

## DEPARTMENT OF COMMERCE

## National Oceanic and Atmospheric Administration

## 50 CFR Part 216

[Docket No. 00801223-1204-03; I.D. 062000A]

RIN 0648-AO24

**Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to Operation of a Low Frequency Sound Source by the North Pacific Acoustic Laboratory**

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

**ACTION:** Final rule.

**SUMMARY:** NMFS, upon application from the University of California San Diego, Scripps Institution of Oceanography (Scripps), is issuing regulations to govern the unintentional take of a small number of marine mammals incidental to the continued operation of a low frequency (LF) sound source by Scripps. The sound source was previously installed off the north shore of Kauai by the Acoustic Thermometry of Ocean Climate (ATOC) project. Issuance of regulations governing unintentional incidental takes of marine mammals in connection with particular activities is required by the Marine Mammal Protection Act (MMPA) when the Secretary of Commerce (Secretary), after notice and opportunity for comment, finds, as here, that such takes will have a negligible impact on the species and stocks of marine mammals and will not have an unmitigable adverse impact on the availability of them for subsistence uses. These regulations do not authorize conducting the activity; such authorization is not within the jurisdiction of the Secretary. Rather, these regulations authorize the unintentional incidental take of marine mammals in connection with such activities and prescribe methods of taking and other means of effecting the least practicable adverse impact on the species and its habitat, and on the availability of the species for subsistence uses.

**DATES:** Effective from September 17, 2001, through September 17, 2006.

**ADDRESSES:** Copies of the Scripps' application and NMFS' Biological Opinion may be obtained by writing to Donna Wieting, Chief, Marine Mammal Conservation Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West

Highway, Silver Spring, MD 20910-3226 or by telephoning the contact listed here (see **FOR FURTHER INFORMATION CONTACT**). A limited number of copies of the Final Environmental Impact Statement (final EIS), issued by the Office of Naval Research, Department of the Navy (ONR) for this activity, are available from Marine Acoustics Inc., 809 Aquidneck Ave., Middletown, RI 02842, attn. Kathy Vigness Reposa, 401-847-7508.

Comments regarding the burden-hour estimate or any other aspect of the collection of information requirements contained in this rule should be sent to the Chief, and to the Office of Information and Regulatory Affairs, Office of Management and Budget (OMB), Attention: NOAA Desk Officer, Washington, DC 20503.

**FOR FURTHER INFORMATION CONTACT:** Kenneth R. Hollingshead (301) 713-2055, ext. 128.

**SUPPLEMENTARY INFORMATION:**

**Background**

Section 101(a)(5)(A) of the Marine Mammal Protection Act (16 U.S.C. 1361 *et seq.*) (MMPA) directs the Secretary of Commerce (Secretary) to allow, upon request, the incidental, but not intentional, taking of small numbers 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 regulations governing the take are issued.

Permission may be granted for periods of 5 years or less if the Secretary finds that the taking will be small, will have no more than 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 Arctic Ocean subsistence uses, and if regulations are prescribed setting forth the permissible methods of taking and the requirements pertaining to the monitoring and reporting of such taking.

**Summary of Request**

On May 21, 2000, NMFS received an application for an incidental, small take authorization under section 101(a)(5)(A) of the MMPA from Scripps to take a small number of marine mammals incidental to the continued operation of a LF sound source previously installed off the north shore of Kauai, HI as part of the ATOC project. The principal funding agency for the proposed action is ONR. A final decision on whether to use the acoustic sound source and its seabed power cable for the North Pacific Acoustic Laboratory (NPAL), in order to

combine a second phase of research on the feasibility and value of large-scale acoustic thermometry with long range underwater sound transmission studies and marine mammal monitoring and studies, will be made by Scripps and ONR based, in part, on their findings and determinations made under the National Environmental Policy Act (NEPA). Draft and final EISs have been prepared by the ONR. NMFS is a cooperating agency, as defined by NEPA, in the preparation of these documents.

**Project Description**

Acoustic thermometry is a method for obtaining information about the temperature field in the ocean from precise measurements of the travel times of sound pulses transmitted through the ocean. It is also a technique for acoustic remote sensing of the ocean interior, in which the properties of the ocean between the acoustic sources and receivers are determined, rather than the properties of the ocean at the instruments as is the case for conventional thermometers and current meters.

The basic principle behind acoustic thermometry is that, because sound travels faster in warm water than in cold water, sound travel time is a direct measure of the average temperature between source and receiver. The travel time of a sound pulse from a source near Kauai to a receiver in the western North Pacific Ocean, for example, will decrease if the ocean in between warms up and will increase if the ocean cools down. Measuring average ocean temperatures over time may answer questions related to global climate change.

The NPAL acoustic project takes advantage of an acoustic "waveguide" deep within the ocean that carries sounds over very long distances. This feature, known as the "sound channel" or sound fixing and ranging (SOFAR) channel, is at the ocean depth where the speed of sound is at a minimum. Above the SOFAR channel, sound travels faster because the water is warmer. Below the SOFAR channel, sound travels faster because the pressures are greater. Sounds that would otherwise spread to higher or lower depths are refracted (bent) back toward the SOFAR channel axis by this difference in speeds. The net effect is that the sound channel very efficiently transmits sounds for long distances. This effect also tends to limit sounds that are trapped in the SOFAR channel from being detectable at depths outside of the channel. The sounds to be produced by the NPAL source are digitally coded, low frequency rumbles

at a pitch comparable to the low notes of a cello. The same digital sequences are repeated a number of times and combined at the receivers. This allows a signal to be detected beneath the ambient background noise which, in turn, permits use of a less intense sound source. The receiving stations use advanced digital processing techniques similar to those used to retrieve data from deep space probes, to detect signals after traveling great distances through the SOFAR channel.

Long-range underwater sound transmission studies are needed: (1) To improve the understanding of the basic principles of LF, long-range underwater sound transmission (i.e., acoustic propagation) in the ocean; (2) to determine the effects of ocean environmental variability on acoustic signal stability and coherence; (3) to study the seasonal and annual variations in acoustic conditions in the North Pacific and the impact of environmental variability on acoustic propagation; and (4) to determine the fundamental limits to acoustic signal processing at long-range imposed by the ocean environment.

The original ATOC feasibility project demonstrated that acoustic thermometry is a powerful tool for making routine measurements of large-scale ocean temperature variability and heat content. The key results obtained to date are: (1) Acoustic travel times can be measured with a precision of about 20-30 milliseconds at 3000-5000 km (1620-2700 nm) ranges; (2) range- and depth-averaged temperature estimates made from the acoustic travel-time data are consistent with direct temperature measurements made with instruments lowered from ships (Worcester *et al.*, 1999); (3) the observed travel time changes can be clearly related to known ocean processes; and (4) the range and depth-averaged temperatures derived from ATOC are consistent with, and complementary to, related estimates derived from measurements of sea-surface height.

The purposes for conducting the proposed second-phase of large-scale acoustic thermometry research are: (1) To test the feasibility and value of large-scale acoustic thermometry; (2) to study the behavior of sound transmissions in the ocean over long distances; (3) to study seasonal and interannual ocean variability associated with ocean phenomena such as El Niño, La Niña, and the Pacific Decadal Oscillation; (4) to use acoustic thermometry data in combination with a variety of other data types, including satellite altimeter data, surface drifter data, surface mooring data, and others to test and constrain

computer models of ocean circulation in order to gain a better understanding of ocean variability and the earth's changing climate; and (6) to make an objective assessment of the value of acoustic methods for remote sensing of the ocean interior as one component of an integrated ocean observing system for ocean weather and climate. This second phase of acoustic research will require a long time series of acoustic measurements in order to determine whether the acoustically-derived time series of large-scale ocean temperature and heat content variability prove to be as valuable as anticipated in studying seasonal and interannual ocean variability.

