copies of the information collection instrument and instructions should be directed to Alvin Katekaru, (808) 973–2937 or *Alvin.Katekaru@noaa.gov.*

SUPPLEMENTARY INFORMATION:

I. Abstract

The Western Pacific Fishery Management Council is preparing mitigation measures to reduce interactions between seabirds and the Hawaii-based pelagic longline fishery, by requiring longline vessel operators to use either side-setting (setting the longline fishing gear from the side of the vessel rather than the stern) or the current suite of seabird mitigation measures, plus tori lines. Although side-setting shows to be the most promising mitigation technique in terms of effectiveness, additional information is needed. The vessel operators currently voluntarily side-setting will be asked to provide data on the operational benefits of side-setting as well as the effectiveness of side-setting as a seabird deterrent. This collection of information is intended to provide the National Marine Fisheries Service with information as to the cost, availability of equipment, and operational use of equipment, required for side-setting. This information will be used to determine whether it is feasible and cost effective for Hawaii longline vessels to convert to side setting, and to formulate specifications for vessels side-setting.

II. Method of Collection

Paper surveys administered and completed by staff in interviews conducted dockside with participants.

III. Data

OMB Number: None.

Form Number: None.

Type of Review: Regular submission.

Affected Public: Business or other for-profits organizations, and individuals or households.

Estimated Number of Respondents: 120.

Estimated Time Per Response: 30 minutes.

Estimated Total Annual Burden Hours: 60.

Estimated Total Annual Cost to Public: $0.

IV. Request for Comments

Comments are invited on: (a) Whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information shall have practical utility; (b) the accuracy of the agency's estimate of the burden (including hours and cost) of the proposed collection of information; (c) ways to enhance the quality, utility, and clarity of the information to be collected; and (d) ways to minimize the burden of the collection of information on respondents, including through the use of automated collection techniques or other forms of information technology.

Comments submitted in response to this notice will be summarized and/or included in the request for OMB approval of this information collection; they also will become a matter of public record.

Dated: March 16, 2005.

Gwellnar Banks,

Management Analyst, Office of the Chief Information Officer.

[FR Doc. 05–5526 Filed 3–18–05; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 020405A]

Small Takes of Marine Mammals Incidental to Specified Activities; Marine Seismic Survey off the Aleutian Islands in the North Pacific Ocean

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

ACTION: Notice of receipt of application and proposed incidental take authorization; request for comments.

SUMMARY: NMFS has received an application from the Lamont-Doherty Earth Observatory (L-DEO), a part of Columbia University, for an Incidental Harassment Authorization (IHA) to take small numbers of marine mammals, by harassment, incidental to conducting a low-energy, shallow-penetrating seismic survey and scientific rock dredging program around the Aleutian Islands. Under the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an authorization to L-DEO to incidentally take, by harassment, small numbers of several species of cetaceans and pinnipeds for a limited period of time within the next year.

DATES: Comments and information must be received no later than April 20, 2005.

ADDRESSES: Comments on the application should be addressed 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, or by telephoning the contact listed here. The mailbox address for providing email comments is *PR1.020405A@noaa.gov*. Please include in the subject line of the e-mail comment the following document identifier: 020405A. NMFS is not responsible for e-mail comments sent to addresses other than the one provided here. Comments sent via e-mail, including all attachments, must not exceed a 10–megabyte file size. A copy of the application containing a list of the references used in this document may be obtained by writing to this address or by telephoning the contact listed here and is 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) 713–2289, 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), 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 with respect to certain 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 December 23, 2004, NMFS received an application from L-DEO for the taking, by harassment, of several species of marine mammals incidental to conducting a low-energy, shallow-penetrating seismic survey and scientific rock dredging program around the Aleutian Islands. The purpose of the proposed study is to examine the east-to-west change in the angle of the convergence of the Pacific-North America plates, which implies systematic westward decreases in the rate of subduction and sediment delivery to the Aleutian trench. The Aleutian Island Arc is the only island arc where systematic changes in physical aspects of the subduction system have been well correlated with magma output rates and with the geochemistry of the melts that the system produces. Despite its potential importance, studies of volcanism in the Aleutians are lacking. In particular, the western Aleutians (west of Adak Island) are now playing a key role in the evolving view of subduction magma genesis, yet it remains a poorly studied area. Few volcanic rock samples are available from that area, and it has not been studied substantially at sea.

In addition to an emphasis on magma genesis and its relationship to tectonics, volcanism in the Aleutians and southern Alaska is important because it is known to present a hazard to air traffic. However, the seismic and geochemical studies proposed by L-DEO are not directly hazard-related. They are aimed at understanding the deep-level processes that underlie the volcanic eruptions, and are thus relevant to the broad goals of understanding volcano behavior and hazard assessment in the Aleutians and elsewhere.

Description of the Activity

The seismic survey will involve one vessel, either the *R/V Kilo Moana* or a similar research vessel. The research vessel will deploy one Generator-injector (GI) airgun as an energy source (discharge volume of 105 in3), plus a towed hydrophone streamer up to 300 m (984 ft) long, or possibly as short as 50 m (164 ft). The *R/V Kilo Moana* has a length of 56.5 m (185.3 ft), and a beam of 26.8 m (88 ft). As the GI gun is towed along the survey lines, the receiving system will receive the returning acoustic signals. The proposed program will consist of approximately 4112 km (2220 nm) of seismic survey, and scientific rock dredging at 10 locations. The seismic survey will take place in water depths from less than 50 m (164 ft) to 3.5 kilometers (km) (1.9 nautical miles (nm)). More than 99 percent of the survey will be in depths greater than 100 m (328 ft), and scientific rock dredging will be conducted in water depths 100–1800 m (328–5906 ft), mostly in depths greater than 400 m (1312 ft).

