marine mammals and sea turtles. For example, it discusses and analyzes impacts on, and the relationship between, military sonar and marine mammal strandings, in addition to the potential interaction between marine mammals and seismic operations. In conclusion, and as shown in the RTCs that follow, NMFS has determined that this project, as described in the NSF EA, does not raise substantial issues requiring an EIS.

Comment 16: The CBD states it cannot be disputed that there are ''uncertain impacts or unknown risks'' associated with this project and other similar seismic surveys and geophysical activities undertaken by L-DEO and NSF and authorized by NMFS. There exist large data gaps regarding the impacts of acoustics on marine life. Given the many stranding events that have been linked to underwater acoustics, including the melon-headed whale stranding near Hanalei Bay, Hawaii, a more detailed analysis in the form of a full EIS is more than warranted.

Response: While NMFS agrees that there are some unknown risks and uncertain impacts associated with this project for which NMFS has implemented precautionary mitigation measures, the major issue is in regard to the biological mechanism that is causing some strandings related to sound to occur. Also, it is recognized by many scientists that there are data gaps because of the difficulty of obtaining data in a humane manner from many of the species for which we do not have data. In those cases, surrogate species are used and conservative measures taken to ensure that injury or mortality to these animals does not occur. This current state of knowledge has been fully described in the NSF EA and no additional information or analyses would be available for use in an EIS. Finally, NMFS would like to clarify that the melon-headed whale stranding near Hanalei Bay was not caused by seismic survey work.

Comment 17: The CBD states there is significant controversy over the impacts of underwater seismic activity on the environment. For example, there are extremely divergent views on how substantial a change in behavior or activity is required before an animal should be deemed to be harassed or impacted, what received sound levels can be considered ''safe,'' what mitigation measures are effective, and, in general, how to proceed in the face of existing scientific uncertainty on these and other issues.

Response: These issues relate more to interpretation and application of the MMPA than to impacts on the human environment; in this case, principally impacts on marine mammals. While organizations such as the National Research Council recommend other interpretations, as detailed in the L-DEO application and the NSF EA, calculations for Level B harassment used here are based upon conservative assumptions of distance from the source for impact and do not make a distinction as to whether the harassment is biologically significant. Since the majority of the marine mammal species likely to be impacted by this action are pinnipeds or members of the Delphinidae family, which have their best hearing at frequencies much greater than the predominant seismic frequencies, establishing a Level B harassment at 160 dB is considered conservative. Also, while there is currently a debate as to what mitigation measures are effective, it should be noted that in the L-DEO application, estimates of take (mortality, injury, or harassment) are made without consideration that mitigation is effective. There is also no significant controversy over whether or not to issue incidental take authorizations in the face of scientific uncertainty. While some members of the public recommend NMFS deny almost all authorizations under section 101(a)(5) of the MMPA, NMFS is charged to determine whether takings should be allowed based upon the best scientific information currently available. When some portion of that information is unavailable, NMFS proceeds in a precautionary manner ensuring that such takings are small, negligible and at the lowest level practicable.

Finally, it should be understood that NMFS and other federal agencies have issued EAs in the past for seismic activities, such as in Southern California (NMFS, 1997), the Beaufort Sea (NMFS, 1998, 1999) and the Gulf of Mexico (Minerals Management Service, 2004). All these documents used similar criteria for determining impacts to marine mammals from seismic sources.

Comment 18: The CBD states that L-DEO, NSF, and numerous private seismic vessels may have as yet unanalyzed cumulatively significant effects on the environment. Cumulative impacts include the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future significant actions. While NSF identifies fishing, shipping and vessel noise, hunting, and marine tourism as cumulative effects on the environment, it only provides a general description of each activity and never analyzes their individual or combined impact on the marine environment. It also neglects to analyze the cumulative impacts to individuals of repeated exposures from the proposed project. The CBD claims that the EA turns the findings in *Neighbors of Cuddy Mountain* v. *U.S. Forest Service* 137 F.3d 1372, 1379 (9th Circ. 1998) on its head and concludes that ''[i]mpacts of the L-DEO's proposed survey in SE Alaska and the GOA are expected to be no more than a very minor (and short-term) increment when viewed in light of other human activities within the study area.'' NMFS must conduct its own cumulative impacts analysis to remedy this deficiency.

Response: The NSF EA adequately addresses the cumulative impacts of a short-term, low-intensity seismic airgun survey in relation to long-term noise and taking events, such as shipping, fishing, and marine tourism. These latter events are long-term activities over which neither NSF nor NMFS can affect by NMFS' decision on this action. Therefore, greater in-depth analyses of these activities are not needed for the decision-making process here.

In regard to the CBD comment on repeated exposures, such an event is discussed in the NSF EA and in the L-DEO application. This information was summarized in Table 6 of the application and in Table 2 in both the notice of proposed IHA and in this document. Comparing the number of exposures calculated versus the number of individuals that may be exposed indicates that few mammals would likely be taken by Level B harassment more than a single time. This is due to the 23–29 different survey sites for this research, the short-time at each site and the unlikely chance that a single mammal would be found in more than a single location during the month-long survey.

Comment 19: The CBD states that the proposed project and other activities in the area have the potential to impact species listed under the ESA, including sperm, humpback, sei, fin, blue, and North Pacific right whales, the Steller sea lion, and the leatherback and green sea turtles. Therefore, it believes and EIS is required.

Response: Impacts on marine species listed under the ESA have been addressed in NMFS' Biological Opinion on the proposed action of conducting a marine seismic survey in the GOA under an authorization for the harassment of marine mammals incidental to conducting that activity. The finding of that biological opinion is that this action is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. No listed species are expected to be killed or seriously injured, all impacts will be short-term resulting in no more than minor behavioral harassment, and no critical habitat will be destroyed. The L-DEO action does not rise to a level of significance requiring preparation of an EIS.

Comment 20: The CBD states that the project is slated for a geographically unique and highly productive ecosystem containing critically important ecological resources, including Steller sea lion rookeries and haul-outs, critical stocks and populations of species, as well as a complex system of de-glaciated fjords that complicates estimating the environmental impacts of acoustic research. The presence of these and other significance factors clearly triggers the need for an EIS.

Response: As noted in the EA and in the L-DEO application, the proposed seismic survey will not result in any permanent impact on habitats used by marine mammals or to the food resources they (and other species) utilize. The main impact associated with the seismic survey activity will be temporarily elevated noise levels that affect marine mammals and other species as detailed in the EA. The EA also addresses propagation of sounds in inshore waters and accommodates the complex nature of fjords by incorporating conservative mitigation measures, such as an increased safety zone size, to ensure that marine mammals are not injured.

Comment 21: The CBD states that the EA lacks the required environmental baseline data and adequate analysis of impacts and mitigation measures as discussed previously. Mere conclusions does not satisfy NEPA (ref: *Blue Mountain Biodiversity Project* v. *Blackwood* 161 F.3d 1208, 1213 (9th Cir. 1998), cert denied, 527 U.S. 1003 (1999)).

Response: NMFS disagrees. NMFS believes that the EA provides a level of detail not usually found in many Environmental Assessments. The EA provides a step-by-step analysis on how impacts were assessed, starting with (and citing) the best scientific information available on marine mammal and sea turtle distribution and abundance and using those data to make conservative estimates on levels of take by harassment and reasonable assumptions on why no marine mammals are likely to be injured or killed by this survey. A discussion on addressing the mitigation measures as alternatives to the proposed action is provided in the next response.

Comment 22: The CBD states that the EA does not evaluate a reasonable range of alternatives. The EA does not analyze any alternative that incorporated more mitigation or otherwise lessened the impacts of the seismic operations on the marine environment. The EA only analyzes the Proposed Action alternative, the No Action alternative, and a generic Another Time alternative. NSF and L-DEO's unilateral decision to commit resources to a particular (ship) schedule cannot excuse them from full compliance with NEPA or be used to restrict the alternatives analysis of the EA.

Response: NMFS has reviewed the range of alternatives addressed in NSF's EA and agrees that the alternatives can be expanded by providing additional analysis of the mitigation measures that were considered for use during seismic surveys (but not necessarily practicable for each and every survey). For reader convenience that discussion has been provided in this document and in NMFS' Finding of No Significant Impact (FONSI) determination (see NEPA later in this document).

Comment 23: The CBD states that the EA is also grossly deficient in its discussion of potential impacts to fish species. While the EA briefly describes various fisheries in the area, it concludes without analysis that ''It is not expected that L-DEO's operations will have significant impact on commercial fisheries in the GOA.''

Response: That is not totally correct. The EA states that ''fish often react to sounds, especially strong and/or intermittent sounds of low frequency. Sound pulses at received levels of 160 dB re 1 μPa (peak) may cause subtle changes in behavior. Pulses at levels of 180 dB (peak) may cause noticeable changes in behavior (Chapman and Hawkins, 1969; Pearson et al., 1992; Skalski et al., 1992).'' NMFS believes that significant changes in behavior would mean that these fish might be unavailable to line and gillnet fisheries (but not necessarily trawl fisheries) for some period of time. The rms value for a given airgun pulse is typically about 10 dB lower than the peak level, so this fish impact zone extends to approximately the 170 dB (rms) isopleth around the vessel. As indicated in Table 1, the 170–dB rms isopleth radius will range from 175 to 750 m (574 to 2461 ft), depending upon water depth. It also appears that fish often habituate to repeated strong sounds rather rapidly, on time scales of minutes to an hour. Since L-DEO notes in the EA that they will avoid areas of fishing activity, and as fishing vessels will likely avoid seismic vessels simply because of the potential to entangle fishing gear with seismic gear, NMFS is confident that the EA has provided the level of information necessary to determine that the *Ewing* survey in the GOA will not have a significant effect on fish or fisheries.