Under the proposed action, which is for Scripps to operate the sound source previously installed off the north shore of Kauai by the ATOC project, the seabed power cable and sound source from the ATOC project would remain in their present locations offshore of Kauai, and transmissions would continue with approximately the same signal parameters and transmission schedule used in the earlier ATOC project. The typical schedule would consist of six 20-minute (min) transmissions (one every 4 hours), every fourth day, with each transmission preceded by a 5-min ramp-up period during which the signal intensity is gradually increased, representing an average duty cycle of 2 percent. With the possible exception of short duration testing with duty cycles of up to 8 percent, or equipment failure, this schedule would continue for a period of 5 years. In this context, short duration testing refers to a maximum of 2 months of testing per year at a duty cycle higher than 2 percent. The signals transmitted by the source would have a center frequency of 75 Hertz (Hz) and a bandwidth of approximately 35 Hz (i.e., sound transmissions are in the frequency band of 57.5-92.5 Hz). Approximately 260 watts of acoustic power would be radiated during transmission. According to Scripps, the signal parameters and source level in the ATOC project have been found to provide adequate, but not excessive, signal-to-noise ratios in the receiver ranges of interest. At 1 meter (m) (3.3 feet (ft)) from the source (at 807 m (2,648 ft) water depth), sound intensity (i.e., source level) would be about 195 decibels (dB) referenced to the intensity of a signal with a sound pressure level (SPL) of 1 microPascal (1  $\mu$ Pa).

Average ambient noise levels in the 60-90 Hz band offshore central Kauai can be 76-98 dB (with various degrees of shipping traffic) and are expected to be higher ( $\sim$ 105 dB) when humpback whales are present. At the water's

surface above the NPAL source, the received level from the NPAL source is not expected to be louder than 137 dB when the source is on. The received level in the top 100 m (328.1 ft) from the water surface, when the source is on, has been measured to decrease to about 120 dB at 5 km (2.7 nm) shoreward of the source. The near-surface NPAL received level is predicted to decrease to about 120 dB at 7.5 km (4 nm) seaward of the source. Underwater sound levels in the area surrounding the NPAL source are expected to be: 140 dB at 245 m (804 ft) water depth (562 m (1844 ft) from the source); 145 dB at 491 m (1611 ft) water depth (316 m (1037 ft) from the source); 150 dB at 629 m (2064 ft) water depth (178 m (564 ft) range around the source); and 165 dB at 775 m (2543 ft) water depth (32 m (105 ft) range around the NPAL source (ONR/NMFS, 2000; ARPA/NMFS, 1995).

### Comments and Responses

On December 22, 2000 (65 FR 80815), NMFS published a proposed rule to authorize Scripps to take small numbers of marine mammals incidental to the continued operation of a LF sound source previously installed off the north shore of Kauai, HI, and requested comments, information, and suggestions concerning the request and the regulations that would govern the taking by harassment of certain species of marine mammals. During the 45-day public comment period, NMFS received letters from one citizen, the Marine Mammal Commission (MMC), the Hawaii Department of Business, Economic Development and Tourism (State of Hawaii), the Humane Society of the United States (on behalf of itself, Earth Island Institute and the Natural Resources Defense Council)(HSUS), and from the Whale and Dolphin Conservation Society (WDCS). Some comments by the MMC regarding minor text edits modifications have been incorporated without further discussion in this document.

### Activity Concerns

*Comment AC1:* The MMC notes that the term "short duration" should be described in reference to duty cycles of up to 8 percent.

*Response:* In the preamble to the proposed rule, NMFS stated: "[W]ith the possible exception of short duration testing with duty cycles of up to 8 percent, or equipment failure, this (NPAL transmission) schedule would continue for a period of 5 years." In this document, "short duration testing" refers to the maximum of 2 months of testing per year at a duty cycle higher than 2 percent. This increased duty

cycle would not occur during the humpback whale season (February through April), and would not have any single transmission longer than 2 hours in duration. For example, an 8 percent duty cycle might include 20-minute transmissions at 4-hour intervals every day, instead of every fourth day. Another example could involve transmitting the 20-minute signal on the hour for 24 hours followed by 72 hours with no transmissions, repeated up to 15 times over the 2-month 8-percent duty cycle period.

*Comment AC2:* The MMC notes that the discussion does not, but should, explain that received sound levels at different distances from the source are mean or modal estimates and that certain environmental conditions could cause sound focusing, thereby resulting in received levels greater than estimated at various distances from the source.

*Response:* NMFS agrees that SPLs at different distances may be affected slightly by water and bottom characteristics. This is especially likely for upslope propagation and is explained in some detail in ONR's final EIS. However, sound focusing is likely to occur only with surface ducting; with the NPAL source located at a depth of 807 m (2,648 ft), surface ducting is very unlikely to occur.

#### MMPA Concerns

*Comment MMPA1:* The MMC notes that, while any significant behavioral response by a marine mammal no doubt would constitute Level B harassment, it is not clear that other types of disturbance that cause disruption of behavioral patterns would not constitute harassment. As such, NMFS should more clearly explain how the distinction it seeks to draw between significant and other behavioral responses conforms to the statutory definition of Level B harassment. The MMC recommends also that NMFS more clearly describe what would constitute a significant behavioral response.

*Response:* NMFS clarifies that, for small take authorizations (as opposed to intentional takings), NMFS considers a Level B harassment taking to have occurred if the marine mammal has a significant behavioral response in a biologically important behavior or activity. The term "harassment" is defined in the MMPA as "any act of pursuit, torment, or annoyance which . . . (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."

In this context, a behavioral pattern means a composite of biological traits characteristic of an individual or of a species. Therefore, to disrupt a behavioral pattern, the activity would need to disrupt an animal's normal pattern of biological traits or behavior, not just cause a momentary reaction on the part of a marine mammal. Therefore, if the only reaction to an activity on the part of the marine mammal is within the normal repertoire of actions that are required to carry out the behavioral pattern for that species of marine mammal, NMFS considers the activity not to have caused an incidental disruption of the behavioral pattern, provided the animal's reaction is not otherwise significant enough to be considered disruptive due to length or severity. For example, if there is a short-term change in breathing rates or a somewhat shortened or lengthened diving sequence that is within the animal's normal range of breathing patterns and diving cycles but there is not a disruption to the animal's overall behavioral pattern (i.e., the changes are not biologically significant), then these responses do not rise to a level requiring a small take authorization or, if under a small take authorization, does not constitute an incidental take.

Examples of significantly disruptive or severe behavior would be where pinnipeds flee a haulout beach or rookery en masse due to a disturbance, or animals either leave an area of habitation for a period of time, or diverge significantly from their migratory path to avoid either an acoustic or a visual interference. For these two mentioned situations, non-significant behavioral responses would be when only a few pinnipeds leave the haulout or mill-about, but many pinnipeds alert to the disruption; or when marine mammals make minor course corrections that are not discernable either to observers or directional plotting, and which require statistical manipulation in order to determine that a course correction has taken place. For the action under consideration in this document, it is the behavioral response of the humpback and possibly sperm whale to the NPAL signal that is the biological response that is considered to be a taking by harassment.

*Comment MMPAC2:* The HSUS believes that NMFS has used the NPAL proposed rulemaking to establish a standard for Level B (acoustic) harassment, which appears to extend well beyond this project. This new standard, which NMFS has referred to

as "biological significance," would count as "takes" only those activities with the potential to affect the reproduction and survival of a protected species. The HSUS believes that NMFS is making discriminations that are non-conservative judgments in violation of the MMPA. NMFS is obligated to use the definition found in the MMPA (for Level B harassment) in calculating species take and must include in its tally any animal whose behavioral patterns might potentially be disrupted. The Agency's failure to do so here, and its extension of this failure to a broadly applied rule, represents a rewriting of law and an offense to the conservative intent of the MMPA.

*Response:* Reproduction and survival effects are used by NMFS to determine whether an activity is having a negligible impact on marine mammals, not whether an incidental take is occurring. Negligible impact determinations are based on the impact the activity might have on a species' or stocks' annual rates of recruitment (reproduction) or survival (50 CFR 216.103). Because negligible impact determinations are based, in part, on an activity's impact on a species' or stock's survival, this is far more significant to the conservation of marine mammal species and stocks than NMFS' consideration of what constitutes a significant behavioral response in a biologically important activity under Level B harassment. For Level B incidental harassment takings, NMFS will determine whether takings by harassment are occurring based on whether there is a significant behavioral change in a biologically important activity, such as feeding, breeding, migration or sheltering. All of these activities are potentially important for reproductive success of a marine mammal population.