The proposed program will use conventional seismic methodology with a single towed GI airgun as the energy source, and a towed hydrophone streamer as the receiver system. The energy to the airguns is compressed air supplied by compressors on board the source vessel.

In addition to the GI gun, bathymetric sonars and an echo sounder will be used during the seismic profiling and continuously when underway. Multi-beam bathymetric and single channel seismic surveys will be conducted prior to scientific rock dredging to ensure that dredging is done as accurately and productively as possible. The surveys will also affect the number of dredges that can be completed. While on station for rock dredging, a 12–kHz pinger will be used to monitor the depth of the dredge relative to the sea floor. A detailed description of the acoustic sources proposed for use during this survey can be found in the L-DEO application, which is available at: *http://www.nmfs.noaa.gov/prot__res/PR2/Small__Take/smalltakeinfo.htm#applications.*

GI-Airgun Description

The L-DEO portable high-resolution seismic system will be installed on the research vessel for this cruise. The seismic vessel will tow the single GI-airgun and a streamer containing hydrophones along predetermined lines. Seismic pulses will be emitted at intervals of 5–10 sec. The 5–10 sec spacing corresponds to a shot interval of about 13–26 m (43–85 ft).

The GI airgun will have a total discharge volume of up to 105 in^3. The gun will be towed 44.3 m (145.3 ft) behind the stern at a depth of about 3 m (9.8 ft). The GI-airgun has a zero to peak (peak) source output of 231 dB re 1 microPascal-m (3.6 bar-m) and a peak-to-peak (pk-pk) level of 237 dB (7.0 bar-m). The dominant frequency components of the airgun are in the range of 0–188 Hz. For a one-gun source, the nominal source level represents the actual level that would be found about 1 m (3.3 ft) from the GI gun. Actual levels experienced by any marine organism more than 1 m (3.3 ft) from the GI gun will be significantly lower.

The rms (root mean square) received levels that are used as impact criteria for marine mammals are not directly comparable to the pk or pk-pk values normally used to characterize source levels of airguns. The measurement units used to describe airgun sources, pk or pk-pk decibels, are always higher than the ''root mean square'' (rms) decibels referred to in much of the biological literature. For example, a measured received level of 160 dB rms in the far field would typically correspond to a pk 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, 2000a). The precise difference between rms and pk or p-pk values depends on the frequency content and duration of the pulse, among other factors. However, the rms level is always lower than the pk or pk-pk level for an airgun-type source.

The depth at which the source is 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 source 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.

Received sound levels have been modeled by L-DEO for the single GI-airgun in relation to distance and direction from the gun. This publically available model does not allow for bottom interactions, and is most directly applicable to deep water. Based on the model, the distances from the single GI-airgun where sound levels of 190-, 180-, and 160–dB re 1 μPa (rms) are predicted to be received are shown in

the greater than 1000–m (328 ft) line of Table 1. The rms (root-mean-square) pressure is an average over the pulse duration. This is the measure commonly used in studies of marine mammal reactions to airgun sounds. The rms level of a seismic pulse is typically about 10 dB less than its peak level (Greene, 1997; McCauley *et al.*, 1998, 2000a).

TABLE 1. ESTIMATED DISTANCES TO WHICH SOUND LEVELS 190, 180, AND 160 DB RE 1 MICROPA (RMS) MIGHT BE RECEIVED FROM THE ONE 105 IN^3 GI GUN THAT WILL BE USED DURING THE SEISMIC SURVEY AROUND THE ALEUTIAN ISLANDS DURING 2005. THE SAFETY RADII USED DURING THE SURVEY WILL DEPEND ON WATER DEPTH (SEE TEXT).

Water Depth	Estimated Distances at Received Levels (m)		
	190 dB	180 dB	160 dB
>1000 m	10	27	275
100–1000 m	15	41	413
<100 m	125	200	750

Empirical data concerning the 180 and 160 dB distances 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 (Tolstoy *et al.*, 2004a,b). Although the results are limited, the data showed that radii around the airguns where the received level would be 180 dB re 1 µPa (rms), the safety criterion applicable to cetaceans (NMFS 2000), vary with water depth. Similar depth-related variation is likely in the 190–dB distances applicable to pinnipeds. The 180- and 190–dB distances are typically used as safety radii during seismic surveys. For all sea turtle sightings, the 180–dB distance will be used as the safety radius. The proposed study area will occur in water approximately 30–3000 m (98–9842 ft), although only about 3 percent of the survey lines are expected to occur in shallow (<1000 m; 3280 ft) water.

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.*, 2004a,b). However, to be precautionary pending acquisition of additional empirical data, L-DEO has proposed using safety radii during GI-airgun operations in deep water that correspond to the values predicted by L-DEO's model for deep water (Table 1). The assumed 190- and 180–dB radii for one GI gun are 10 m (33 ft) and 27 m (88 ft), respectively.

Empirical measurements were not conducted for intermediate water depths (100–1000 m (328–3281 ft)). On the expectation that results will be intermediate between those from shallow and deep water, L-DEO has applied a 1.5X correction factor 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. The assumed 190 and 180 dB radii in intermediate-depth water are 15 m (49 ft) and 41 m (134 ft), respectively (Table 1). L-DEO has requested NMFS use these values for calculating safety ranges in intermediate-depth waters.

Empirical measurements were not made for a single small source 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 was used to predict the radii for two GI airguns. The radii for one GI-airgun were assumed to be half of that predicted for two GI guns. Thus, the 190- and 180–dB radii in shallow water are assumed to be 125 m (410 ft) and 200 m (656 ft), respectively (Table 1) and L-DEO has requested NMFS use thse values for establishing safety zones in shallow water.