Description of Habitat and Marine Mammals Affected by the Activity

A detailed description of the GOA area and its associated marine mammals can be found in the L-DEO application and a number of documents referenced in the L-DEO application, and is not repeated here. A total of 18 cetacean species, 3 species of pinnipeds, and the sea otter are known to or may occur in SE Alaska (Rice, 1998; Angliss and Lodge, 2002). The marine mammals that occur in the proposed survey area belong to four taxonomic groups: odontocetes (sperm whales* (*Physeter macrocephalus*), beaked whales (Cuvier's* (*Ziphius cavirostris*), Baird's* (*Berardius bairdii*), and Stejneger's (*Mesoplodon stejnegeri*)), beluga

(*Delphinapterus leucas*), Pacific white-sided dolphin* (*Lagenorhynchus obliquidens*), Risso's dolphin (*Grampus griseus*), killer whale* (*Orcinus orca*), short-finned pilot whale (*Globicephala macrorhynchus*), harbor porpoise* (*Phocoena phocoena*), and Dall's porpopise* (*Phocoenoides dalli*)), mysticetes (North Pacific right whales (*Eubalaena japonica*), gray whales (*Eschrichtius robustus*), humpback whales* (*Megaptera novaeangliae*), minke whales* (*Balaenoptera acutorostrata*), sei whales (*Balaenoptera borealis*), fin whales* (*Balaenoptera physalus*), and blue whales ((*Balaenoptera musculus*)), pinnipeds (Steller sea lion (*Eumetopias jubatus*), harbor seal (*Phoca vitulina*) and northern fur seal (*Callorhinus ursinus*)). Of the 18 cetacean species in the area, several (designated by an *) are commonly found in the activity area and may be affected by the proposed acitivty. Of the three species of pinnipeds that could potentially occur in SE Alaska, only the Steller sea lion and harbor seal are likely to be present. The northern fur seal inhabits the Bering Sea during the summer and is generally found in SE Alaska in low numbers during the winter, and during the northward migration in spring. Sea otters generally inhabit coastal waters within the 40–m (131–ft) depth contour (Riedman and Estes, 1990) and may be encountered in coastal areas of the study area. More detailed information on these species is contained in the L-DEO application and additional information is contained in Angliss and Lodge, 2002 which are available at: *http://www.nmfs.noaa.gov/prot__res/PR2/Small__Take/smalltake__info.htm#applications*, and *http://www.nmfs.noaa.gov/prot__res/PR2/Stock__Assessment__Program/sars.html*, respectively.

Potential Effects on Marine Mammals

As outlined in several previous NMFS documents, the effects of noise on marine mammals are highly variable, and can be categorized as follows (based on Richardson et al., 1995):

(1) The noise may be too weak to be heard at the location of the animal (i.e., lower than the prevailing ambient noise level, the hearing threshold of the animal at relevant frequencies, or both);

(2) The noise may be audible but not strong enough to elicit any overt behavioral response;

(3) The noise may elicit reactions of variable conspicuousness and variable relevance to the well being of the marine mammal; these can range from temporary alert responses to active avoidance reactions such as vacating an area at least until the noise event ceases;

(4) Upon repeated exposure, a marine mammal may exhibit diminishing responsiveness (habituation), or disturbance effects may persist; the latter is most likely with sounds that are highly variable in characteristics, infrequent and unpredictable in occurrence, and associated with situations that a marine mammal perceives as a threat;

(5) Any anthropogenic noise that is strong enough to be heard has the potential to reduce (mask) the ability of a marine mammal to hear natural sounds at similar frequencies, including calls from conspecifics, and underwater environmental sounds such as surf noise;

(6) If mammals remain in an area because it is important for feeding, breeding or some other biologically important purpose even though there is chronic exposure to noise, it is possible that there could be noise-induced physiological stress; this might in turn have negative effects on the well-being or reproduction of the animals involved; and

(7) Very strong sounds have the potential to cause temporary or permanent reduction in hearing sensitivity. In terrestrial mammals, and presumably marine mammals, received sound levels must far exceed the animal's hearing threshold for there to be any temporary threshold shift (TTS) in its hearing ability. For transient sounds, the sound level necessary to cause TTS is inversely related to the duration of the sound. Received sound levels must be even higher for there to be risk of permanent hearing impairment. In addition, intense acoustic or explosive events may cause trauma to tissues associated with organs vital for hearing, sound production, respiration and other functions. This trauma may include minor to severe hemorrhage.

Effects of Seismic Surveys on Marine Mammals

The L-DEO application provides the following information on what is known about the effects on marine mammals of the types of seismic operations planned by L-DEO. The types of effects considered here are (1) masking, (2) disturbance, and (3) potential hearing impairment and other physical effects. Additional discussion on species specific effects can be found in the L-DEO application.

Masking

Masking effects of pulsed sounds on marine mammal calls and other natural sounds are expected to be limited, although there are very few specific data on this. Seismic sounds are short pulses generally occurring for less than 1 sec every 20 or 60–90 sec during this project. Sounds from the multibeam sonar are very short pulses, occurring for 1–10 msec once every 1 to 15 sec, depending on water depth. (During operations in deep water, the duration of each pulse from the multibeam sonar as received at any one location would actually be only ⅕ or at most ⅖ of 1–10 msec, given the segmented nature of the pulses.) Some whales are known to continue calling in the presence of seismic pulses. Their calls can be heard between the seismic pulses (Richardson et al., 1986; McDonald et al., 1995, Greene et al., 1999). Although there has been one report that sperm whales cease calling when exposed to pulses from a very distant seismic ship (Bowles et al., 1994), a recent study reports that sperm whales continued calling in the presence of seismic pulses (Madsen et al., 2002). Given the small source planned for use during this survey, there is even less potential for masking of sperm whale calls during the present study than in most seismic surveys. Masking effects of seismic pulses are expected to be negligible in the case of the smaller odontocete cetaceans, given the intermittent nature of seismic pulses and the relatively low source level of the airguns to be used in the GOA. Also, the sounds important to small odontocetes are predominantly at much higher frequencies than are airgun sounds.

Most of the energy in the sound pulses emitted by airgun arrays is at low frequencies, with strongest spectrum levels below 200 Hz and considerably lower spectrum levels above 1000 Hz. These frequencies are mainly used by mysticetes, but not by odontocetes or pinnipeds. An industrial sound source will reduce the effective communication or echolocation distance only if its frequency is close to that of the cetacean signal. If little or no overlap occurs between the industrial noise and the frequencies used, as in the case of many marine mammals vs. airgun sounds, communication and echolocation are not expected to be disrupted. Furthermore, the discontinuous nature of seismic pulses makes significant masking effects unlikely even for mysticetes.

A few cetaceans are known to increase the source levels of their calls in the presence of elevated sound levels, or possibly to shift their peak frequencies in response to strong sound signals (Dahlheim, 1987; Au, 1993; Lesage et al., 1999; Terhune, 1999; as

reviewed in Richardson et al., 1995). These studies involved exposure to other types of anthropogenic sounds, not seismic pulses, and it is not known whether these types of responses ever occur upon exposure to seismic sounds. If so, these adaptations, along with directional hearing, pre-adaptation to tolerate some masking by natural sounds (Richardson et al., 1995) and the relatively low-power acoustic sources being used in this survey, would all reduce the importance of masking marine mammal vocalizations.

Disturbance by Seismic Surveys

Disturbance includes a variety of effects, including subtle changes in behavior, more conspicuous dramatic changes in activities, and displacement. However, there are difficulties in defining which marine mammals should be counted as ''taken by harassment''. For many species and situations, scientists do not have detailed information about their reactions to noise, including reactions to seismic (and sonar) pulses. Behavioral reactions of marine mammals to sound are difficult to predict. Reactions to sound, if any, depend on species, state of maturity, experience, current activity, reproductive state, time of day, and many other factors. If a marine mammal does react to an underwater sound by changing its behavior or moving a small distance, the impacts of the change may not rise to the level of a disruption of a behavioral pattern. However, if a sound source would displace marine mammals from an important feeding or breeding area for a prolonged period, such a disturbance would constitute Level B harassment. Given the many uncertainties in predicting the quantity and types of impacts of noise on marine mammals, scientists often resort to estimating how many mammals may be present within a particular distance of industrial activities or exposed to a particular level of industrial sound. This likely overestimates the numbers of marine mammals that are affected in some biologically meaningful manner.

The sound criteria used to estimate how many marine mammals might be harassed behaviorally by the seismic survey are based on behavioral observations during studies of several species. However, information is lacking for many species. More detailed information on potential disturbance effects on baleen whales, toothed whales, and pinnipeds can be found on pages 36–38 and Appendix A in L-DEO's application.

Hearing Impairment and Other Physical Effects

Temporary or permanent hearing impairment is a possibility when marine mammals are exposed to very strong sounds, but there has been no specific documentation of this for marine mammals exposed to airgun pulses. Current NMFS policy precautionarily sets impulsive sounds equal to or greater than 180 and 190 dB re 1 microPa (rms) as the exposure thresholds for onset of Level A harassment for cetaceans and pinnipeds, respectively (NMFS, 2000). Those criteria have been used in defining the safety (shut-down) radii for seismic surveys. However, those criteria were established before there were any data on the minimum received levels of sounds necessary to cause auditory impairment in marine mammals. As discussed in the L-DEO application and summarized here,

1. The 180 dB criterion for cetaceans is probably quite precautionary, i.e., lower than necessary to avoid TTS let alone permanent auditory injury, at least for delphinids.