*Comment MMPAC3:* The MMC notes that, in a previous rulemaking for taking marine mammals incidental to conducting a shock trial, the MMC expressed a concern that NMFS' proposal to define Level B harassment from explosive detonation events exclusively in terms of temporary threshold shift (TTS) was tantamount to concluding that behavioral changes not related to TTS are biologically insignificant and do not constitute harassment as defined in the MMPA. Such a conclusion, the MMC contends, seems inconsistent with the statutory definition of the term harassment and needs to be reconsidered or further justified.

*Response:* As stated in the final rulemaking for issuance of a small take authorization for the U.S. Navy

incidental to conducting the shock trial (66 FR 22450, May 4, 2001), NMFS clarified that the criterion limiting Level B harassment to behavioral responses that are possible as a result of receiving an impairment to hearing (i.e., TTS) was limited to single-event explosions, not multiple explosive events spaced over a relatively short period of time in the same vicinity, nor to impulse or intermittent/continuous noise sources such as seismic, Navy sonars, and oceanographic instrumentation. These other listed activities have at least the potential to cause significant behavioral responses on the part of marine mammals that are not related to behavioral disruptions caused by TTS. Because NPAL is considered an intermittent noise source, and has, therefore, the potential to result in non-TTS related behavioral responses, the comment is not relevant to the discussion in this rulemaking. Reviewers interested in NMFS' response to this concern of the MMC should review the previously mentioned rule, specifically NMFS' response to comment 3 in that document. For intermittent sounds, Level B harassment would include both TTS-related behaviors and behavioral responses resulting from noise levels lower than those that might potentially cause TTS. However, for the NPAL project, as mentioned elsewhere in this document, TTS is unlikely to occur.

**Comment MMPAC4:** The MMC recommends NMFS more clearly describe what is meant by "far exceed."

**Response:** The sentence referenced by the MMC states: "Few data on the effects of non-explosive sounds on hearing thresholds of marine mammals have been obtained; however, in terrestrial mammals, and presumably in marine mammals, received sound levels must far exceed the animal's hearing threshold for there to be any TTS." The statement is meant to apply to marine mammals in general since the difference between hearing threshold (level where one could hear the quietest sounds) and a level that might cause onset-TTS is expected to vary among marine mammal species and even among individual animals. However, the term "far exceed" is based on Richardson *et al.*'s (1991, 1995) conclusion, that, based upon studies on humans, SPLs of 80 to 100 dB and 130 dB over threshold are necessary in order to cause annoyance and for injury, respectively, in odontocetes (see response to comment MMPAC5 for more information).

**Comment MMPAC5:** The WDCS quotes Ketten (1998) that "sublethal impacts may ultimately be as devastating as lethal impacts, causing

death indirectly through behavioral reactions, such as panic, as well as impaired foraging or predator detection, but the potential for this type of extended or delayed impact from any sound source is not well understood for any mammal." The WDCS believes that temporary lack of predator avoidance skills may clearly lead to the death of an individual cetacean. This leads WDCS to conclude that TTS should be classified as a Level A harassment.

**Response:** For reasons provided in response to comment 26 in the **Federal Register** document for issuance of a small take authorization for shock testing the USS WINSTON S. CHURCHILL (66 FR 22450, May 4, 2001), NMFS does not believe the evidence warrants TTS being considered as Level A harassment (i.e., injury) due to the referenced secondary effects. Please refer to that document for additional information.

**Comment MMPAC6:** The HSUS quotes NMFS stating: "scientists have noted that a range of only 15-20 dB may exist between the onset of TTS and the onset of PTS . . ." With such a narrow safety margin, the HSUS considers it non-precautionary to consider TTS to be the upper portion of the Level B harassment zone, as does NMFS. With so little known about TTS, in mysticetes in particular, it seems more prudent and precautionary to consider TTS as the lower portion of the Level A harassment zone.

**Response:** The statement in the proposed rule that is quoted in the comment was incomplete. The 15-20 dB difference refers to the difference between the sound exposure levels (SELs) that cause the slightest TTS and the onset of PTS. As explained in more detail in response to comment PRC6 and in the response to comment 29 in the final rulemaking document for the shock trial of the USS WINSTON S. CHURCHILL (66 FR 22450, May 4, 2001), experiments on chinchillas have shown that this species experiences full recovery from up to 40 dB of TTS (Ahroon *et al.*, 1996) from impulsive noise. However, in the absence of comparable data for marine mammals, NMFS believes it is precautionary to define the onset of PTS for marine mammals to be 20 dB of TTS. This should not be interpreted to mean that the onset of PTS results when you add 20 dB to the dB level found to cause the onset TTS in an animal, but instead means that the onset of PTS is the SEL (in dB) that would cause 20 dB of TTS. This 20 dB level would be considered conservative for chinchillas, and would likely be conservative for marine mammals.

Because of this conservative approach, and because of the relatively low intensity of the NPAL source, and the depth of water in which the source is anchored (further attenuating the SPL), NMFS does not need to apply additional precautions, such as considering all, or a portion of, TTS to be Level A harassment.

**Comment MMPAC7:** The MMC notes that the reference in the proposed rule to "lower Level A" and "upper Level B" harassment are subdivisions not reflected in either the statutory definition of harassment or the NMFS' implementing regulations.

**Response:** The designations proposed by NMFS for "lower Level A" and "upper Level B" harassment have been replaced in this document by adoption of a standard that onset PTS, which is Level A harassment (injury), for marine mammals is 20 dB of TTS.

**Comment MMPAC8:** The MMC notes that the discussion on intentional taking of marine mammals by whale watching and recreational boating activities should be revised to note that both intentional and incidental taking for such purposes is prohibited, absent some authorization under the MMPA. Currently there is no such authorization.

**Response:** NMFS clarifies here that the whale watching industry is not authorized to "take" marine mammals, either intentionally or incidentally, therefore, harassment takings are illegal.

#### *Proposed Rule Concerns*

**Comment PRC1:** The MMC believes that the proposed rule relies to a significant extent on ONR's draft EIS for its interpretation and justification, and requests that previous comments by the MMC regarding the draft EIS be considered, incorporated by reference, and addressed in the NMFS final rule, as well as in ONR's final EIS.

**Response:** As stated in previous documents, NMFS incorporates into its decision-making process all comments submitted on the NEPA document that accompanies a NMFS proposed action and the responses made on any recommendations and concerns. NMFS also incorporates additional information and documentation by reference. Under this action, this includes the comments submitted by the MMC and other organizations and individuals on ONR's draft EIS, and the responses made by ONR to these recommendations and concerns as provided in ONR's recently-released final EIS. Because NMFS is adopting ONR's final EIS as its own on this matter, these responses can be considered to also reflect NMFS' responses. Where necessary, this document provides additional

clarification on certain issues raised by the MMC in its July 24, 2000, letter to Scripps. However, NMFS' procedures for addressing third party concerns in a NMFS final rule were provided previously (see 66 FR 22450, May 4, 2001). Please refer to that document for further information, especially response to comment 11 regarding the USS WINSTON S. CHURCHILL shock trial's small take authorization.

*Comment PRC2:* The MMC believes that NMFS should have addressed the private citizen's concern about the validity of assumptions inherent in the risk analysis and the Acoustic Integration Model (AIM). As noted by the MMC in comments on the ONR draft EIS, both the risk analysis and the AIM appear to be based on two assumptions, at least one of which likely is not valid. The first is that a received sound level below 120 dB will not disturb a biologically important behavior of any of the listed species. The second is that the listed species are distributed uniformly or randomly throughout their ranges in the North Pacific. Thus, researchers familiar with the seasonal distribution, abundance, and movement patterns of the various species in the Hawaiian Islands area should be consulted to obtain a more realistic estimate of the numbers of the various species that could be exposed to received NPAL sound levels between 120 and 180 dB.

*Response:* The only marine mammal species expected to be affected by the NPAL acoustic source are humpback whales, sperm whales and possibly Hawaiian monk seals. For a response regarding the assumption regarding marine mammal effects from SPLs of 120 dB or less, please refer to the response to comment MMIC6 later in this document.