Characteristics of Airgun Pulses

Discussion on the characteristics of airgun pulses have been provided in the application and in previous **Federal Register** notices (see 69 FR 31792 (June 7, 2004) or 69 FR 34996 (June 23, 2004)). Reviewers are referred to those documents for additional information.

Description of Habitat and Marine Mammals Affected by the Activity

A detailed description of the Aleutian Islands 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. A total of 18 cetacean species and 10 species of pinnipeds may occur in the proposed study area around the Aleutian Islands. The marine mammals that occur in the proposed survey area belong to four taxonomic groups: odontocetes (toothed cetaceans, such as dolphins and sperm whales), mysticetes (baleen whales), pinnipeds (seals, sea lions, and walrus), and fissipeds (sea otter). Of the 18 cetacean species in the area, several are common.

Odontocete whales include the: sperm whale, Cuvier's beaked whale, Baird's beaked whale, Stejneger's beaked whale, beluga whale, Pacific white-sided dolphin, Risso's dolphin, killer whale, short-finned pilot whale, harbor porpoise, and Dall's porpoise;

Mysticete whales include the: North Pacific right whale, eastern North Pacific gray whale, humpback whale, minke whale, sei whale, fin whale, and blue whale;

Pinnipeds include the: northern fur seal, California sea lion, Steller sea lion, Pacific walrus, bearded seal, harbor seal, spotted seal, ringed seal, ribbon seal, and northern elephant seal. However, only four of these species of pinnipeds are likely to occur in the western Aleutian Islands: Steller sea lions, harbor seals, northern fur seals, and ribbon seals.

The walrus, California sea lion, and ringed, spotted, bearded, and northern elephant seals likely will not be encountered in the study area although they are known to occur in the eastern Aleutians. The sea otter and the walrus are managed by the U.S. Fish and Wildlife Service (USFWS) and are not the subject of this authorization. L-DEO will coordinate with the USFWS regarding project operations and sea otters.

More detailed information on these species is contained in the L-DEO application.

Potential Effects on Marine Mammals

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 in this document are (1) tolerance, (2) masking of natural sounds, (2) behavioral disturbance, and (3) potential hearing impairment and other non-auditory physical effects (Richardson *et al.*, 1995). Given the relatively small size of the single airgun planned for the present project, its effects are anticipated to be considerably less than would be the case with a large array of airguns. L-DEO and NMFS believe it is very unlikely that there would be any cases of temporary or permanent hearing impairment, or non-auditory physical effects. Also, behavioral disturbance is expected to be limited to distances less than 275 m (902 ft) in deep water, 413 m (1355 ft) for intermediate water depths, and 750 m (2461 ft) in shallow water, the zones calculated for 160 dB or the onset of Level B harassment due to impulse sounds. Additional discussion on effects on marine mammal species can be found in the L-DEO application.

Tolerance

Numerous studies (referenced in L-DEO, 2004) have shown that pulsed sounds from airguns are often readily detectable in the water at distances of many kilometers, but that marine mammals at distances more than a few kilometers from operating seismic vessels often show no apparent response. That is often true even in cases when the pulsed sounds must be readily audible to the animals based on measured received levels and the hearing sensitivity of that mammal group. However, most measurements of airgun sounds that have been reported concerned sounds from larger arrays of airguns, whose sounds would be detectable farther away than the ones that are planned to be used in the proposed survey. Although various baleen whales, toothed whales, and pinnipeds have been shown to react behaviorally to airgun pulses under some conditions, at other times all three types of mammals have shown no overt reactions. In general, pinnipeds and small odontocetes seem to be more tolerant of exposure to airgun pulses than are baleen whales. Given the small and low-energy GI-airgun source planned for use in this proposed project, marine mammals would be expected to tolerate being closer to this source than would be the case for a larger airgun source typical of most seismic surveys.

Masking

Masking effects of pulsed sounds on marine mammal calls and other natural sounds are expected to be very limited (due in part to the small size of the single GI-airgun), although there are very few specific data on this. Given the small source planned for use in the Aleutian Island survey, there is little potential for masking of baleen or sperm whale calls during the proposed research. Seismic sounds are short pulses generally occurring for less than 1 sec every 5–10 seconds. This spacing corresponds to a shot interval of approximately 13–26 m (43–85 ft).

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). This has also been shown during recent research in the Gulf of Mexico (Tyack *et al.*, 2003). Given the relatively small source planned for use during this survey and the intermittent nature of seismic pulses, there is even less potential for masking of sperm whale calls during the present study than in most seismic surveys. For the same reasons, masking effects of seismic pulses also are expected to be negligible in the case of the smaller odontocete cetaceans. 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 airguns is at low frequencies, with strongest spectrum levels below 200 Hz and considerably lower spectrum levels above 1000 Hz. These low frequencies are mainly used by mysticetes, but generally 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 marine mammal signal. If little or no overlap occurs between the frequencies of the industrial noise and the marine mammals, as in the case of many marine mammals relative to 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.

Behavioral Disturbance by Seismic Surveys

Behavioral 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, such a disturbance may constitute Level B harassment under the MMPA. 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. With the possible exception of beaked whales, NMFS believes that this is a conservative approach and likely overestimates the numbers of marine mammals that may experience a disruption of a behavioral pattern.

The sound exposure 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. Detailed information on potential disturbance effects on baleen whales, toothed whales, and pinnipeds can be found in Appendix A in L-DEO's Aleutian Islands 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. Based on current information, NMFS 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 for several years in setting the safety (shut-down) radii for seismic surveys. 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.