2. The minimum sound level necessary to cause permanent hearing impairment is higher, by a variable and generally unknown amount, than the level that induces barely-detectable TTS.

3. The level associated with the onset of TTS is often considered to be a level below which there is no danger of permanent damage.

Given the small size of the GI airguns, along with the planned monitoring and mitigation measures, there is little likelihood that any marine mammals will be exposed to sounds sufficiently strong to cause even the mildest (and reversible) form of hearing impairment. Several aspects of the planned monitoring and mitigation measures for this project are designed to detect marine mammals occurring near the 2 GI-airguns (and multibeam bathymetric sonar), and to avoid exposing them to sound pulses that might cause hearing impairment. In addition, many cetaceans are likely to show some avoidance of the area with ongoing seismic operations. In these cases, the avoidance responses of the animals themselves will reduce or avoid the possibility of hearing impairment.

Non-auditory physical effects may also occur in marine mammals exposed to strong underwater pulsed sound. Possible types of non-auditory physiological effects or injuries that theoretically might occur in mammals close to a strong sound source include stress, neurological effects, bubble formation, resonance effects, and other types of organ or tissue damage. It is possible that some marine mammal species (i.e., beaked whales) may be especially susceptible to injury and/or stranding when exposed to strong pulsed sounds. However, L-DEO and NMFS believe that it is especially unlikely that any of these non-auditory effects would occur during the proposed survey given the small size of the sound sources, the brief duration of exposure of any given mammal, and the planned mitigation and monitoring measures. The following paragraphs discuss the possibility of TTS, permanent threshold shift (PTS), and non-auditory physical effects.

Temporary Threshold Shift (TTS)

TTS is the mildest form of hearing impairment that can occur during exposure to a strong sound (Kryter, 1985). When an animal experiences TTS, its hearing threshold rises and a sound must be stronger in order to be heard. TTS can last from minutes or hours to (in cases of strong TTS) days. Richardson et al. (1995) notes that the magnitude of TTS depends on the level and duration of noise exposure, among other considerations. For sound exposures at or somewhat above the TTS threshold, hearing sensitivity recovers rapidly after exposure to the noise ends. Little data on sound levels and durations necessary to elicit mild TTS have been obtained for marine mammals.

For toothed whales exposed to single short pulses, the TTS threshold appears to be, to a first approximation, a function of the energy content of the pulse (Finneran et al., 2002). Given the available data, the received level of a single seismic pulse might need to be on the order of 210 dB re 1 microPa rms (approx. 221 226 dB pk pk) in order to produce brief, mild TTS. Exposure to several seismic pulses at received levels near 200 205 dB (rms) might result in slight TTS in a small odontocete, assuming the TTS threshold is (to a first approximation) a function of the total received pulse energy (Finneran et al., 2002). Seismic pulses with received levels of 200 205 dB or more are usually restricted to a zone of no more than 100 m (328 ft) around a seismic vessel operating a large array of airguns. Such sound levels would be limited to distances within a few meters of the small airgun source to be used during this project.

There are no data, direct or indirect, on levels or properties of sound that are required to induce TTS in any baleen whale. However, TTS is not expected to occur during this survey given the small

size of the source, and the strong likelihood that baleen whales would avoid the approaching airguns (or vessel) before being exposed to levels high enough for there to be any possibility of TTS.

TTS thresholds for pinnipeds exposed to brief pulses (single or multiple) have not been measured, although exposures up to 183 db re 1 microPa (rms) have been shown to be insufficient to induce TTS in California sea lions (Finneran et al., 2003). However, prolonged exposures show that some pinnipeds may incur TTS at somewhat lower received levels than do small odontocetes exposed for similar durations (Kastak et al., 1999; Ketten et al., 2001; Au et al., 2000).

A marine mammal within a zone of ≤100 m (≤ 328 ft) around a typical large array of operating airguns might be exposed to a few seismic pulses with levels of ≥205 dB, and possibly more pulses if the mammal moved with the seismic vessel. Also, around smaller arrays, such as the 2 GI-airgun proposed for use during this survey, a marine mammal would need to be even closer to the source to be exposed to levels ≥205 dB, at least in waters greater than 100 m (328 ft) deep. However, as noted previously, most cetacean species tend to avoid operating airguns, although not all individuals do so. In addition, ramping up airgun arrays, which is standard operational protocol for L-DEO and other seismic operators, should allow cetaceans to move away from the seismic source and avoid being exposed to the full acoustic output of the airgun array. It is unlikely that these cetaceans would be exposed to airgun pulses at a sufficiently high level for a sufficiently long period to cause more than mild TTS, given the relative movement of the vessel and the marine mammal. However, TTS would be more likely in any odontocetes that bow-ride or otherwise linger near the airguns. Odontocetes would be at or above the surface while bow-riding, and thus not exposed to strong sound pulses given the pressure-release effect at the surface. However, bow-riding animals generally dive below the surface intermittently. If they did so while bow-riding near airguns, they would be exposed to strong sound pulses, possibly repeatedly. If some cetaceans did incur TTS through exposure to airgun sounds, this would very likely be a temporary and reversible phenomenon.

NMFS currently believes that, whenever possible to avoid Level A harassment, cetaceans should not be exposed to pulsed underwater noise at received levels exceeding 180 dB re 1 microPa (rms). The corresponding limit for pinnipeds has been set at 190 dB. The predicted 180- and 190–dB received-level distances for the airgun arrays operated by L-DEO during this activity are summarized elsewhere in this document. These sound levels are not considered to be the levels at or above which TTS might occur. Rather, they are the received levels above which, in the view of a panel of bioacoustics specialists convened by NMFS (at a time before TTS measurements for marine mammals started to become available), one could not be certain that there would be no injurious effects, auditory or otherwise, to marine mammals. As noted here, TTS data that are now available imply that, at least for dolphins, TTS is unlikely to occur unless the dolphins are exposed to airgun pulses substantially stronger that 180 dB re 1 microPa (rms).

It has also been shown that most whales tend to avoid ships and associated seismic operations. Thus, whales will likely not be exposed to such high levels of airgun sounds. Because of the slow ship speed, any whales close to the trackline could move away before the sounds become sufficiently strong for there to be any potential for hearing impairment. Therefore, there is little potential for whales being close enough to an array to experience TTS. In addition, as mentioned previously, ramping up the 2 GI-airgun array, which has become standard operational protocol for many seismic operators including L-DEO, should allow cetaceans to move away from the seismic source and to avoid being exposed to the full acoustic output of the GI airguns.

Permanent Threshold Shift (PTS)

When PTS occurs, there is physical damage to the sound receptors in the ear. In some cases, there can be total or partial deafness, while in other cases, the animal has an impaired ability to hear sounds in specific frequency ranges. Physical damage to a mammal's hearing apparatus can occur if it is exposed to sound impulses that have very high peak pressures, especially if they have very short rise times (time required for sound pulse to reach peak pressure from the baseline pressure). Such damage can result in a permanent decrease in functional sensitivity of the hearing system at some or all frequencies.

Single or occasional occurrences of mild TTS are not indicative of permanent auditory damage in terrestrial mammals. However, very prolonged exposure to sound strong enough to elicit TTS, or shorter-term exposure to sound levels well above the TTS threshold, can cause PTS, at least in terrestrial mammals (Kryter, 1985). Relationships between TTS and PTS thresholds have not been studied in marine mammals but are assumed to be similar to those in humans and other terrestrial mammals. The low-to-moderate levels of TTS that have been induced in captive odontocetes and pinnipeds during recent controlled studies of TTS have been confirmed to be temporary, with no measurable residual PTS (Kastak et al., 1999; Schlundt et al., 2000; Finneran et al., 2002; Nachtigall et al., 2003). In terrestrial mammals, the received sound level from a single non-impulsive sound exposure must be far above the TTS threshold for any risk of permanent hearing damage (Kryter, 1994; Richardson et al., 1995). For impulse sounds with very rapid rise times (e.g., those associated with explosions or gunfire), a received level not greatly in excess of the TTS threshold may start to elicit PTS. Rise times for airgun pulses are rapid, but less rapid than for explosions.

Some factors that contribute to onset of PTS are as follows: (1) exposure to single very intense noises, (2) repetitive exposure to intense sounds that individually cause TTS but not PTS, and (3) recurrent ear infections or (in captive animals) exposure to certain drugs.

Cavanagh (2000) has reviewed the thresholds used to define TTS and PTS. Based on his review and SACLANT (1998), it is reasonable to assume that PTS might occur at a received sound level 20 dB or more above that which induces mild TTS. However, for PTS to occur at a received level only 20 dB above the TTS threshold, it is probable that the animal would have to be exposed to the strong sound for an extended period.

Sound impulse duration, peak amplitude, rise time, and number of pulses are the main factors thought to determine the onset and extent of PTS. Based on existing data, Ketten (1994) has noted that the criteria for differentiating the sound pressure levels that result in PTS (or TTS) are location and species-specific. PTS effects may also be influenced strongly by the health of the receiver's ear.