In its final EIS, ONR responded to the MMC concern about random distribution by noting that the "incidental take" analysis did not include an assumption that animals are distributed uniformly or randomly throughout their range in the North Pacific, but that the best scientific data for each species was used to model their individual dive profiles and distributions in the modeled areas. This precludes homogeneously distributed animal densities in the three dimensions profiled. Therefore, animal distribution on the large scale reflects known concentrations of animals, and distribution on the small scale represents the patchiness that is observed in the field. In reviewing the available data and information, NMFS believes that the population assessments of marine mammals, that were provided

by ONR and Scripps, are the most realistic estimates available, as they are based on recent aerial surveys conducted by Hawaii-based marine mammal researchers, conducted over several years (see Mobley *et al.*, 1999, 2000), and other sources of information. In addition, Dr. Mobley was a technical editor in the preparation of the ONR's draft and final EISs.

*Comment PRC3:* The HSUS objects to the use of proposed rulemaking for specific projects as the regulatory avenue by which broadly applied acoustic harassment standards are being promulgated. Such proposed standards should be the subject of their own, separate rulemaking. Parties who might otherwise wish to comment on broadly applied standards may miss the import of a specific project's proposed rule.

*Response:* First, NMFS clarifies that no new acoustic criteria are being proposed here, only new methodology is being utilized to determine and refine estimates of levels of impact and takings. This methodology has been subject to review and comment previously under NEPA for the SURTASS LFA sonar (Navy, 1999) and NPAL (ONR, 2000). Second, the new methodology (i.e., incorporation of the AIM) is only one means NMFS is using to determine impacts on marine mammals. NMFS will also continue to assess impacts by a review of relevant research conducted on marine mammals. Finally, NMFS does not agree that separate rulemaking is needed before it can adopt criteria for acoustic harassment. This is explained in detail in response to comment 15 in the final rulemaking document for the shock trial of the USS WINSTON S. CHURCHILL (66 FR 22450, May 4, 2001). Please refer to that document for additional information on this issue.

*Comment PRC4:* The HSUS notes that NMFS appears to accept that the LOA application's use of the term "prolonged" is a clarifying element of its definition of harassment that is in compliance with, rather than a novel concept not found in the MMPA. The HSUS disagrees with this apparent acceptance and asks NMFS to clarify whether the concept of "prolonged" disturbance is in compliance with, or exceeds, the criteria of the MMPA.

*Response:* In response to comment 22 in the NPAL proposed rule (65 FR 80815, December 22, 2000), NMFS explained that the term "prolonged," as used in ONR's draft EIS and Scripps' small take application, implies an increase in time or duration beyond normal limits. This, NMFS stated in the response, exceeds the criterion used by NMFS that harassment must refer to a

reaction that is behaviorally significant on the part of the animal in the course of that animal's conducting a biologically important activity, such as breeding, feeding, or migrating. Therefore, the term "prolonged" is not used in this document, nor in ONR's final EIS. In this context, it is the impact of the activity on the animal, not the duration of the disturbance, that is critical. NMFS explained the use of the term "behaviorally significant" previously in response to comment MMPAC1.

*Comment PRC5:* The MMC notes that the NRC Report (NRC, 2000) states: "as a preliminary criterion, it seems reasonable to presume that any sound that produces a TTS of 10 dB or less in exposure episodes that are separated by nonexposure intervals that are ample to allow full recovery (at least 24 hours) does not constitute a major risk to the auditory system of a marine mammal." Therefore, the MMC questions the appropriateness of NMFS characterizing the NRC report as fully supporting that TTS does not constitute an injury.

*Response:* The sentence used by NMFS is found on page 67 of the NRC (2000) report. That sentence reads: "Animals that experience only low levels of TTS are not going to be injured, suggesting TTS as a conservative standard for prevention of injury." This sentence supports NMFS' statement in the proposed rule that TTS is not an injury. The statement quoted in this comment by the MMC is found on page 68. However, prior to the MMC quoted sentence, the NRC (2000) states: "For certain animal models it appears that TTS of 10 dB or less within 15 minutes after exposure is fully reversible and without obvious cochlear damage (Liberman and Dodds, 1987; Ahroon *et al.*, 1996) as long as the exposures are not continued for long periods of time. In both studies, cochlear damage was evident only after TTS exceeded 40 to 60 dB within 15 minutes after exposure." NMFS believes that the NRC used this quoted statement to support the statements quoted by both the MMC and NMFS.

NMFS believes however, that the NRC is overly cautious in its choice of 10 dB of TTS as being a safe level. NMFS' review of Liberman and Dodds (1987) and Ahroon *et al.* (1996) does not support a level as low as 10 dB of TTS for being an upper level for prevention of PTS as suggested by the NRC (2000). Contrary, Ahroon *et al.* (1996) and Liberman and Dodds (1987) indicate that the difference between an initial TS that results in slight TTS (onset TTS) and the initial TS that results in slight PTS (onset PTS) is about 40-60 dB. In

other words, from the lowest initial TS that recovers (i.e., TTS) to the level at which recovery is incomplete by several dB (i.e., PTS), the difference is routinely found to be 40-60 dB of TS. These values are found not only with longer duration stimulation, but with repeated application of impulsive stimuli as well (Ahroon *et al.*, 1996).

The problem of determining the same values for marine mammals with their marine-adapted ears remains to be solved. However, because the onset of PTS in marine mammals would be expected to be quite variable dependent upon the ear structure of the mammalian group (mysticetes, odontocetes, pinnipeds) and species-specific sensitivity, the health of the individual animal, and the characteristics of both the water and the acoustic source, there may not be a single value to establish for determining onset PTS. Therefore, in the absence of comparable data for marine mammals, NMFS believes it is precautionary to define the onset of PTS for marine mammals to be 20 dB of TTS. This level would be conservative for chinchillas, and would likely be conservative for marine mammals.

**Comment PRC6:** The HSUS continues to oppose the establishment of a received level of 180 dB (re 1 uPa (rms)) as the criterion (for low frequency, intermittent, or any other kind of sound) for onset TTS for all marine mammals.

**Response:** NMFS agrees, noting that Ridgway *et al.* (1997) and Schlundt *et al.* (2000) found TTS significantly higher than 180 dB (re 1 uPa rms) in two odontocete species at intense one-sec. tones of 0.4, 3, 10, 20, and 75 kHz, while Kastak *et al.* (1999) documented TTS, for octave band noise with frequencies from 100 to 2,000 Hz, at mean values of 137, 150, and 148 dB (re 1 uPa) for the harbor seal, sea lion and elephant seal, respectively, for 20- to 22-minute exposures. (However, these data also have variations around the mean on the order of -5 to +10 dB.) As described in the account of the test, these levels can be considered to represent the lower level for onset of TTS for a 20-minute signal. NMFS clarifies that because TTS may result from a prolonged exposure to a faint sound, a brief exposure to a loud sound, or an intermediate exposure to a sound of intermediate loudness, sound duration and intensity can be considered to trade off with each other in causing TTS, as is indicated by comparing the work of Kastak *et al.* (1999) with the work of Schlundt *et al.* (2000). This is one reason why NMFS advises caution in the widespread advocacy for the use of the 180 dB (re 1 uPa (rms)) standard for noise sources

other than impulse noise. For the NPAL action, ONR/Scripps prudently presume that 95 percent of the marine mammals exposed to a "single-ping equivalent" (SPE) of 180 dB (re 1 uPa (rms)) could incur "harm" or TTS. NMFS believes that this is cautious as TTS is unlikely at an SPL of 180 dB since several species of cetaceans have the ability to vocalize at 180 dB and greater (see Richardson *et al.*, 1995, Table 7.1).

To account for the longer duration NPAL signal however, ONR and Scripps use the 180-dB SPE as the level for the onset of "harm" or TTS. An SPE is defined as the summation of the intensities for all received brief acoustic sounds into an equivalent exposure from one ping, which is always at a higher level than the highest individual ping received. In other words, an animal exposed to a single 1-minute ping at 180 dB could incur TTS, an animal exposed to 10 1-minute pings at 170 dB could incur TTS, and an animal exposed to 20 1-minute pings (the length of the standard NPAL signal) at 167 dB could incur TTS. This, NMFS believes, is precautionary and, notes that for the first time, a small take applicant has taken into account the duration of the signal when calculating impacts on marine mammals.

**Comment PRC7:** The HSUS notes an inconsistency between the response to comment 5 and the response to comment 12 in the preamble to the proposed rule. In response 12, NMFS states "[T]here is no obvious connection between an annoying or harmful sound level for humans in air and an annoying or harmful sound level for a marine mammal in water." Either the human model is an appropriate one for marine mammals or it is not, NMFS cannot pick and choose which aspects of human hearing to consider as appropriate parallels with marine mammal hearing.