Because of the small size of the single 105 in^3 GI-airgun, along with the planned monitoring and mitigation measures, there is little likelihood that any marine mammals would 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 single GI-airgun (and multibeam bathymetric sonar), and to avoid exposing them to airgun sound pulses that might (at least in theory) cause hearing impairment. In addition, research and monitoring studies on gray whales, bowhead whales and other cetacean species indicate that 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 highly unlikely that any of these non-auditory effects would occur during the proposed survey given the small size of the airgun, 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.

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) note 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 pulsed 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 approximately 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 single airgun planned for use 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 airgun (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 captive 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 less than 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. Around smaller arrays, such as the single 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 greater than or equal to 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. 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 airgun array. While bow-riding, odontocetes would be at or above the surface, 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 the airgun(s), they would be exposed to strong sound pulses, possibly repeatedly. If some cetaceans did incur TTS through exposure to airgun sounds, it would very likely be a temporary and reversible phenomenon. However, during this project, the bow of the *Kilo Moana* will be about 100 m (328 ft) ahead of the GI-airgun and the 205–dB zone would be significantly less than 100 m (328 ft), except when the vessel is operating in shallow water (less than 1 percent of the survey time). Thus, TTS would not be expected in the case of odontocetes bow riding during airgun operations on this vessel.

NMFS believes that, 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 is 190 dB. The predicted 180- and 190–dB distances for the airgun arrays operated by L-DEO during this activity are summarized in Table 1 in this document.

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, although it is not possible to ramp-up the single airgun being used in this survey, ramping up multiple airguns in arrays has become standard operational protocol for many seismic operators including L-DEO.

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. Although there is no specific evidence that exposure to pulses of airgun sounds can cause PTS in any marine mammals, even with the largest airgun arrays, physical damage to a mammal's hearing apparatus can potentially 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. The 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 odontocetes for exposure to a series of seismic pulses may be on the order of 220 dB re 1 microPa (pk-pk) (approximately 204 dB re 1 microPa rms), 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, as noted previously in this document, 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 from the source. 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

levels immediately adjacent to the single GI-airgun 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 behavioral reactions that can lead to stranding when exposed to strong pulsed sounds.

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, mortality suggests that caution is warranted when dealing with exposure of marine mammals to any high-intensity pulsed sound.

In addition to mid-frequency sonar-related strandings (e.g., for additional discussion see 69 FR 74906 (December 14, 2004)), there was a September, 2002 stranding of two Cuvier's beaked whales in the Gulf of California (Mexico) when a seismic survey by the *R/V Maurice 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 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 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 the proposed L-DEO project where the airgun is small, the ship is moving at 9 knots, and for the most part each survey leg does not encompass a large area.

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.

Until recently, it was assumed that diving marine mammals are not subject to the bends or air embolism. However, a paper concerning beaked whales stranded in the Canary Islands in 2002 suggests that cetaceans might be subject to decompression injury in some situations (Jepson *et al.*, 2003). If so, that might occur if they ascend unusually quickly when exposed to aversive sounds. However, the interpretation that the effect was related to decompression injury is unproven (Piantadosi and Thalmann, 2004; Fernandez *et al.*, 2004). Even if that effect can occur during exposure to mid-frequency sonar, there is no evidence that this type of effect occurs in response to low-frequency airgun sounds. It is especially unlikely in the case of the proposed L-DEO survey which involves only one GI-airgun.

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. Also, the planned mitigation and monitoring measures are expected to minimize any possibility of serious injury, mortality or strandings.

Possible Effects of Mid-frequency Sonar Signals

A multi-beam bathymetric sonar (Simrad EM120 (for deep water) and Simrad EM1002 (for shallow water), and a sub-bottom profiler will be operated from the source vessel essentially continuously during the planned survey.

Sounds from the multi-beam are very short pulses, depending on water depth. Most of the energy in the sound pulses emitted by the multi-beam is at moderately high frequencies, centered at 12 kHz. The beam is narrow (1° or 2°) in fore-aft extent, and wide (150°) in the cross-track extent. Each ping consists of nine successive transmissions (segments) at different cross-track angles. Any given mammal at depth near the trackline would be in the main beam for only a fraction of a second. The Simrad EM1002 is a compact high resolution multi-beam echo sounder that operates at a frequency of 95 kHz, down to water depths of 1000 m (3281 ft). The high operational frequency of this unit will be beyond the effective audible range of all mysticetes and pinnipeds, but the hearing capabilities of many odontocetes extend to frequencies this high. The system operates with 3 different pulse lengths, 0.2, 0.7, and 2 ms, with pulse length increasing with increased water depth. The transmitted beam is narrow (3°) fore-aft, and wide (150°) across-track. Maximum ping rate is 10 per second (in shallow water) with the ping rate decreasing with increasing water depth.

Navy sonars that have been linked to avoidance reactions and stranding of cetaceans generally (1) are more powerful than the Simrad sonars, (2) have a longer pulse duration, and (3) are directed close to horizontally (vs. downward for the Simrad sonars). The area of possible influence of the bathymetric sonar is much smaller-a narrow band oriented in the cross-track direction below the source vessel. Marine mammals that encounter the bathymetric sonar 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 small amounts of pulse energy because of the short pulses and ship speed. In assessing the possible impacts of the 15.5 kHz Atlas Hydrosweep (similar to the Simrad sonar), Boebel *et al.* (2004) noted that the critical sound pressure level at which TTS may occur is 203.2 dB re 1 μPa (rms). The critical region included an area of 43 m (141 ft) in depth, 46 m (151 ft) wide athwartship, and 1 m (3.3 ft) fore-and-aft (Boebel *et al.*, 2004). In the more distant parts of that (small) critical region, only slight TTS would be incurred. 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 Simrad multibeam sonars.