Given that marine mammals are unlikely to be exposed to received levels of seismic pulses that could cause TTS, it is highly unlikely that they would sustain permanent hearing impairment. If we assume that the TTS threshold for exposure to a series of seismic pulses may be on the order of 220 dB re 1 microPa (pk-pk) in odontocetes, then the PTS threshold might be about 240

dB re 1 microPa (pk-pk). In the units used by geophysicists, this is 10 bar-m. Such levels are found only in the immediate vicinity of the largest airguns (Richardson et al., 1995; Caldwell and Dragoset, 2000). However, it is very unlikely that an odontocete would remain within a few meters of a large airgun for sufficiently long to incur PTS. The TTS (and thus PTS) thresholds of baleen whales and pinnipeds may be lower, and thus may extend to a somewhat greater distance. However, baleen whales generally avoid the immediate area around operating seismic vessels, so it is unlikely that a baleen whale could incur PTS from exposure to airgun pulses. Some pinnipeds do not show strong avoidance of operating airguns. In summary, it is highly unlikely that marine mammals could receive sounds strong enough (and over a sufficient period of time) to cause permanent hearing impairment during this project. In the proposed project, marine mammals are unlikely to be exposed to received levels of seismic pulses strong enough to cause TTS and because of the higher level of sound necessary to cause PTS, it is even less likely that PTS could occur. This is due to the fact that even sound levels immediately adjacent to the 2 GI-airguns may not be sufficient to induce PTS because the mammal would not be exposed to more than one strong pulse unless it swam alongside an airgun for a period of time.

Strandings and Mortality

Marine mammals close to underwater detonations of high explosives can be killed or severely injured, and the auditory organs are especially susceptible to injury (Ketten et al., 1993; Ketten, 1995). Airgun pulses are less energetic and have slower rise times than underwater detonations. While there is no documented evidence that airgun arrays can cause serious injury, death, or stranding, the association of mass strandings of beaked whales with naval exercises and, recently, an L-DEO seismic survey have raised the possibility that beaked whales may be especially susceptible to injury and/or stranding when exposed to strong pulsed sounds.

In March 2000, several beaked whales that had been exposed to repeated pulses from high intensity, mid-frequency military sonars stranded and died in the Providence Channels of the Bahamas Islands, and were subsequently found to have incurred cranial and ear damage (NOAA and USN, 2001). Based on post-mortem analyses, it was concluded that an acoustic event caused hemorrhages in and near the auditory region of some beaked whales. These hemorrhages occurred before death. They would not necessarily have caused death or permanent hearing damage, but could have compromised hearing and navigational ability (NOAA and USN, 2001). The researchers concluded that acoustic exposure caused this damage and triggered stranding, which resulted in overheating, cardiovascular collapse, and physiological shock that ultimately led to the death of the stranded beaked whales. During the event, five naval vessels used their AN/SQS–53C or -56 hull-mounted active sonars for a period of 16 hours. The sonars produced narrow (<100 Hz) bandwidth signals at center frequencies of 2.6 and 3.3 kHz (-53C), and 6.8 to 8.2 kHz (-56). The respective source levels were usually 235 and 223 dB re 1 μ Pa, but the -53C briefly operated at an unstated but substantially higher source level. The unusual bathymetry and constricted channel where the strandings occurred were conducive to channeling sound. This, and the extended operations by multiple sonars, apparently prevented escape of the animals to the open sea. In addition to the strandings, there are reports that beaked whales were no longer present in the Providence Channel region after the event, suggesting that other beaked whales either abandoned the area or perhaps died at sea (Balcomb and Claridge, 2001).

Other strandings of beaked whales associated with operation of military sonars have also been reported (e.g., Simmonds and Lopez-Jurado, 1991; Frantzis, 1998). In these cases, it was not determined whether there were noise-induced injuries to the ears or other organs. Another stranding of beaked whales (15 whales) happened on 24–25 September 2002 in the Canary Islands, where naval maneuvers were taking place in the area. Jepson et al. (2003) concluded that cetaceans might be subject to decompression injury in some situations. If so, this might occur if the mammals ascend unusually quickly when exposed to aversive sounds. Previously, it was widely assumed that diving marine mammals are not subject to decompression injury (the bends or air embolism).

It is important to note that seismic pulses and mid-frequency sonar pulses are quite different. Sounds produced by the types of airgun arrays used to profile sub-sea geological structures are broadband with most of the energy below 1 kHz. Typical military mid-frequency sonars operate at frequencies of 2 to 10 kHz, generally with a relatively narrow bandwidth at any one time (though the center frequency may change over time). Because seismic and sonar sounds have considerably different characteristics and duty cycles, it is not appropriate to assume that there is a direct connection between the effects of military sonar and seismic surveys on marine mammals. However, evidence that sonar pulses can in special circumstances lead to hearing damage and, indirectly, to mortality suggests that caution is warranted when dealing with exposure of marine mammals to any high-intensity pulsed sound.

In addition to the sonar-related strandings, there was a September, 2002 stranding of two Cuvier's beaked whales in the Gulf of California (Mexico) when a seismic survey by the *Ewing* was underway in the general area (Malakoff, 2002). The airgun array in use during that project was the *Ewing's* 20–gun 8490–in^3 array. This might be a first indication that seismic surveys can have effects, at least on beaked whales, similar to the suspected effects of naval sonars. However, the evidence linking the Gulf of California strandings to the seismic surveys is inconclusive, and to date is not based on any physical evidence (Hogarth, 2002; Yoder, 2002). The ship was also operating its multi-beam bathymetric sonar at the same time but this sonar had much less potential than these naval sonars to affect beaked whales. Although the link between the Gulf of California strandings and the seismic (plus multi-beam sonar) survey is inconclusive, this event plus the various incidents involving beaked whale strandings associated with naval exercises suggests a need for caution in conducting seismic surveys in areas occupied by beaked whales.

Non-auditory Physiological Effects

Possible types of non-auditory physiological effects or injuries that might theoretically occur in marine mammals exposed to strong underwater sound might include stress, neurological effects, bubble formation, resonance effects, and other types of organ or tissue damage. There is no evidence that any of these effects occur in marine mammals exposed to sound from airgun arrays. However, there have been no direct studies of the potential for airgun pulses to elicit any of these effects. If any such effects do occur, they would probably be limited to unusual situations when animals might be exposed at close range for unusually long periods.

Long-term exposure to anthropogenic noise may have the potential to cause physiological stress that could affect the

health of individual animals or their reproductive potential, which could theoretically cause effects at the population level (Gisner (ed.), 1999). However, there is essentially no information about the occurrence of noise-induced stress in marine mammals. Also, it is doubtful that any single marine mammal would be exposed to strong seismic sounds for sufficiently long that significant physiological stress would develop. This is particularly so in the case of broad-scale seismic surveys where the tracklines are generally not as closely spaced as in many oil and gas industry seismic surveys.

Gas-filled structures in marine animals have an inherent fundamental resonance frequency. If stimulated at this frequency, the ensuing resonance could cause damage to the animal. There may also be a possibility that high sound levels could cause bubble formation in the blood of diving mammals that in turn could cause an air embolism, tissue separation, and high, localized pressure in nervous tissue (Gisner (ed), 1999; Houser et al., 2001). In 2002, NMFS held a workshop (Gentry (ed.) 2002) to discuss whether the stranding of beaked whales in the Bahamas in 2000 might have been related to air cavity resonance or bubble formation in tissues caused by exposure to noise from naval sonar. A panel of experts concluded that resonance in air-filled structures was not likely to have caused this stranding. Among other reasons, the air spaces in marine mammals are too large to be susceptible to resonant frequencies emitted by mid- or low-frequency sonar; lung tissue damage has not been observed in any mass, multi-species stranding of beaked whales; and the duration of sonar pings is likely too short to induce vibrations that could damage tissues (Gentry (ed.), 2002). Opinions were less conclusive about the possible role of gas (nitrogen) bubble formation/growth in the Bahamas stranding of beaked whales. Workshop participants did not rule out the possibility that bubble formation/growth played a role in the stranding and participants acknowledged that more research is needed in this area. The only available information on acoustically-mediated bubble growth in marine mammals is modeling that assumes prolonged exposure to sound.

In summary, little is known about the potential for seismic survey sounds to cause either auditory impairment or other non-auditory physical effects in marine mammals. Available data suggest that such effects, if they occur at all, would be limited to short distances from the sound source. However, the available data do not allow for meaningful quantitative predictions of the numbers (if any) of marine mammals that might be affected in these ways. Marine mammals that show behavioral avoidance of seismic vessels, including most baleen whales, some odontocetes, and some pinnipeds, are unlikely to incur auditory impairment or other physical effects.

Possible Effects of Mid-frequency Sonar Signals

A multi-beam bathymetric sonar (Atlas Hydrosweep DS–2 (15.5–kHz) or Simrad EM1002 (95 kHz)) and a sub-bottom profiler will be operated from the source vessel essentially continuously during the planned survey. Details about these sonars were provided previously in this document.

Navy sonars that have been linked to avoidance reactions and stranding of cetaceans generally (1) are more powerful than the Atlas Hydrosweep or EM1002 sonars, (2) have a longer pulse duration, and (3) are directed close to horizontally (vs. downward for the Atlas Hydrosweep and EM1002). The area of possible influence for the *Ewing's* sonars is much smaller - a narrow band below the source vessel. For the Hydrosweep there is no horizontal propagation as these signals project at an angle of approximately 45 degrees from the ship. For the deep-water mode, under the ship the 160- and 180–dB zones are estimated to be 3200 m (10500 ft) and 610 m (2000 ft), respectively. However, the beam width of the Hydrosweep signal is only 2.67 degrees fore and aft of the vessel, meaning that a marine mammal diving could receive at most 1–2 signals from the Hydrosweep and a marine mammal on the surface would be unaffected. Marine mammals that do encounter the bathymetric sonars at close range are unlikely to be subjected to repeated pulses because of the narrow fore-aft width of the beam, and will receive only limited amounts of pulse energy because of the short pulses and vessel speed. Therefore, as harassment or injury from pulsed sound is a function of total energy received, the actual harassment or injury threshold for the bathymetric sonar signals (approximately 10 ms) would be at a much higher dB level than that for longer duration pulses such as seismic signals. As a result, NMFS believes that marine mammals are unlikely to be harassed or injured from the multibeam sonar.