**Response:** In the response to comment 12 which made allegations of neurological damage in humans at 140 dB (re 201 uPa), NMFS was quoting from the reference provided in the **Federal Register** document (Chapman and Ellis, 1998). The conclusion of the Chapman and Ellis (1998) article is that it would be unwise to assume that the auditory experience of any animal would be the same as that of humans exposed to the same sound level. In response to comment 5, NMFS noted that "while recognizing that no empirical data have been collected to establish this relationship, and *there is no guarantee that marine mammal behavioral responses exhibit patterns similar to human hearing* (emphasis added), the human model is the best objective foundation for an assessment

and is consistent with Crocker (1997)." Reading both statements carefully indicates that they are not in disagreement. As scientific research on the effects of noise on marine mammals becomes available, the data from this research will be used by NMFS instead of using comparisons with human hearing.

**Comment PRC8:** The MMC believes the rule should be revised in paragraph 216.177(a) to clarify whether an LOA will be issued annually or once, to cover a five-year period.

**Response:** NMFS has clarified that the LOA will be issued annually.

#### *Marine Mammal Impact Concerns*

**Comment MMIC1:** The HSUS continues to be disturbed by NMFS' apparently broad application of low frequency acoustic harassment standards-for impulsive, intermittent, and continuous sounds, both narrow and broad-band in character, for all marine mammals and sea turtles-on the very limited results from a U.S. Navy project using single, pure tones at various frequencies on a small sample of only two species of odontocete cetaceans (Ridgway *et al.*, 1997; Schlundt *et al.*, 2000). The HSUS repeats its objections, expressed in comments on the shock trial of the USS WINSTON S. CHURCHILL of applying the limited results from Schlundt *et al.* (2000) to all marine mammals.

**Response:** While the small take authorization for the taking of marine mammals incidental to the use of the NPAL source by Scripps and ONR reference both Ridgway *et al.* (1997) and Schlundt *et al.* (2000) in its analysis for TTS impacts, it has not adopted the SPLs found by those authors for marine mammals incurring TTS. If it had, ONR/Scripps would have established the 95 percent risk value in the AIM at about 192 dB instead of the more precautionary 180 dB (see ONR, 2001 for an explanation of terminology). The previously referenced papers found that a masked TTS of 6 dB or larger, in bottlenose dolphins and beluga whales, occurred at between 192 and 201 dB (re 1 uPa (rms)) for intense one-sec. tones of 0.4, 3, 10, 20, and 75 kHz. However, the present action implements a TTS/harm zone at 180 dB, not 192 dB. An additional precaution provided by ONR/Scripps is through consideration of the 180-dB SPE, defined previously, to be "harm" or TTS. The 180-dB SPE is designed to take into account the longer duration of the NPAL signal (i.e., 20 min).

However, because the Ridgway *et al.* (1997) and Schlundt *et al.* (2000) research were conducted in the region

of greatest hearing sensitivity for bottlenose dolphins, it is believed that the levels identified for behavioral change and TTS at 3 kHz would be conservative for small odontocetes below 3 kHz (Ridgway S. pers. comm. as cited in ONR, 2001). Large odontocetes are considered as sensitive as mysticetes while pinnipeds are believed to be less sensitive than small odontocetes to underwater sound (ONR, 2001). Therefore, NMFS considers it very conservative to establish the threshold that 95 percent of the small odontocetes and pinnipeds, exposed to a single ping of LF sound at 180 dB could incur TTS.

There are no studies of TTS and PTS in mysticetes. However, studies of human hearing indicate that the normal process of hearing loss with age (presbycusis) can be accelerated by chronic exposure to sounds 80 dB above the absolute threshold of hearing (Richardson *et al.*, 1995). Here chronic is interpreted as about 8 hours/day for about 10 years. For odontocetes, Au *et al.* (1997) present data indicating that hearing thresholds are about 140 dB at 75 Hz. Hearing thresholds are not known in mysticetes, but the lowest value is speculated to be 80 dB (Ketten, 1998). This suggests therefore that 10 years of exposure to 160 dB RL for 8 hours per day would cause auditory damage. Therefore, estimating that 95 percent of mysticete and large odontocete whales will experience TTS after exposure to a 1-minute ping at 180 dB is also considered by NMFS to be conservative.

*Comment MMIC2:* The WDCCS does not consider the level(s) for TTS found by Ridgway *et al.* (1997) to be conservative for the prediction for onset TTS in odontocetes or mysticetes in the wild. A report by Croll *et al.* (1999) states that baleen whales could suffer temporary auditory damage at noise levels as low as 120 dB and that physiological effects could occur well before 180 dB.

*Response:* Please refer to the previous response. Although NMFS was unable to verify the statements directly to the Croll reference, the dB levels, quoted in the comment, apparently derive from Richardson *et al.* (1995) for effects on marine mammals extrapolated from human damage risk criteria (DRC) and from work done by Malme *et al.* (1983, 1984, 1988). For reasons explained previously in this document, one must consider duration of the signal and the type of noise (impulse or intermittent/continuous) before making generalities on impacts based solely on an SPL. NMFS believes that ONR/Scripps have

addressed the duration issue by establishing the 180 dB SPE criterion.

*Comment MMIC3:* The WDCCS believes that repeated exposure could lead to at least gradual hearing loss and PTS. Ketten (1998) stated: "It has been established that repeated exposures to TTS-level stimuli without adequate recovery periods can induce permanent, acute threshold shifts." Also, the MMC notes that as it is known that repeated exposure of terrestrial mammals to sounds capable of causing TTS increases the likelihood of PTS, there is the possibility that repeated exposure to sounds capable of causing TTS increases the likelihood that marine mammals would be injured.

*Response:* While there is some recent research indicating that there is no relationship between repeated TTS exposures and an animal incurring a PTS injury, the science to date indicates that PTS can occur with repeated exposures of TTS without allowing animals to completely recover, as stated by Ketten (1998). However, noting the behavior of marine mammals in the NPAL area, especially the migratory behavior of humpback whales and that the NPAL source is in a water depth that would prevent marine mammals from incurring a TTS impairment, a PTS injury is unlikely to occur. NMFS believes the SPLs in those areas of the water column that marine mammals inhabit are simply too low to cause TTS, let alone PTS.

In response to comment PRC6, NMFS concurred with ONR that a marine mammal exposed to 20 1-minute pings (the length of the standard NPAL signal) at 167 dB could incur TTS, or Level B harassment. The 167-dB isopleth is only 25 m (82 ft) around the NPAL source at its 807 m (2,648 ft) depth, meaning that a marine mammal would need to dive to a minimum depth of 782 m (2,565 ft) and remain within that small area for the entire 20-min transmission in order to theoretically incur a TTS impairment. Theoretically then, the marine mammal would need to do this dive repeatedly, time after time, year after year, to incur a PTS injury from the NPAL source. Therefore, NMFS believes that, considering the migratory behavior and transitory nature of those marine mammal species likely to be impacted, and other reasons including dive profiles, it would be very unlikely a marine mammal would incur a TTS impairment and virtually impossible for a marine mammal to incur a PTS injury from the NPAL source.

*Comment MMIC4:* The MMC agrees with NMFS that defining TTS as Level B harassment is reasonable only if the TTS does not make the affected animals

vulnerable to predation or otherwise affect their survival or productivity. In this regard, the MMC notes that it is not inconceivable that temporary hearing impairment over a period of one to a few days could increase the potential for injury or death of an affected animal, e.g., by increasing vulnerability to natural predation or ship strike. If such were the case, TTS would have the potential for injury and would constitute Level A harassment.

*Response:* First, in order for a marine mammal to incur TTS from the NPAL source, it would need to dive to water depths deeper than scientific knowledge indicates that humpback whales are capable of diving. Sperm whales and beaked whales, while capable of diving to those depths, are not expected to occur in the immediate vicinity of the source in any numbers, nor likely coincide a dive to those depths during the brief 2 percent (or 8 percent for non-migratory marine mammals) duty cycle of the NPAL source. For those marine mammal species capable of hearing the NPAL sound, TTS is unlikely considering the depth of the 167-dB isopleth (based on a SPE of 180 dB for the full 20 minutes) and the short duty cycle. For those marine mammal species unable to hear the NPAL source (75 Hz) well, TTS is simply not possible. For a response on considering all, or a portion of Level B harassment takings as Level A takings, please refer to the response to comment MMPAC1.