Sounds from the 12–kHz pinger are very short pulses, occurring for 1 ms once every second, with source level 193 dB re 1 microPa. The 12–kHz signal is omnidirectional. The pinger produces sounds that are within the range of frequencies used by small odontocetes (killer whales, Pacific white-sided dolphins, and Dall's porpoise) and pinnipeds (harbor seals and Steller sea lions) that occur or may occur in the area of the planned surveys.

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, the 12 kHz multi-beam will not overlap with the predominant frequencies in baleen whale calls, further reducing any potential for masking in that group. The approximately 95 kHz pulses from the EM1002 sonar will be inaudible to baleen whales and pinnipeds. Furthermore, even to odontocetes, 95–kHz sounds would not be audible or cause masking at long distances, as they absorb rapidly in seawater, at a rate of approximately 33 dB/km over and above normal spreading losses (D. Ross, in Malme 1995).

While the 12–kHz pinger produces sounds within the frequency range used by odontocetes that may be present in the survey area and within the frequency range heard by pinnipeds, marine mammal communications will not be masked appreciably by the pinger signals. This is a consequence of the relatively low power output, low duty cycle, and brief period when an individual mammal is likely to be within the area of potential effects. In the case of mysticetes, the pulses do not overlap with the predominant frequencies in the calls, which would avoid significant masking.

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 strandings 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 bathymetric sonars to be used during the proposed survey, 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 bathymetric sonar to be 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 in either duration or bandwidth as compared to those from a bathymetric sonar.

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 12 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. The 95–kHz sounds from the EM1002 will be inaudible to pinnipeds and to baleen whales, so will have no disturbance effects on those groups. The pulsed signals from the pinger are much weaker than those from the bathymetric sonars and from the GI gun. Therefore,

behavioral responses are not expected unless marine mammals are very close to the source.

Hearing Impairment and Other Physical Effects

Given recent stranding events that have been associated with the operation of naval sonar, there is concern that sonar noise can cause serious impacts to marine mammals (for discussion see Effects of Seismic Surveys on Marine Mammals). 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 much less 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 pinger are much lower than those of the GI airgun and bathymetric sonars. It is unlikely that the pinger produces pulse levels strong enough to cause temporary hearing impairment or (especially) physical injuries even in an animal that is (briefly) in a position near the source.

Estimates of Take by Harassment for the Aleutian Islands Seismic Survey

Given the proposed mitigation (see Mitigation later in this document), all anticipated takes involve a temporary change in behavior that may constitute Level B harassment. The proposed 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 Aleutian Islands seismic survey using data on marine mammal density and abundance from marine mammal surveys in the region by Brueggeman *et al.* (1987, 1988), Troy and Johnson (1989), Dahlheim *et al.*(2000), Waite *et al.* (2002), Doroff *et al.* (2003), Wade *et al.*(2003), and Tynan (2004), 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 single GI-airgun planned to be used for this project. No animals are expected to exhibit responses to the sonars or pinger given their characteristics (e.g., narrow, downward-directed beam) described previously. Therefore, no additional incidental takings are included for animals that might be affected by the multi-beam sonars or 12–kHz pinger.

Table 2 incorporates the corrected density estimates and provides 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 Aleutian Islands survey.

BILLING CODE 0–5542–S

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 the Aleutian Islands in June–July 2005.

Species	Number of Exposures to Sound Levels ≥160 dB[a]		Number of Individuals Exposed to Sound Levels ≥160 dB[b]			
			Best Estimate			
	Best Estimate	Maximum Estimate	Number	% of Regional Pop'n[c]	Maximum Estimate	Requested Take Authorization
Physeteridae						
Sperm whale	*2*	*8*	*2*	*0.0*	*7*	***8***
Ziphiidae						
Cuvier's beaked whale	12	12	11	0.1	11	**12**
Baird's beaked whale	4	14	3	0.1	13	**14**
Stejneger's beaked whale	0	0	0	0.0	0	**5**
Monodontidae						
Beluga	0	0	0	NA	0	**5**
Delphinidae						
Pacific white-sided dolphin	5	44	4		41	**44**
Risso's dolphin	0	0	0		0	**5**
Killer whale	50	157	46		144	**157**
Short-finned pilot whale	0	0	0		0	**10**
Phocoenidae						
Harbor porpoise	46	381	43	0.1	350	**381**
Dall's porpoise	409	898	376	0.1	827	**898**
Balaenopteridae						
North Pacific right whale	*0*	*3*	*0*	*0.0*	*3*	***3***
Gray whale	38	90	35	0.1	83	**90**
Humpback whale	*58*	*121*	*54*	*0.9*	*112*	***121***
Minke whale	13	37	12	*0.8*	34	**37**
Sei whale	*0*	*1*	*0*	*NA*	*1*	***5***
Fin whale	*45*	*120*	*42*	*0.4*	*111*	***120***
Blue whale	*0*	*0*	*0*	*0.0*	*0*	***5***
Pinnipeds						
Northern fur seal	4	24	3	0.0	22	**24**
Steller sea lion	37	95	34	0.1	87	**95**
Harbor seal	61	160	56	0.2	148	**148**
Ribbon seal	0	0	0	0.0	0	**5**

[a] Best estimate and maximum estimates of density are from Table 5 in L-DEO, 2004.

[b] Estimates of the number of exposures would be about 1.15 × the number of individuals exposed if there were no allowance for lines that might be resurveyed due to poor data quality. There is no overlap of the 160 or 170 dB received noise level radii between adjacent survey lines.