Masking by Mid-frequency Sonar Signals

Marine mammal communications will not be masked appreciably by the multibeam sonar signals or the sub-bottom profiler given the low duty cycle and directionality of the sonars and the brief period when an individual mammal is likely to be within its beam. Furthermore, in the case of baleen whales, the sonar signals from the Hydrosweep sonar do not overlap with the predominant frequencies in the calls, which would avoid significant masking. The 95–kHz pulses from the EM1002 sonar will be inaudible to baleen whales and pinnipeds.

For the sub-bottom profiler and 12–kHz pinger, marine mammal communications will not be masked appreciably because of their relatively low power output, low duty cycle, directionality (for the profiler), and the brief period when an individual mammal may be within the sonar's beam. In the case of most odonotocetes, the sonar signals from the profiler do not overlap with the predominant frequencies of their calls. In the case of mysticetes, the pulses from the pinger do not overlap with their predominant frequencies.

Behavioral Responses Resulting from Mid-Frequency Sonar Signals

Behavioral reactions of free-ranging marine mammals to military and other sonars appear to vary by species and circumstance. Observed reactions have included silencing and dispersal by sperm whales (Watkins et al., 1985), increased vocalizations and no dispersal by pilot whales (Rendell and Gordon, 1999), and the previously-mentioned beachings by beaked whales. Also, Navy personnel have described observations of dolphins bow-riding adjacent to bow-mounted mid-frequency sonars during sonar transmissions. However, all of these observations are of limited relevance to the present situation. Pulse durations from these sonars were much longer than those of the L-DEO multibeam sonar, and a given mammal would have received many pulses from the naval sonars. During L-DEO's operations, the individual pulses will be very short, and a given mammal would not receive many of the downward-directed pulses as the vessel passes by.

Captive bottlenose dolphins and a white whale exhibited changes in behavior when exposed to 1–sec pulsed sounds at frequencies similar to those that will be emitted by the multi-beam sonar used by L-DEO and to shorter broadband pulsed signals. Behavioral changes typically involved what appeared to be deliberate attempts to avoid the sound exposure (Schlundt et al., 2000; Finneran et al., 2002). The relevance of these data to free-ranging odontocetes is uncertain and in any case

the test sounds were quite different from a bathymetric sonar in either duration or bandwidth.

L-DEO and NMFS are not aware of any data on the reactions of pinnipeds to sonar sounds at frequencies similar to those of the 15.5 kHz frequency of the *Ewing's* multibeam sonar. Based on observed pinniped responses to other types of pulsed sounds, and the likely brevity of exposure to the bathymetric sonar sounds, pinniped reactions are expected to be limited to startle or otherwise brief responses of no lasting consequences to the individual animals. As mentioned, the 95–kHz sounds from the EM1002 will be inaudible to pinnipeds and to baleen whales, so it will have no disturbance effects on those groups of mammals. The pulsed signals from the sub-bottom profiler and pinger are much weaker than those from the airgun array and the multibeam sonar. Therefore, significant behavioral responses are not expected.

Hearing Impairment and Other Physical Effects from Mid-Frequency Sonar Signals

Given recent stranding events that have been associated with the operation of naval sonar, there is much concern that sonar noise can cause serious impacts to marine mammals (for discussion see Effects of Seismic Surveys). However, the multi-beam sonars proposed for use by L-DEO are quite different than sonars used for navy operations. Pulse duration of the bathymetric sonars is very short relative to the naval sonars. Also, at any given location, an individual marine mammal would be in the beam of the multi-beam sonar for a very limited time given the generally downward orientation of the beam and its narrow fore-aft beam-width. (Navy sonars often use near-horizontally-directed sound.) These factors would all reduce the sound energy received from the multi-beam sonar rather drastically relative to that from the sonars used by the Navy. Therefore, hearing impairment by multi-beam bathymetric sonar is unlikely.

Source levels of the sub-bottom profiler are much lower than those of the airguns and the multi-beam sonar. Sound levels from a sub-bottom profiler similar to the one on the *Ewing* were estimated to decrease to 180 dB re 1 microPa (rms) at 8 m (26 ft) horizontally from the source (Burgess and Lawson, 2000), and at approximately 18 m downward from the source. Furthermore, received levels of pulsed sounds that are necessary to cause temporary or especially permanent hearing impairment in marine mammals appear to be higher than 180 dB (see earlier discussion). Thus, it is unlikely that the sub-bottom profiler produces pulse levels strong enough to cause hearing impairment or other physical injuries even in an animal that is (briefly) in a position near the source.

The sub-bottom profiler is usually operated simultaneously with other higher-power acoustic sources. Many marine mammals will move away in response to the approaching higher-power sources or the vessel itself before the mammals would be close enough for there to be any possibility of effects from the less intense sounds from the sub-bottom profiler. In the case of mammals that do not avoid the approaching vessel and its various sound sources, mitigation measures that would be applied to minimize effects of the higher-power sources would further reduce or eliminate any minor effects of the sub-bottom profiler.

The 12–kHz pinger is unlikely to cause hearing impairment or physical injuries even in an animal that is in a position near the source because is does not produce strong pulse levels.

Estimates of Take by Harassment for the GOA Seismic Survey

Although information contained in this document indicates that injury to marine mammals from seismic sounds potentially occurs at sound pressure levels significantly higher than 180 and 190 dB, NMFS' current criteria for onset of Level A harassment of cetaceans and pinnipeds from impulse sound are, respectively, 180 and 190 re 1 microPa rms. The rms level of a seismic pulse is typically about 10 dB less than its peak level and about 16 dB less than its pk-pk level (Greene, 1997; McCauley et al., 1998; 2000a). The criterion for Level B harassment onset is 160 dB.

Given the required mitigation (see Mitigation later in this document), all anticipated takes involve a temporary change in behavior that may constitute Level B harassment. The required mitigation measures will minimize or eliminate the possibility of Level A harassment or mortality. L-DEO has calculated the ''best estimates'' for the numbers of animals that could be taken by Level B harassment during the proposed GOA seismic survey using data on marine mammal density and abundance from marine mammal surveys in the region, and estimates of the size of the affected area, as shown in the predicted RMS radii table (see Table 1).

These estimates are based on a consideration of the number of marine mammals that might be exposed to sound levels greater than 160 dB, the criterion for the onset of Level B harassment, by operations with the 2 GI-gun array planned to be used for this project. The anticipated zone of influence of the multi-beam sonar is less than that for the airguns, so it is assumed that any marine mammals close enough to be affected by the multi-beam sonar would already be affected by the airguns. Therefore, no additional incidental takings are included for animals that might be affected by the multi-beam sonar.

Table 2 explains the corrected density estimates as well as the best estimate of the numbers of each species that would be exposed to seismic sounds greater than 160 dB. A detailed description on the methodology used by L-DEO to arrive at the estimates of Level B harassment takes that are provided in Table 2 can be found in L-DEO's IHA application for the GOA survey.

TABLE 2. Estimates of the possible numbers of marine mammal exposures to the different sound levels, and the numbers of different individuals that might be exposed, during L-DEO's proposed seismic program in SE Alaska in late summer/autumn 2004. The proposed sound source consists of 2 GI airguns. Received levels of airgun sounds are expressed in dB re 1 μPa (rms, averaged over pulse duration). Species in italics are listed under the ESA as endangered or threatened. The column of numbers in boldface shows the numbers of "takes" for which authorization is requested.[a]

	Number of Exposures to Sound Levels ≥160 dB		Number of Individuals Exposed to Sound Levels ≥160 dB			
			Best Estimate			
Species	**Best Estimate**	**Maximum Estimate**	**Number**	**% of Regional Pop'n[b]**	**Maximum Estimate**	**Requested Take Authorization**
Physeteridae						
Sperm whale	*3*	*4*	*2*	*0.0*	*3*	***5***
Ziphiidae						
Cuvier's beaked whale	18	26	11	0.1	17	**26**
Baird's beaked whale	4	6	3	0.0	4	**6**
Stejneger's beaked whale	0	0	0	0.0	0	**5**
Monodontidae						
Beluga	0	0	0	0.0	0	**5**
Delphinidae						
Pacific white-sided dolphin	161	329	103	0.1	211	**329**
Risso's dolphin	0	0	0	0.0	0	**5**
Killer whale	65	97	42	0.2	62	**97**
Short-finned pilot whale	0	0	0	0.0	0	**10**
Phocoenidae						
Harbor porpoise	187	230	120	0.4	148	**230**
Dall's porpoise	5218	7828	3354	0.8	5031	**7828**
Balaenopteridae						
North Pacific right whale	*0*	*0*	0	*0.0*	*0*	***2***
Gray whale	0	0	0	0.0	0	**15**
Humpback whale	*105*	*157*	67	*1.1*	*101*	***157***
Minke whale	2	3	1	*0.0*	2	**8**
Fin whale	*144*	*216*	93	*0.8*	*139*	***216***
Blue whale	*0*	*0*	0	*0.0*	*0*	***5***
Pinnipeds						
Northern fur seal [c]			0		0	**5**
Harbor seal [c]			1498	4.0		**1498**
Steller sea lion	*712*		*458*	*1.0*		***458***
Fissipeds						
Sea Otter [d]			68	0.3	123	**123**

[a] Best estimate and maximum estimates of density are from Table 5 in L-DEO (2004)..
[b] Regional population size estimates are from Table 2 in L-DEO (2004)..
[c] Estimates for fur and harbor seals are not based on direct calculations from density data (see text for explanation).
[d] Estimates for the sea otter are based on the encounter rate per linear kilometer, not densities.