Second, NMFS does not agree that affecting a marine mammal's survival or future productivity would require a taking to rise to Level A harassment (injury), unless the activity directly affected in some injurious way, either the mammal's ability to reproduce, or it's newborn or unborn offspring. To the extent possible, what NMFS is evaluating under Level B harassment is the lost opportunity to mate, primarily as demonstrated by using the AIM.

*Comment MMIC5:* The HSUS continues to oppose NMFS rejection of the use of the preliminary results of the investigation into the March 2000 stranding of various cetacean species in the Bahamas, as cited in the MMPA Bulletin, yet NMFS applies its management decisions on the results from Schlundt *et al.* (2000) and the Low Frequency Active Scientific Research Program (LFA SRP) associated with the Navy's NEPA process for SURTASS LFA sonar.

*Response:* NMFS does not reject the preliminary findings of its joint investigation with the Navy on the Bahamian multi-species stranding, only the relevancy of the preliminary findings in the context of this

rulemaking. Issue 19/20 of the MMPA Bulletin noted that "the injuries to the five beaked whales were all consistent with an intense acoustic or pressure event. All five beaked whales showed some evidence of trauma to tissue associated with hearing, sound production, and/or airways. In particular, all had some hemorrhages in or around the ears. Other tissues related to sound conduction, or production such as the larynx and auditory fats, had minor to severe hemorrhages. The injuries revealed in the necropsies were not consistent with a nearby explosion (there were no bone fractures), but could have been caused by a distant explosion, or an intense acoustic event. Postcranial tissues showed minor lesions in heart muscle and minor hemorrhage in lung and kidney tissue that are less indicative of cause than the skull damage. In humans, injuries such as these would have caused extreme discomfort, but do not generally cause permanent hearing loss or death. Essentially, these animals died from actually stranding on the beach." This means that loud, intense sounds can cause injuries to marine mammals that are in the vicinity of loud, high intensity sound sources. A sound source such as NPAL's source is simply not of sufficient intensity to cause the impacts described in this response. That is the reason NMFS does not consider the Bahamian stranding incident relevant to a discussion of potential impacts by the NPAL source. Because the NPAL source is moored in 807 m (2,648 ft) water depth, and because this depth is approximately 550 m (1,804 ft) deeper than the deepest recorded humpback whale dive depth (the only deep-diving marine mammal species expected to be commonly found in the offshore NPAL waters), NMFS restricts its discussion of impacts to behavioral responses (Level B harassment), and not injury (Level A harassment) or mortality to marine mammals from the NPAL source. As a result, NMFS has incorporated into its determination the scientific findings of the California and Hawaii ATOC Marine Mammal Research Program (MMRP), and secondarily the scientific findings of the LFA SRP. Utilization of the findings of Schlundt *et al.* (2000) have been discussed previously in this document.

**Comment MMIC6:** The MMC requests NMFS provide the basis for the statement that a received level of 120 dB is presumed to have a zero potential for disturbing biologically important behavior of humpback whales. Apparently, both bowhead and beluga whales have shown strong avoidance

reactions at or below a received level of 120 dB, and some of the clearest individual cessations of humpback whale song to the Navy's LFA source have occurred at received levels of only 122 dB.

**Response:** As stated in ONR's final EIS, and adopted by reference by NMFS, science cannot establish zero risk. Therefore, the AIM cannot establish zero risk. However, given the shape of the risk function, 120 dB can be established as the point at which risk is so low, that it is pointless to calculate the risk below it. Changing this basement value for risk by as much as +10 dB (110-130 dB) would not affect the number of potential takings and would not alter the cumulative risk values. For humpback whales, the marine mammal most likely to be impacted by the NPAL source, some singers stopped singing and showed avoidance reactions at levels near 120 dB (re 1 uPa (rms)), while other singers continued singing when exposed to playbacks at levels as high as 150 dB (re 1 uPa (rms)). This, according to Clark *et al.* (1999), may be due to individual differences between singers. Observers had the distinct impression, often even before a LFA playback began, that certain singers had very stable behavioral patterns and were imperturbable whereas other singers were much more variable and responsive even to the vessel approach. This may represent two different types of singers, dominant and experienced singers, and younger, less experienced, singers. If these younger, less experienced singers are nondominant males, unlikely to successfully mate, this behavior would not be unexpected if the SURTASS LFA sonar transmitting waveforms similar to humpback whale songs at the same time.

While bowheads and belugas have been shown to have a behavioral reaction to received SPLs at or below 120 dB, NMFS would not characterize the avoidance reactions as being strong. For bowhead whales at least, it has been necessary to apply strong statistical analyses in order to determine that bowheads in the Beaufort Sea north of Alaska reacted to seismic pulses at distances where received levels were on the order of 120 dB. Richardson *et al.* (1995), summarizing the information available at that time, noted that initial behavioral changes were detected when received noise levels were 142-157 dB (re 1 uPa (rms)); active avoidance became evident at SPLs of 152-178 dB. More recently, bowheads have been detected, through statistical analyses, making minor course corrections at lower SPL levels, however, these course

corrections were not detectable visually from aircraft. NMFS has clarified several times that behavioral reactions appear to be context related, such as gray whales reacting to industrial noise when the source is located in its migration path, but showing greatly reduced responses when the acoustic source was located offshore of the migration path (Clark *et al.*, 1999). In the case cited by the MMC, bowheads and belugas inhabit waters frequented by ice and may require a low ambient noise level in order to navigate successfully through the ice, to locate leads and polynyas, and avoid ice keels. This type of environment is not found in Hawaii.

**Comment MMIC7:** The MMC recommends that the rationale should be provided for Scripps' determination that "only humpback whales that remain in the vicinity of the source for a full day of transmissions may potentially experience any effect from the source transmissions."

**Response:** The rationale relates to how the modeling was carried out. ONR/Scripps conducted the AIM under two conditions - one in which the animals were only exposed to one 20-min transmission, and another in which the animals were exposed to six 20-min transmissions (that is, a full day of transmissions). In both cases, ONR/Scripps modeled a milling movement pattern that kept the animals in the general vicinity of the sound source, rather than the movement pattern that was observed from the shore stations where the animals moved parallel to the coast (and thus would not remain in the general vicinity of the sound source for very long). Only for humpback whales under the second scenario (milling in the vicinity of the sound source for a full day of transmissions) was there a chance for humpback whales to experience a biologically important reaction to the sound source (see Table 4.2-5 in the ONR final EIS). The details of the modeling are described on p. 4-17 of the ONR final EIS.

**Comment MMIC8:** The WDCCS noted that while the studies noted in the NMFS' ANPR reported no significant changes in the abundance of humpback and sperm whales, Calambokidis *et al.* (1998) found that humpbacks and sperm whales were generally seen farther from the sound source during experimental versus control surveys.

**Response:** While NMFS concurs with the WDCCS' synopsis of the work by Calambokidis *et al.* (1998) during ATOC studies off Pioneer Seamount, NMFS does not equate a shift in local distribution of humpback whales with a change in abundance near the NPAL source. NMFS hopes that the findings

by these scientists will soon be published and become available. NMFS understands that humpback and sperm whales were displaced approximately 0.6 km (0.3 nm, 1,823 ft) between times when the source was on and when it was off. However, NMFS notes that this displacement was noted by later statistical analysis and was not apparent to the observers. The findings of Calambokidis *et al.* (1998) are consistent with the findings of Frankel and Clark (1998, 2000). Frankel and Clark (2000) found that humpback whales within 12 km (6.5 nm) of the source showed only subtle, short-term effects on their surface behaviors. The whales did not show any immediately obvious response to the ATOC signal at received levels less than 130 dB and they did not abandon their coastal habitat adjacent to the offshore ATOC source. Frankel and Clark (2000) concluded that the present operation of the ATOC source off Kauai is not sufficient to cause biologically significant changes in behavior for the humpback whale population wintering off Hawaii, but that this conclusion cannot be generalized to the effects of cumulative impacts from other anthropogenic sources of noise in the marine environment. Essentially this is the reason for ONR/Scripps requesting a five-year small take authorization and having a monitoring program to better assess potential long-term cumulative impacts.