[c] Regional population size estimates are from Table 4, in L-DEO, 2004. NA indicates that regional population estimates are not available.

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, particularly when feeding whales are involved (Miller *et al.* in press). Fewer than 150 mysticetes are expected to be encountered during the proposed survey in the Aleutian Islands (Table 2) and disturbance effects would be confined to shorter distances given the low-energy acoustic source to be used during this project. In addition, the estimated numbers presented in Table 2 are considered overestimates of actual numbers that may be harassed.

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 delphinids and Dall's porpoise 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 single GI-airgun 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 odontocete cetaceans that may be exposed to sounds ≥160 dB re 1 microPa (rms) represent 0 to approximately 0.4 percent (except for approximately 3.1 percent for killer whales) of the regional species populations (Table 2).

Mitigation measures such as controlled speed, course alteration, observers, and shut downs when marine mammals are seen within defined ranges should further reduce short-term reactions, and minimize any effects on hearing. 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 of cetaceans, the action is expected to have no more than a negligible impact on the affected species or stocks of cetaceans.

Effects on Pinnipeds

Two pinniped species (the Steller sea lion and the harbor seal) and the sea otter are likely to be encountered in the study area. Also, it is possible that a small number of northern fur seals may be encountered, and possible (but very unlikely) that a few ribbon seals may be encountered. An estimated 56 individual harbor seals and 34 individual Steller sea lions (<0.1 percent and 0.2 percent of their northeast Pacific Ocean populations, respectively) may be exposed to GI gun sounds at received levels greater than or equal to 160 dB re 1 microPa (rms) during the seismic survey. It is probable that only a small percentage of those would actually be disturbed. It is most likely that only 3 northern fur seals and no ribbon seals will be exposed to sounds greater than or equal to 160 dB. Effects are expected to be limited to short-term and localized behavioral changes falling within the MMPA definition of Level B harassment. As is the case for cetaceans, the short-term exposures to sounds from the single GI-airgun is not expected to result in any long-term consequences for the individuals or their populations and the activity is expected to have no more than a negligible impact on the affected species or stocks of pinnipeds.

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.

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 at 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 injury-zone 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 microPa (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 shock wave. 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

Subsistence remains the basis for Alaska Native culture and community. Subsistence hunting and fishing continue to be prominent in the household economies and social welfare of some Alaskan residents, particularly among those living in small, rural villages (Wolfe and Walker, 1987). In rural Alaska, subsistence activities are often central to many aspects of human existence, including patterns of family life, artistic expression, and community religious and celebrator activities. Marine mammals are legally hunted in Alaskan waters by coastal Alaska Natives. In the Aleutian Islands, Steller sea lions, harbor seals, sea otters, and small numbers of spotted and ringed seals are hunted (ADFG, 1997). In the Pribilof Islands, fur seals and sea lions make up most of the marine mammal harvest in Saint Paul and Saint George (on the Pribilof Islands). In the Aleutian Islands, harbor seals and sea lions comprise the majority of subsistence takes in Atka, Nikolski, Unalaska, and Akutan; and harbor seals are taken most frequently in False Pass, Sand Point,

King Cove, and Nelson Lagoon (ADFG 1997). Hunting communities are concentrated along the Eastern Aleutian Islands, and the L-DEO project area is close to only two hunting communities, Nikolski (on Umnak Island) and Unalaska. More detailed information regarding the level of subsistence by species is provided in the application (L-DEO, 2004).

The proposed L-DEO project potentially could impact the availability of marine mammals for harvest in a very small area immediately around the *Kilo Moana*. At any given location, this effect would persist for a only a short time period during seismic activities-probably less than an hour, given the small size of the seismic source to be used in this project. Pinnipeds and sea otters are generally not very responsive to airgun pulses and therefore would not be affected. Considering that, and the limited time and locations for the planned seismic surveys, the proposed project is not expected to have an unmitigable adverse impact on the availability of Steller sea lions, harbor seals, or sea otters for subsistence harvest.

Mitigation

For the proposed seismic survey in the Aleutian Islands, North Pacific Ocean, L-DEO will deploy a single GI-airgun as an energy source, with a total discharge volume of 105 in^3. The energy from the airgun is directed mostly downward. The directional nature of the airgun 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 this airgun 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.

The following mitigation measures, as well as marine mammal visual monitoring (discussed later in this document), will be implemented for the subject seismic survey: (1) Speed and course alteration (provided that they do not compromise operational safety requirements); (2) shut-down procedures; (3) special mitigation measures (shut downs) for the North Pacific right whale;(4) avoidance of encroachment upon critical habitat around Steller sea lion rookeries and haulouts; and (5) no start-up of GI-airgun operations at night unless the full 180–dB safety zone is visible.

Speed and Course Alteration

If a marine mammal is detected outside its respective safety zone (180 dB for cetaceans, 190 dB for pinnipeds) 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).

Shut-down Procedures

Although a ''power-down'' procedure is often applied by L-DEO during seismic surveys with larger arrays, powering down is not possible during the proposed project, as only a single GI-airgun will be used. Likewise, although ''ramp-up'' procedures are usually followed by L-DEO prior to airgun operations, ramp ups are impractical for a single GI airgun. Therefore, if a marine mammal is detected outside the safety radius but is likely to enter the safety radius, and if the vessel's speed and/or course cannot be changed to avoid having the mammal enter the safety radius, the GI-airgun will be shut-down before the mammal is within the safety radius. Likewise, if a mammal is already within the safety zone when first detected, the airgun will be shut down immediately. The GI gun also will be shut down if a North Pacific right whale is sighted from the vessel, even if it is located outside the safety radius.