Conclusions

Effects on Cetaceans

Strong avoidance reactions by several species of mysticetes to seismic vessels have been observed at ranges up to 6–8 km (3.2–4.3 nm) and occasionally as far as 20–30 km (10.8–16.2 nm) from the source vessel. However, reactions at the longer distances appear to be atypical of most species and situations, particular when feeding whales are involved. Many of the mysticetes that will be encountered in SE Alaska at the time of the proposed seismic survey will be feeding. In addition, the estimated numbers presented in Table 2 are considered overestimates of actual numbers that may be harassed. The estimated 160–dB radii used here are probably overestimates of the actual 160–dB radii at water depths ≥100 m (328 ft) based on the few calibration data obtained in deep water (Tolstoy et al., 2004).

Odontocete reactions to seismic pulses, or at least the reactions 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 into account the small size and the relatively low sound output of the 2 GI-guns to be used, and the mitigation measures that are planned, effects on cetaceans are generally expected to be limited to avoidance of a small area around the seismic operation and short-term changes in behavior, falling within the MMPA definition of Level B harassment. Furthermore, the estimated numbers of animals potentially exposed to sound levels sufficient to cause appreciable disturbance are very low percentages of the affected populations.

Based on the 160–dB criterion, the best estimates of the numbers of individual cetaceans that may be exposed to sounds ≥160 dB re 1 microPa (rms) represent 0 to 1.1 percent of the populations of each species in the North Pacific Ocean (Table 2). For species listed as endangered under the ESA, this includes no North Pacific right whales or blue whales; ≤0.01 percent of the Northeast Pacific population of sperm whales; 1.1 percent of the humpback whale population; and 0.8 percent of the fin whale population (Table 2). In the cases of belugas, beaked whales, and sperm whales, these potential reactions are expected to involve no more than very small numbers (0 to 11) of individual cetaceans. Humpback and fin whales are the endangered cetacean species that are most likely to be exposed and their Northeast Pacific populations are approximately 6000 (Caretta et al., 2002) and 10970 (Ohsumi and Wada, 1974), respectively.

It is highly unlikely that any North Pacific right whales will be exposed to seismic sounds ≥160 dB re 1 microPa (rms). This conclusion is based on the rarity of this species in SE Alaska and in the Northeast Pacific (less than 100, Carretta et al., 2002), and that the remnant population of this species apparently migrates to more northerly areas during the summer. However, L-DEO has requested an authorization to expose up to two North Pacific right whales to ≥160 dB, given the possibility (however unlikely) of encountering one or more of this endangered species. If a right whale is sighted by the vessel-based observers, the 2 GI-airguns will be shut down (not just powered down) regardless of the distance of the whale from the airguns.

Substantial numbers of phocoenids and delphinids may be exposed to airgun sounds during the proposed seismic studies, but the population sizes of species likely to occur in the operating area are large, and the numbers potentially affected are small relative to the population sizes (Table 2). The best estimates of the numbers of individual Dall's and harbor porpoises that might be exposed to ≥160 dB represent 0.8 percent and 0.4 percent of their Northeast Pacific populations. The best estimates of the numbers of individual delphinids that might be exposed to sounds ≥170 dB re 1 μPa (rms) represents much less than 0.01 percent of the approximately 600,000 dolphins estimated to occur in the Northeast Pacific, and 0 to 0.2 percent of the populations of each species occurring there (Table 2).

Varying estimates of the numbers of marine mammals that might be exposed to sounds from the 2 GI-airguns during the 2004 seismic surveys off SW Alaska have been presented, depending on the specific exposure criteria, calculation procedures (exposures vs. individuals), and density criteria used (best vs. maximum). The requested ''take authorization'' for each species is based on the estimated maximum number of exposures to ≥160 dB re 1 microPa (rms). That figure likely overestimates (in most cases by a large margin) the actual number of animals that will be exposed to these sounds; the reasons for this have been discussed previously and in L-DEO's application. Even so, the estimates for the proposed surveys are quite low percentages of the population sizes. Also, these relatively short-term exposures are unlikely to result in any long-term negative consequences for the individuals or their populations.

Mitigation measures such as controlled speed, course alteration, observers, ramp ups, and shut downs when marine mammals are seen within defined ranges (see Mitigation) should further reduce short-term reactions, and minimize any effects on hearing sensitivity. In all cases, the effects are expected to be short-term, with no lasting biological consequence. In light of the type of take expected and the small percentages of affected stocks, the action is expected to have no more than a negligible impact on the affected species or stocks of marine mammals.

Effects on Pinnipeds

Two pinniped species, the Steller sea lion and the harbor seal, are likely to be encountered in the study area. In addition, it is possible (although unlikely) that a small number of northern fur seals may be encountered. An estimated 1498 harbor seals and 195 Steller sea lions (or 1 percent of the Northeast Pacific population) may be exposed to airgun sounds during the seismic survey. It is unknown how many of these would actually be disturbed, but most likely it would only be a small percentage of that population. Similar to cetaceans, the short-term exposures to airgun and sonar sounds are not expected to result in any long-term negative consequences for the individuals or their populations.

Potential Effects on Habitat

The proposed seismic survey will not result in any permanent impact on habitats used by marine mammals, or to the food sources they utilize. The main impact issue associated with the proposed activity will be temporarily elevated noise levels and the associated direct effects on marine mammals. The actual area that will be affected by coring operations will be a very small fraction of the marine mammal habitat and the habitat of their food species in the area; thus, any effects are expected to be highly localized and insignificant. Coring operations would result in no more than a negligible and highly localized short-term disturbance to sediments and benthic organisms. The area that might be disturbed is a very small fraction of the overall area occupied by a fish or marine mammal species.

One of the reasons for the adoption of airguns as the standard energy source for marine seismic surveys was that they (unlike the explosives used in the distant past) do not result in any appreciable fish kill. Various experimental studies showed that airgun discharges cause little or no fish kill, and that any injurious effects were generally limited to the water within a meter or so of an airgun. However, it has recently been found that injurious effects on captive fish, especially on fish hearing, may occur to somewhat greater distances than previously thought (McCauley et al., 2000a,b, 2002; 2003). Even so, any injurious effects on fish would be limited to short distances from the source. Also, many of the fish that might otherwise be within the potential zone of injury are likely to be displaced from this region prior to the approach of the airguns through avoidance reactions to the passing seismic vessel or to the airgun sounds as received at distances beyond the injury radius.

Fish often react to sounds, especially strong and/or intermittent sounds of low frequency. Sound pulses at received levels of 160 dB re 1 μPa (peak) may cause subtle changes in behavior. Pulses at levels of 180 dB (peak) may cause noticeable changes in behavior (Chapman and Hawkins, 1969; Pearson et al., 1992; Skalski et al., 1992). It also appears that fish often habituate to repeated strong sounds rather rapidly, on time scales of minutes to an hour. However, the habituation does not endure, and resumption of the disturbing activity may again elicit disturbance responses from the same fish. Fish near the airguns are likely to dive or exhibit some other kind of behavioral response. This might have short-term impacts on the ability of cetaceans to feed near the survey area. However, only a small fraction of the available habitat would be ensonified at any given time, and fish species would return to their pre-disturbance behavior once the seismic activity ceased. Thus, the proposed surveys would have little impact on the abilities of marine mammals to feed in the area where seismic work is planned. Some of the fish that do not avoid the approaching airguns (probably a small number) may be subject to auditory or other injuries.

Zooplankton that are very close to the source may react to the airgun's impulse. These animals have an exoskeleton and no air sacs; therefore, little or no mortality is expected. Many crustaceans can make sounds and some crustacea and other invertebrates have some type of sound receptor. However, the reactions of zooplankton to sound are not known. Some mysticetes feed on concentrations of zooplankton. A reaction by zooplankton to a seismic impulse would only be relevant to whales if it caused a concentration of zooplankton to scatter. Pressure changes of sufficient magnitude to cause this type of reaction would probably occur only very close to the source, so few zooplankton concentrations would be affected. Impacts on zooplankton behavior are predicted to be negligible, and this would translate into negligible impacts on feeding mysticetes.

Potential Effects on Subsistence Use of Marine Mammals

The proposed seismic project could potentially impact the availability of marine mammals for subsistence harvests in a very small area immediately around the *Ewing*, and for a very short time period while conducting seismic activities. However, considering the limited time and locations for the planned surveys, the proposed survey is not expected to have an unmitigable adverse impact on the availability of Steller sea lions, harbor seals or northern sea otters for subsistence harvests. Nevertheless, L-DEO plans to coordinate its activities with local subsistence communities so that seismic activities will be conducted outside subsistence hunting areas and times, if possible.