*Comment MMIC9:* The MMC notes that the list of deep-diving species of marine mammals commonly found off Kauai in response to comment 12 of the proposed rule document should be revised to include sperm whales, another deep-diving marine mammal commonly found in the referenced offshore waters.

*Response:* While sperm whales are found in the offshore waters of Kauai and are included in the list of species expected to be taken by harassment, information available to NMFS does not indicate that this species is commonly found in the area of NPAL operations. This is explained in the proposed rule and in ONR's draft EIS, and clarified in the response to the following comment.

*Comment MMIC10:* The MMC notes that the statement that no statistically significant shifts in distribution were found for species other than humpback whales (and possibly sperm whales) does not diminish the fact that shifts in distribution were observed, especially since these two species have the ability to detect, and are more likely to occur at depths where they would be exposed to, the sound source. NMFS should more clearly explain the basis for the belief that sperm whale distributions

may have been affected and should also include information on such confounding factors as small sample sizes etc.

*Response:* Shifts in sperm whale distribution were not observed at the Kauai site due to small sample sizes. However, shifts in distribution were observed at the ATOC site at Pioneer Seamount, off California, and, therefore, can be presumed to occur at Kauai. NMFS notes that few sperm whales (about 100) were detected during the Hawaii-wide aerial surveys from 1993 to 1998 that detected 2,773 humpback whales. Although some sperm whales may have been missed because they were diving at the time of the survey, these numbers provide support that sperm whales are more than an order of magnitude less abundant than humpback whales off Hawaii. Also, while the avoidance was statistically significant in California, the actual distance of displacement was small. Therefore, NMFS agrees that sperm whales could be affected if they were in the vicinity of the source during the 2 percent time that the source is on. However, there is no evidence on record to indicate that sperm whales are seasonal residents offshore of Kauai, and thus no individual animal is expected to receive more than a single transmission. Based on this information, NMFS believes that no more than a few sperm whales may pass through the NPAL source's zone of influence during the year when the source is on, and may have a minor avoidance reaction to the NPAL source.

*Comment MMIC11:* The WDSC asks whether the statement that "no significant shifts in distribution were found for any other species of marine mammal" is valid because these other species were not the focus species of the survey or because the sample size was not large enough?

*Response:* As stated in ONR's draft EIS, only humpback whales were seen in sufficient numbers (i.e., large enough sample size) around the Kauai site to permit quantitative assessments of distributional changes from 1994 (source off) to 1998 (source on).

*Comment MMIC12:* The MMC believes the statement that humpback whales in Hawaii show an "almost statistically significant increase in population size", is not convincing support for maintaining that the observed shift should not be considered important. The MMC believes that given the ambiguities associated with the data, it is particularly important that the monitoring program be designed to detect possible longer term biologically

significant changes that may be produced by the sound source.

*Response:* The monitoring program has been designed to detect long-term changes in the distribution and abundance of humpback whales and is discussed later in this document.

*Comment MMIC13:* Although the WDSC possibly agrees with NMFS that the best scientific information to date is provided by the ATOC MMRP and the SURTASS LFA SRP, these are still not complete studies. WDSC understands that the final analysis is not available from the LFA SRP.

*Response:* The final analyses for the SURTASS LFA sonar SRP are found in the Technical Report # 1 (Clark *et al.*, 1999). Some of this research remains under peer review prior to publication in scientific journals. Other research has already been published (Miller *et al.*, 2000). Scientific research under the ATOC MMRP includes Frankel and Clark (1998, 2000).

*Comment MMIC14:* The WDSC, noting that both sperm and beaked whales are known to be deep divers and that sperm whales were shown to be affected by previous ATOC experiments, asks again whether research has been conducted on the depths that these animals reach around the proposed NPAL area.

*Response:* Research on the diving depths of sperm whales and beaked whales in the waters offshore of Kauai is not practical due to the low abundance of these species in these waters. Research on depth of dive for these species in other areas indicates that they are capable of diving to the depth of the NPAL source. This was described in ONR's draft and final EISs.

*Comment MMIC15:* One citizen noted that he does not know what acoustic devices the Allied forces may have employed around the time of the strandings, but we do know that LFAS was scheduled to operate in the region a short time earlier. One large balaenopterid live-stranded following that scheduled deployment, and it should be further investigated for evidence of trauma.

*Response:* NMFS presumes the commenter is referring to the multi-species stranding event in the Bahamas on March 16, 2000. The single minke whale that stranded during this event was released off the beach alive. Therefore, a necropsy was not conducted on that animal. Also, NMFS is unaware of what "LFAS" operation the commenter is referring to; however, NMFS understands that no LFA sonar operations were conducted during the referenced time period.

*Comment MMIC16:* One citizen pointed out that the evidence of hemorrhage in acoustic fats and tissues adjacent to the ears, and in the brain (Rowles *et al.*, 2000) are not strictly speaking, auditory traumas. They are barotraumas, for which determination of TTS or PTS levels, and the assumed "safe" level of 180 dB RL are irrelevant. The commenter states he has investigated the information available on the Bahamas and 1996 Greek strandings (D'Amico (ed), 1998). He has calculated that damage to the tissues probably occurred in the range of 143-157 dB RL of the offending acoustic energy. This damage could be exacerbated by resonance phenomena, such as that reported in the Navy's 1999 Technical Report 13, in concert with the enormous pressure at the normal diving depths for beaked whales (500-1500 m (1,640-4,921 ft)).

*Response:* As NMFS has not been provided with any scientific information by the commenter to support his calculations that tissue damage could occur in the range of 143-157 dB RL, NMFS cannot respond further on this statement. NMFS notes however, that in order to incur an SPL of 143 dB, an animal would need to dive to a depth of at least 400 m (1,312 ft) during the 2 percent time that the NPAL source is active, and not react to the source transmissions during ramp-up.

*Comment MMIC17:* If resonance phenomena are implicated in tissue damage observed in the beaked whales, it should be noted that the resonant frequency of airspace in *Ziphius cavirostris* is reported to be 75 Hz at 100 m (328 ft) depth (derived from D'Amico, 1998), which happens to be the center ATOC frequency. Theoretically, beaked whales could be damaged somewhere between 100 m (328 ft) and many kilometers from the source depending upon the signal and the propagation characteristics.

*Response:* NMFS is charged by the MMPA to make negligible impact determination based upon the best scientific information available. As the commenter has not provided any scientific information to support his hypothesis, NMFS cannot respond further on this statement. However, NMFS would appreciate this information at the commenter's earliest opportunity.

*Comment MMIC18:* The HSUS urges NMFS to consider the potential impact of loud, low frequency sound on other physiological processes and body organs of marine mammals. There is a growing body of literature that suggests such impacts can have long-term debilitating effects, at least in terrestrial species.

*Response:* To NMFS' knowledge, other than pacinian corpuscles, which are believed to be sensitive to vibration, the only other physiological impacts to marine mammals would be due to high intensity sources that might impact marine mammal lungs or the fat pad sound channel (which conducts sounds to the middle ear) in the lower jaw of certain odontocetes. However, the NPAL source with a maximum SPL of 195 dB (re 1 uPa (rms)) has neither sufficient intensity nor rise time to cause this type of injury.

#### Mitigation Concerns

*Comment MC1:* The HSUS, while agreeing that ramp-up should be incorporated as a mitigation measure even if there is no evidence that it is effective, believes that calling ramp-up precautionary is inappropriate. If ramp-up is not effective, the animals will potentially suffer for it. The MMC believes that it is reasonable to assume that most marine mammals will move away from the sound source as it is ramped up. However, studies necessary to validate this assumption have not yet been done.

*Response:* As noted in response to comment 17 in the proposed rule, NMFS recognizes that ramp-up may not be effective as a mitigation tool. However, ramp-up has been recommended to be employed in offshore seismic activities by the participants at the High-Energy Seismic Survey (HESS) panel. Moreover, based on observational data showing that humpback and sperm whales actively avoid noise from the NPAL source, ramp-up should be at least partially effective as a mitigation measure for the NPAL activity.