The GI-airgun activity will not resume until the marine mammal(s) has cleared the safety radius. The animal will be considered to have cleared the safety radius if it is visually observed to have left the safety radius, if it has not been seen within the radius for 15 minutes in the case of small odontocetes and pinnipeds, or has not been seen within the zone for 30 minutes in the case of mysticetes and large odontocetes, including sperm, pygmy sperm, dwarf sperm, and beaked whales.

For a 105–in^3 GI airgun, the predicted 180–dB distances applicable to cetaceans are 27–200 m (89–656 ft), depending on water depth, and the corresponding 190–dB radii applicable to pinnipeds are 10–125 m (33–410 ft), depending on depth (Table 1). Airgun activity will not resume until the marine mammal has cleared the safety radius.

Also, to the extent practicable, the vessel will avoid entering the critical habitat around Steller sea lion haul outs by planning operations to remain in water depths ≤30 m (98 ft). In addition, no-approach zones of Steller sea lion rookeries will be observed, and the vessel will not approach within 3 nm (5.6 km) of the rookeries.

Start-Up Procedures

In order for airgun start-up to occur during day or night, the full safety radius must be visible for at least 30 consecutive minutes. During night-time operations, if the entire safety radius is visible using vessel lights and night-vision devices (NVDs) (as may be the case in deep and intermediate waters), then start up of the airgun from a shut down may occur. However, lights and NVDs may not be very effective as a basis for monitoring the larger safety radii around the GI airgun operating in shallow water. In shallow water, nighttime start ups of the GI gun from a shut-down condition may not to be possible and therefore, would not be authorized. However, if the GI airgun has been operational before nightfall, it can remain operational throughout the night, even though the entire safety radius may not be visible.

Comments on past IHAs raised the issue of prohibiting nighttime operations as a practical mitigation measure. However, this is not practicable due to cost considerations and ship time schedules. The daily cost to the Federal Government to operate vessels such as *Kilo Moana* is approximately $33,000-$35,000 /day (Ljunngren, pers. comm. May 28, 2003). If the vessel was prohibited from operating during nighttime, each trip could require an additional three to five days to complete, or up to $175,000 more, depending on average daylight at the time of work.

If a seismic survey vessel is limited to daylight seismic operations, efficiency would also be much reduced. Without commenting specifically on how that would affect the present project, for seismic operators in general, a daylight-only requirement would be expected to result in one or more of the following outcomes: cancellation of potentially valuable seismic surveys; reduction in the total number of seismic cruises annually due to longer cruise durations; a need for additional vessels to conduct the seismic operations; or work conducted by non-U.S. operators or non-U.S. vessels when in waters not subject to U.S. law.

Marine Mammal Monitoring

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

The visual observers will monitor marine mammals near the seismic source vessel during all daytime airgun operations, during any nighttime start-ups of the airgun (in intermediate and deep waters) and at night, whenever daytime monitoring resulted in one or more shut-down situations due to marine mammal presence. During daylight, vessel-based observers will watch for marine mammals 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), especially during ongoing operations at night when the designated observers are on stand-by and not required to be on watch at all times.

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 flying bridge of the *Kilo Moana*, the observer's eye level will be 17.2 m (56.4 ft) above sea level, allowing for good visibility around the entire vessel. If observers are stationed on the flying bridge, the eye level will be 14.4 m (47.2 ft) above sea level. If surveying from the bridge, the observer's 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 reticle binoculars (e.g., 7 X 50 Fujinon) and with the naked eye during the daytime. At night, NVDs will be available (ITT F500 Series Generation 3 binocular-image intensifier or equivalent), when required. Laser range-finding binoculars (Leica L.F. 1200 laser rangefinder or equivalent) will be available to assist with distance estimation. Those are useful in training observers to estimate distances visually, but are generally not useful in measuring distances to animals directly. The observers will be used to determine when a marine mammal is in or near the safety radii so that the required mitigation measures, such as course alteration and power-down or shut-down, can be implemented. If the GI-airgun is shut down, observers will maintain watch to determine when the animal is outside the safety radius.

Observers will not be on duty during ongoing seismic operations at night; bridge personnel will watch for marine mammals during this time and will call for the airgun to be shut-down if marine mammal(s) are observed in or about to enter the safety radii. However, a biological observer must be on standby at night and available to assist the bridge watch if marine mammals are detected. If the airgun is turned on at night (see previous section for restrictions), two marine mammal observers will monitor the safety zone for marine mammals for 30 minutes prior to ramp-up and during the ramp-up using either deck lighting or NVDs that will be available (ITT F500 Series Generation 3 binocular image intensifier or equivalent).

Post-Survey Monitoring

In addition, at times the biological observers will be able to conduct monitoring of most recently-run transect lines as the returns along a parallel transect track. This will provide the biological observers with opportunities to look for injured or dead marine mammals (although no injuries or mortalities are expected during this research cruise).

Taking into consideration the additional costs of prohibiting nighttime operations and the likely impact of the activity (including all mitigation and monitoring), NMFS has preliminarily determined that the proposed mitigation and monitoring ensures that the activity will have the least practicable impact on the affected species or stocks. Marine mammals will have sufficient notice of a vessel approaching with an operating seismic airguns, thereby giving them an opportunity to avoid the approaching noise source; two marine mammal observers will be required to monitor the safety radii using shipboard lighting or NVDs for at least 30 minutes before ramp-up begins and verify that no marine mammals are in or approaching the safety radii; and start-up may not begin unless the entire safety radii are visible. Therefore as mentioned earlier, it is likely that the single GI-airgun will not be started-up from a shut-down at night when in waters shallower than 100 m (328 ft).