Mitigation

For the subject seismic survey in the GOA, L-DEO will deploy 2 GI-airguns as an energy source, with a total discharge volume of 210 in^3. The energy from the airguns will be directed mostly downward. The directional nature of the airguns to be used in this project is an important mitigating factor. This directionality will result in reduced sound levels at any given horizontal distance as compared with the levels expected at that distance if the source were omnidirectional with the stated nominal source level. Also, the small size of these airguns is an inherent and important mitigation measure that will reduce the potential for effects relative to those that might occur with large airgun arrays. This measure is in conformance with NMFS encouraging seismic operators to use the lowest intensity airguns practical to accomplish research objectives.

Safety Radii

Received sound levels have been modeled by L-DEO for the 2 GI-airguns, in relation to distance and direction from the airguns. The model does not allow for bottom interactions, and is most directly applicable to deep water. Based on the model, the distances from the 2 G-airguns where sound levels of 190 dB, 180 dB, 170 dB, and 160 dB re 1 microPa (rms) are predicted to be received are shown in the >1000 m (3281 ft) line of Table 1.

Empirical data concerning these safety radii have been acquired based on measurements during the acoustic verification study conducted by L-DEO in the northern Gulf of Mexico from 27 May to 3 June 2003 (see 68 FR 32460, May 30, 2003). Although the results are limited, L-DEO's analysis of the acoustic data from that study (Tolstoy et al., 2004) indicate that the radii around the airguns where the received level would be 180 dB re 1 microPa (rms), the safety zone applicable to cetaceans, vary with water depth.

The proposed study area will occur in water approximately 30–3000 m (98–9843 ft) deep. In deep water (>1000 m (3281 ft)), the safety radii during airgun operations will be the values predicted by L-DEO's model (Table 1). Therefore, the assumed 180- and 190–dB radii are 54 m (177 ft) and 17 m (56 ft), respectively. In intermediate water depths (100–1000 m (328–3281 ft)), L-DEO has applied a 1.5x correction factor to the estimates provided by the model for deep water situations. The assumed 180- and 190–dB radii in intermediate-depth water are 81 m (266 ft) and 26 m (85 ft), respectively. For operations in shallow (<100 m (328 ft)) water, L-DEO has applied conservative correction factors to the predicted radii for the 2 GI-airgun array. The 180- and 190–dB radii in shallow water are assumed to be 400 m (1312 ft) and 250 m (820 ft), respectively. However, NMFS has some concerns regarding propagation in very shallow water and has determined that for water depths less than 100 m (328 ft), L-DEO will establish a safety zone for marine mammals and other endangered marine species at 170 dB. As indicated in Table 1, the 170–dB rms isopleth for shallow water will be 750 m (2461 ft). The 2–GI airgun array will be immediately shutdown when cetaceans or pinnipeds are detected within or about to enter the appropriate 170-, 180-, or 190–dB zone.

Additional Mitigation Measures

The following mitigation measures, as well as marine mammal visual monitoring (discussed later in this document), will be implemented for the subject seismic surveys: (1) Speed and course alteration (provided that they do not compromise operational safety requirements); (2) shut-down and ramp-up procedures; (3) conducting inshore seismic from upstream and proceeding towards the sea whenever possible to avoid trapping marine mammals; (4)

scheduling seismic operations in inshore waters during daylight and coring operations during nighttime whenever possible; (5) a prohibition on conducting seismic operations in water depths less than 30 m (98 ft); and (6) avoid encroaching upon critical habitat around Steller sea lion rookeries and haulouts. As discussed elsewhere in this document, special mitigation measures will be implemented for the North Pacific right whale.

Although a ''power-down'' procedure is often applied by L-DEO during seismic surveys with larger arrays of airguns, NMFS is not requiring power down to a single gun during this project. Powering down from two guns to one gun would make only a small difference in the 180- or 190–dB zone, which is not enough distance to allow one-gun to continue operations if a mammal came within the safety zone for two guns.

At night, vessel lights and/or night-vision devices (NVDs) could be useful in sighting some marine mammals at the surface within a short distance from the ship (within the safety radii for the 2–GI guns in deep and intermediate waters). Thus, start up of the airguns may be possible at night in deep and intermediate waters, in situations when the entire safety zone is visible with vessel lights and NVDs. However, due to the limitation on conducting nighttime seismic in shallow water, nighttime start ups of the airguns are not authorized.

Speed and Course Alteration

If a marine mammal is detected outside the safety zone and, based on its position and the relative motion, is likely to enter the safety zone, the vessel's speed and/or direct course may, when practical and safe, 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 zone. If the mammal appears likely to enter the safety zone, further mitigative actions will be taken (i.e., either further course alterations or shut down of the airguns). In the closely constrained waters of Lynn Canal, Muir Inlet, and Frederick Sound, it is unlikely that significant alterations to the vessel's speed or course could be made. In these circumstances, shut-down procedures would be implemented rather than speed or course changes.

Shut-down Procedures

If a marine mammal is detected outside the safety zone but is likely to enter the safety zone, and if the vessel's speed and/or course cannot be changed to avoid having the mammal enter the safety zone, the airguns will be shut down before the mammal is within the safety zone. Likewise, if a mammal is already within the safety zone when first detected, the airguns will be shut down immediately. The airguns will be shut down if a North Pacific right whale is sighted from the vessel, even if it is located outside the safety zone.

Following a shut down, airgun activity will not resume until the marine mammal has cleared the safety zone. The animal will be considered to have cleared the safety zone if it (1) is visually observed to have left the safety zone, or (2) has not been seen within the zone for 15 min in the case of small odontocetes and pinnipeds, or (3) has not been seen within the zone for 30 min in the case of mysticetes and large odontocetes, including sperm, pygmy sperm, dwarf sperm, and beaked whales.

If the complete safety zone has not been visible for at least 30 min prior to the start of operations in either daylight or nighttime (in offshore waters), airgun operations will not commence. However, if the airgun array has been operational before nightfall, it can remain operational throughout the night, even though the entire safety radius may not be visible. If the entire safety zone is visible at night, using vessel lights and NVDs (as may be the case in deep and intermediate waters), then start up of the airguns may occur at night.

Ramp-up

When airgun operations commence after a certain period without airgun operations, the number of guns firing will be increased gradually, or ''ramped up'' (also described as a ''soft start''). Usually, operations begin with the smallest gun in the array and guns are added in sequence such that the source level of the array will increase in steps not exceeding 6 dB per 5–min period. However, during this survey, with only 2 GI-guns, ramp-up will be implemented by turning on one airgun, followed 5 minutes later by the second airgun. Throughout the ramp-up procedure, the safety zone will be maintained.

Other Mitigation

Because this seismic survey is being conducted in inshore waters, NMFS has determined that the following mitigation measures are necessary to ensure that no marine mammals are injured and that takings, by Level B harassment, are at the lowest level practicable.

1. L-DEO must conduct inshore seismic from upstream and proceeding towards the sea whenever possible to avoid trapping marine mammals. If mammals are averse to seismic sounds they may move upstream to avoid increasing SPLs. Although NMFS is also prohibiting takes in waters shallower than 30 m (98 ft) to limit sound propagation in very shallow water, this mitigation measure will ensure that these mammals have an opportunity to escape to deeper waters and not have a potential for stranding.

2. L-DEO must limit seismic operations in inshore waters to daylight and coring operations to nighttime whenever possible. This was clarified in RTC 11.

Marine Mammal Monitoring

L-DEO must have at least three visual observers on board the *Ewing*, and at least two must be experienced marine mammal observers that NMFS has approved in advance of the start of the GOA cruise. These observers will be on duty in shifts of no longer than 4 hours.

The visual observers will monitor marine mammals and sea turtles near the seismic source vessel during all daytime operations and during any night-time airgun operations, although night-time seismic operations are unlikely to be conducted during this survey (see Mitigation). Vessel-based observers will watch for marine mammals and sea turtles near the seismic vessel during periods with shooting (including ramp-ups), and for 30 minutes prior to the planned start of airgun operations after a shut-down.

Use of multiple observers will increase the likelihood that marine mammals near the source vessel are detected. L-DEO bridge personnel will also assist in detecting marine mammals and implementing mitigation requirements whenever possible (they will be given instruction on how to do so).

The observer(s) will watch for marine mammals from the highest practical vantage point on the vessel, which is either the bridge or the flying bridge. On the bridge of the *Ewing*, the observer's eye level will be 11 m (36 ft) above sea level, allowing for good visibility within a 210 arc. If observers are stationed on the flying bridge, the eye level will be 14.4 m (47.2 ft) above sea level. The observer(s) will systematically scan the area around the vessel with Big Eyes binoculars, reticle binoculars (e.g., 7 X 50 Fujinon) and with the naked eye during the daytime. Laser range-finding binoculars (Leica L.F. 1200 laser rangefinder or equivalent) will be available to assist with distance

estimation. The observers will be used to determine when a marine mammal or sea turtle is in or near the safety radii so that the required mitigation measures, such as course alteration and shut-down, can be implemented. If the airguns are shut down, observers will maintain watch to determine when the animal is outside the safety radius.

In addition to vessel monitoring during seismic operations, observers will also conduct monitoring after the seismic operation has been terminated for that line transect while the array is being pulled from the water and the vessel returns to the selected coring site. In most cases this will mean returning along the survey line. During that time, the observer will look for marine mammals that might have been injured as a result of seismic (although no injuries are expected to occur). Also, during coring operations in inshore waters, when that coring operation occurs during daylight hours (most coring should be conducted during night-time), the ship's captain may authorize the ship's small boat to look for marine mammals on or off the ship's previous track. Because there is a safety concern, the *Ewing's* captain has sole authority in this matter. For safety reasons, the boat must remain in visual or radio contact so it can safely return to the *Ewing* should weather conditions change or if the boat were disabled. At least one trained biological observer will be on this boat.

Passive Acoustic Monitoring (PAM)

Although PAM has been used in previous seismic surveys, L-DEO will not use the PAM system during this research cruise. First, the safety radii are significantly smaller than those found for the larger L-DEO arrays, making the PAM unnecessary for locating marine mammals. Secondly, the effectiveness of the PAM in shallow water is not high and third, because of the coring operations, additional berthing is unavailable for the PAM operators. Making room available for the PAM acoustic technician would require the use of one less marine mammal observer. Again, because of the small safety zone, the recommendation that seismic work be conducted during daylight to the extent possible, and the limited effectiveness of the PAM in shallow water, NMFS has decided that the 3rd observer is more valuable for conducting small boat surveys and to assist in night-time monitoring than the use of the PAM.

Reporting

L-DEO will submit a report to NMFS within 90 days after the end of the cruise, which is currently predicted to occur during August, 2004. The report will describe the operations that were conducted and the marine mammals that were detected. The report must provide full documentation of methods, results, and interpretation pertaining to all monitoring tasks. The report will summarize the dates and locations of seismic operations, 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.

Determinations

NMFS has determined that the impact of conducting the seismic survey in the GOA in the northeastern Pacific Ocean will result, at worst, in a temporary modification in behavior by certain species of marine mammals. This activity is expected to result in no more than a negligible impact on the affected species or stocks. For reasons stated previously in this document, this determination is supported by (1) the likelihood that, given sufficient notice through slow ship speed and ramp-up, marine mammals are expected to move away from a noise source that it is annoying prior to its becoming potentially injurious; (2) recent research that indicates that TTS is unlikely (at least in delphinids) until levels closer to 200–205 dB re 1 microPa are reached rather than 180 dB re 1 microPa; (3) the fact that 200–205 dB isopleths would be within 100 m (328 ft) of the vessel even in shallow water; and (4) the likelihood that marine mammal detection ability by trained observers is close to 100 percent during daytime and remains high at night to that distance from the seismic vessel. As a result, no take by injury and/or death is anticipated, and the potential for temporary or permanent hearing impairment is very low and will be avoided through the incorporation of the required mitigation measures discussed in this document.

While the number of potential 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, the proposed seismic program will not have an unmitigable adverse impact on any subsistence hunts, since seismic operations will not take place in major subsistence whaling and sealing areas and may have only minor Level B harassment impacts on Steller sea lions and harbor seals that might be used for subsistence.

Endangered Species Act (ESA)

NMFS has issued a biological opinion regarding the effects of this action on ESA-listed species and critical habitat under the jurisdiction of NMFS. That biological opinion concluded that this action is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. A copy of the Biological Opinion is available upon request (see **ADDRESSES**). However, sea otters are under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS). L-DEO contacted the USFWS regarding this species. The USFWS determined that sea otters would not be affected by the 2 GI-airgun array being employed in the GOA project.

National Environmental Policy Act (NEPA)

The NSF made a FONSI determination on April 7, 2004, 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 NEPA. NSF determined, therefore, that an environmental impact statement would not be prepared. On June 23, 2004 (69 FR 34996), NMFS noted that the NSF had prepared an EA for the GOA surveys and made 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, 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. Accordingly, NMFS adopted the NSF EA under 40 CFR 1506.3 and made it's own FONSI. The NMFS FONSI also takes into consideration additional mitigation measures required by the IHA that are not in NSF's EA. Therefore, it is not necessary to issue a new EA, supplemental EA or an environmental impact statement for the issuance of an IHA to L-DEO for this activity. A copy of the NSF EA and the NMFS FONSI for this activity is available upon request (see **ADDRESSES**).

Authorization

NMFS has issued an IHA to L-DEO to take marine mammals, by harassment, incidental to conducting seismic

surveys in the Gulf of Alaska for a 1–year period, provided the mitigation, monitoring, and reporting requirements are undertaken.

Dated: September 22, 2004.

Laurie K. Allen,

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

[FR Doc. 04–21847 Filed 9–28–04; 8:45 am]

BILLING CODE 3510–22–S

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 090904E]

Gulf of Mexico Fishery Management Council; Public Meetings

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

ACTION: Notice of public meeting.

SUMMARY: The Gulf of Mexico Fishery Management Council (Council) will separately convene its Mackerel and Reef Fish Advisory Panels (AP).

DATES: The Mackerel AP meeting will be convened by conference call at 3 p.m. EST on Tuesday, October 26, 2004. The Reef Fish AP meeting will be convened by conference call at 3 p.m. EST on Wednesday, October 27, 2004.

ADDRESSES: See **SUPPLEMENTARY INFORMATION** for locations of listening stations.

Council address: Gulf of Mexico Fishery Management Council, 3018 North U.S. Highway 301, Suite 1000, Tampa, FL 33619.

FOR FURTHER INFORMATION CONTACT: Richard L. Leard, Deputy Executive Director, Gulf of Mexico Fishery Management Council; telephone: (813) 228–2815.

SUPPLEMENTARY INFORMATION: Persons wishing to listen to the calls may do so at the following locations:

1. NMFS Panama City Laboratory, 3500 Delwood Beach Road, Panama City, FL, Contact: Gary Fitzhugh at 850–234–6541, extension 214.
2. NMFS Southeast Regional Office, 9721 North Executive Center Drive, St. Petersburg, FL, Contact: Peter Hood at 727–570–5728.
3. NMFS Pascagoula Laboratory, 3209 Frederic Street, Pascagoula, MS, Contact: Cheryl Hinkel at 228–762–4591.
4. NMFS Galveston Laboratory (on 15th only), 4700 Avenue U, Galveston, TX, Contact: Rhonda O'Toole at 409–766–3500.

The Council will separately convene its Mackerel and Reef Fish AP to review public hearing drafts of Amendment 15 to the Coastal Migratory Pelagics Fishery Management Plan (FMP) and Amendment 24 to the Reef Fish FMP. Each of these amendments contain alternatives to allow the existing commercial permit moratoria to expire, extend the moratoria for 5 or 10 years, or replace the moratoria with permanent limited access systems that would, in essence, maintain the cap on the number of permits indefinitely, or until replaced or eliminated by additional actions by the Council.

Although other non-emergency issues not on the agendas may be discussed by the APs, in accordance with the Magnuson-Stevens Fishery Conservation and Management Act, those issues may not be the subject of formal action during these meetings. Actions of the APs will be restricted to those issues specifically identified in the agendas and any issues arising after publication of this notice that require emergency action under Section 305(c) of the Magnuson-Stevens Act, provided the public has been notified of the Council's intent to take action to address the emergency.

Special Accommodations

Requests for sign language interpretation or other auxiliary aids should be directed to Dawn Aring at the Council office (see **ADDRESSES**) by September 24, 2004.

Dated: September 23, 2004.

Alan D. Risenhoover,

Acting Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. E4–2406 Filed 9–28–04; 8:45 am]

BILLING CODE 3510–22–S

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 092304B]

Magnuson-Stevens Act Provisions; General Provisions for Domestic Fisheries; Application for Exempted Fishing Permits

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

ACTION: Notification of a proposal for exempted fishing permits to conduct experimental fishing; request for comments.

SUMMARY: The Assistant Regional Administrator for Sustainable Fisheries, Northeast Region, NMFS (Assistant Regional Administrator) has made a preliminary determination that the subject Exempted Fishing Permit (EFP) application contains all the required information and warrants further consideration. The Assistant Regional Administrator has also made a preliminary determination that the activities authorized under the EFP would be consistent with the goals and objectives of the Northeast (NE) Multispecies Fishery Management Plan (FMP). However, further review and consultation may be necessary before a final determination is made to issue the EFP. Therefore, NMFS announces that the Assistant Regional Administrator proposes to recommend that an EFP be issued that would allow one vessel to conduct fishing operations that are otherwise restricted by the regulations governing the fisheries of the Northeastern United States. The EFP may allow for exemptions from the NE multispecies days-at-sea (DAS) effort control program for up to 11 DAS for testing a bycatch reducing gear modification. Regulations under the Magnuson-Stevens Fishery Conservation and Management Act require publication of this notification to provide interested parties the opportunity to comment on applications for proposed EFPs.

DATES: Comments on this document must be received on or before October 14, 2004.

ADDRESSES: Comments on this notice may be submitted by e-mail. The mailbox address for providing e-mail comments is *DA591@noaa.gov*. Include in the subject line of the e-mail comment the following document identifier: ''Comments on UNH Soft Grid Gear Modification EFP Proposal.'' Written comments should be sent to Patricia A. Kurkul, Regional Administrator, NMFS, Northeast Regional Office, 1 Blackburn Drive, Gloucester, MA 01930. Mark the outside of the envelope ''Comments on UNH Soft Grid Gear Modification EFP Proposal.'' Comments may also be sent via facsimile (fax) to (978) 281–9135.

FOR FURTHER INFORMATION CONTACT: Brian Hooker, Fishery Policy Analyst, phone 978–281–9220.

SUPPLEMENTARY INFORMATION: Dr. Pingguo He of the University of New Hampshire Cooperative Extension (UNH) submitted an application for an EFP on May 27, 2004. This is a continuation of a project that started in 2002. Due to gear modifications, tank flume tests, and poor weather conditions the sea trails were not completed in the 2003–2004 fishing