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 June and July, 2005. 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.

Endangered Species Act (ESA)

Under section 7 of the ESA, the National Science Foundation (NSF), the agency funding L-DEO, has begun consultation on this proposed seismic survey. NMFS will also consult on the issuance of an IHA under section 101(a)(5)(D) of the MMPA for this activity. Consultation will be concluded prior to a determination on the issuance of an IHA.

National Environmental Policy Act (NEPA)

The NSF has prepared an Environmental Assessment (EA) for the oceanographic survey planned for the Aleutian Islands area. NMFS is reviewing this EA and will either adopt it or prepare its own NEPA document before making a determination on the issuance of an IHA. A copy of the NSF EA for this activity is available upon request (see **ADDRESSES**).

Preliminary Conclusions

NMFS has preliminarily determined that the impact of conducting the seismic survey in the Aleutian Islands in the North Pacific Ocean may 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 preliminary 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 well 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 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 proposed mitigation measures mentioned 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 interfere with any legal subsistence hunts, since seismic operations will not take place in subsistence whaling and sealing areas and will not affect marine mammals used for subsistence purposes.

Proposed Authorization

NMFS proposes to issue an IHA to L-DEO for conducting a low-intensity oceanographic seismic survey in the Aleutian Island area of the North Pacific Ocean, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. NMFS has preliminarily determined that the proposed activity would result in the harassment of small numbers of marine mammals; would have no more than a negligible impact on the affected marine mammal stocks; and would not have an unmitigable adverse impact on the availability of species or stocks for subsistence uses.

Information Solicited

NMFS requests interested persons to submit comments and information concerning this request (see **ADDRESSES**).

Dated: March 14, 2005.

Laurie K. Allen,

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

[FR Doc. 05–5542 Filed 3–18–05; 8:45 am]

BILLING CODE 3510–22–S

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 031505E]

North Pacific Fishery Management Council; Public Meetings

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

ACTION: Notice of public meetings.

SUMMARY: The North Pacific Fishery Management Council (Council) and its advisory committees will hold public meetings in Anchorage, AK.

DATES: The meetings will be held April 4, 2005, through April 11, 2005. See **SUPPLEMENTARY INFORMATION** for specific dates and times.

ADDRESSES: The meetings will be held at the Anchorage Hilton Hotel, 500 West Third Avenue, Anchorage, AK.

Council address: North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK 99501–2252.

FOR FURTHER INFORMATION CONTACT: Council staff; telephone: (907) 271–2809.

SUPPLEMENTARY INFORMATION: The Council's Advisory Panel will begin at 8 a.m., Monday, April 4 and continue through Friday April 8, 2005. The Scientific and Statistical Committee will begin at 8 a.m. on Monday, April 4, 2005, and continue through Wednesday, April 6, 2005.

The Council will begin its plenary session at 8 a.m. on Wednesday, April 6 and continuing through Monday April 11. All meetings are open to the public except executive sessions. The Ecosystem Committee will meet Monday, April 4, from 1 p.m. to 5 p.m. The Enforcement Committee will meet Tuesday, April 5 from 1 p.m. to 5 p.m.

Council Plenary Session: The agenda for the Council's plenary session will include the following issues. The Council may take appropriate action on any of the issues identified.

1. Reports

a. Executive Director's Report

b. NMFS Management Report 9 include report on (1) Data Quality act requirements, (2) National Environmental Protection Act (NEPA) requirements for annual specification)

c. Coast Guard Report

d. Alaska Department of Fish & Game Report (Review Board of Fisheries March actions, initiating action as necessary)

e. U.S. Fish & Wildlife Service Report

f. Protected Species Report (T)

2. Community Development Quota (CDQ) Program: NMFS Report on CDQ allocation process. State of Alaska's Consultation on CDQ allocation recommendations.

3. Gulf of Alaska Groundfish (GOA) Rationalization: Receive Community Committee report and other available information and refine alternatives as appropriate.

4. GOA Rockfish Demonstration Project: Preliminary Review of EA/RIR/IRFA, action as necessary.

5. Bering Sea Aleutian Islands (BS/AI) Pacific Cod Allocations: Review/refine alternatives and options.

6. Bering Sea and Aleutian Island (BSAI) Salmon Bycatch: Review reports from pollock cooperatives. Finalize alternatives for analysis.

7. *Bairdi* Crab Split: Develop problem statement/refine Alternatives.

8. Groundfish Management: Receive Non-Target Species Committee report and determine next steps. GOA Other species calculation: Initial Review. Exempted Fishing Permit (EFP) for Internal Weighted Groundline: Review and action as necessary. EFP for salmon excluder and action as necessary.

9. Scallop: Review Scallop Stock Assessment Fishery Evaluation. Final action on Scallop Fishery Management Plan.

10. Staff Tasking: Review tasking and committees and initiate action as appropriate. Programmatic Supplemental Environmental Impact Statement Priorities, review objectives and develop workplan.

11. Other Business.

Scientific and Statistical Committee (SSC): The SSC agenda will include the following issues:

1. GOA Rockfish
2. BS/AI Pacific cod allocations
3. BS/AI Salmon Bycatch
4. Groundfish Management
5. Scallop

Advisory Panel: The Advisory Panel will address the same agenda issues as the Council.

Although non-emergency issues not contained in this agenda may come before this group for discussion, those issues may not be the subject of formal action during this meeting. Action will be restricted to those issues specifically identified in this notice and any issues arising after publication of this notice that require emergency action under section 305(c) of the Magnuson-Stevens Fishery Conservation and Management Act, provided the public has been