*Comment MC2:* One citizen noted that the AIM referred to for mitigation is theoretically elegant, but woefully inadequate zoogeographically (Navy, 1999 SURTASS LFA Sonar Technical Report 2). The species abundance and distribution for cetaceans modeled for LFA sonar around the Bahamas (site 29) were obviously erroneous, and it appears likewise for areas around Hawaii (sites #6 and #12).

*Response:* The AIM is a model used to estimate the levels of taking of marine mammals by harassment; it is not a mitigation measure. The ONR draft and final EISs on NPAL explain in detail the inputs into the AIM for the location of the NPAL source. When information becomes available to the Navy the AIM can be, and will be, improved. For the NPAL action, however, NMFS concludes that the information contained in the ONR draft and final EISs and the Scripps' small take

application contain the best scientific information available on the subject, since additional information has not been provided to it, or the Navy.

*Comment MC3:* The MMC believes that the mitigation measures should specify that the sound source will operate on a duty cycle of 2 percent and a power level no greater than 230 watts. The MMC also believes the authorization would appear to authorize transmissions exceeding 195 dB.

*Response:* Both of these recommendations have been addressed as alternatives in ONR's draft and final EISs. The proposed action by Scripps and ONR is to operate the NPAL source on a duty cycle an average of 2 percent during the period February through April with any increases in the duty cycle beyond the nominal 2 percent (with a maximum of 8 percent) not occurring during the humpback whale season (January-April). The 2-percent duty cycle does not include the ramp-up period. However, there is no evidence in the record to support the MMC's recommendation to limit the transmissions to 2 percent year-round. For reasons detailed in the ONR draft EIS, there are valid scientific reasons for needing to exceed a 2 percent duty cycle at certain times of the year.

Also, there is no evidence in the record to support limiting the NPAL power source to 230 Watts, as opposed to the stated operating power of 260 Watts. The NPAL sound source has been designed to operate at the minimum power level necessary to support large-scale acoustic thermometry and long-range sound transmission objectives. It should be recognized that signal length and power trade off with each other; a shorter signal length would require increased power to accomplish the project's objectives. Mitigation measures are also described under "Mitigation" in the preamble to both the proposed rule, and this document.

#### Monitoring and Reporting Concerns

*Comment MRC1:* The MMC believes that, if NMFS has concluded that long-term monitoring studies are necessary only if the project's duration extends beyond 5 years, NMFS should explain why it believes that such long-term monitoring studies to identify the potential cumulative impacts of the currently proposed 5-year program are not currently warranted. The WDCS, while concurring with NMFS' statement (in response to comment 1 in the ANPR) that long-term studies should be initiated if the project were to continue beyond 5 years, believes such monitoring should start now, not after

the program has been in operation for more than 10 years.

*Response:* NMFS clarifies that it considers the aerial monitoring program that was conducted between 1993 and 1998 off the north shore of Kauai as part of the ATOC MMRP to be part of a long-term monitoring program. Data were collected during the humpback whale winter breeding season (February-April) for a total of 3 baseline years when the Kauai ATOC source was not transmitting (1993, 1994 and 1995) and for 1 year when it was transmitting (1998). An additional year of baseline surveys (source off) were conducted in the area off the north shore of Kauai during the 2001 humpback breeding season. The earlier years' information is summarized in Mobley *et al.* (1999), which will be available upon request from NMFS, until formal publication. With 5 years of data, NMFS believes that continuing this monitoring program during the next 5 years (when the source is expected to be on) will provide NMFS and others with information on long term trends. NMFS believes that the aerial monitoring program described in this document provides the best practical method for assessing long term effects of the NPAL source.

*Comment MRC2:* The MMC believes that available data are insufficient to conclude with confidence that there will be no long-term effects on distribution, size, or productivity of any of the potentially affected marine mammal stocks. Given that there is uncertainty as to whether the taking could have biologically significant long-term effects, the MMC considers it essential that Scripps' monitoring program be designed to enable NMFS to detect any such possible project-related changes. The MMC, therefore, recommends NMFS consult with Scripps and scientists familiar with the demography and behavior of marine mammals that could be affected by the proposed action to determine the baseline information and kinds of monitoring that would be required to detect possible long-term population-level effects.

*Response:* See response to comment MRC1. NMFS has determined that the long-term monitoring program designed by Scripps will adequately assess impacts to humpback whales during the 5-year authorization for NPAL takings. The evidence from various sources, contained in this document and in the Scripps/ONR final EIS, indicate that marine mammal species, other than humpback whales and possibly sperm whales, would be unaffected by the LF, low intensity source because of either distributional, water column preference,

and/or hearing abilities for LF sounds. Therefore, NMFS believes it is most important to focus monitoring efforts on humpback whales (although other marine mammal species will also be assessed during humpback whale surveys).

*Comment MRC3:* The MMC recommends that NMFS, if it issues the LOA, include a description of the required monitoring program, in sufficient detail to enable reviewers to judge the likelihood that it will be capable of detecting biologically significant long-term effects in time to stop and reverse them.

*Response:* NMFS has expanded the discussion on the monitoring program in this document. For additional information on the protocols that will be employed, please refer to Mobley *et al.* (1999) which is available upon request. Their analysis included both calculating distance from shore and distance from source to assess distributional shifts. They also calculated an incidence rate that is comparable between years since the survey tracklines were constructed using the same rules. Therefore, although an overall abundance estimate cannot be estimated from these surveys, a relative incidence rate among years can be estimated.

*Comment MRC4:* The MMC notes that NMFS did not respond to the MMC's recommendations (in its letter to Scripps dated 22 September 2000) that (1) scientists with broad knowledge of the form and function of cetacean vocalizations be consulted to determine whether monitoring and comparing vocalizations before, during, and after NPAL transmissions could help resolve the uncertainties concerning masking and possible behavioral disruptions and (2) if the consultations indicate that such monitoring would be possible and useful, an appropriate vocalization monitoring program be designed and included as part of the proposed action.

*Response:* The potential for masking and masking effects were studied during the Kauai ATOC MMRP and summarized in ONR's draft and final EISs. The Kauai ATOC MMRP did not find any overt or obvious short-term changes in singing behavior of humpback whales in the vicinity of the sound source. In addition, no statistically significant changes in the underwater sound output from humpback whales in one of the frequency bands in which they vocalize was found in the vicinity of the Kauai source. Therefore, it is estimated that the potential for effects from masking would be minimal and limited to no more than 2 percent of the time for those animals in residence off the north

shore of Kauai. Therefore, NMFS has determined that no additional short-term studies on masking effects associated with the NPAL source are required, especially since this research would need to be conducted at the cost of decreased coverage in the long-term aerial monitoring program.

*Comment MRC5:* The WDSCS, while pleased that 8 aerial surveys will be conducted each year, rather than 4 surveys, is concerned that no surveys will be conducted when the duty cycle may be increased to 8 percent.

*Response:* As explained elsewhere in this document, under authorized funding levels for this project, conducting additional surveys outside the humpback whale season would necessitate a reduced aerial survey effort for humpback whales during the humpback whale season. Because the required humpback whale aerial surveys will also detect other marine mammal species, NMFS believes that additional aerial surveys are not an efficient use of NPAL's limited resources and, because this additional monitoring is unlikely to provide NMFS and the public with better data than would be provided during the humpback whale aerial surveys, should not be required.

Because the smaller whales and dolphins are not expected to be sensitive (e.g., react) to the Kauai NPAL acoustic source transmission, and because the required humpback whale aerial surveys will also detect other marine mammal species, NMFS also does not believe that conducting boat-based surveys for these species is warranted.

*Comment MRC6:* The WDSCS does not believe that the proposal to coordinate and investigate stranding events will lead to a responsible indication of the number of cetacean deaths that may occur as a result of NPAL operations. The WDSCS believes that a small number of cetaceans that die at sea (will) then wash ashore to be found.

*Response:* As explained in detail elsewhere in this document, due to the water depth of the NPAL source and the fact that it is not of sufficient intensity to result in hearing damage, NMFS has no scientific reason to suspect that the NPAL source could result in injury or death to marine mammals through either hearing or other body function impairments. However, Scripps will be required to coordinate with the Hawaiian Islands' marine mammal stranding network to ensure that all strandings are investigated and analyzed to the extent possible. Moreover, marine mammals do not need to be onshore in order to be considered a stranding. Therefore, floating dead marine

mammals spotted during marine mammal aerial surveys will also be investigated by Scripps and the stranding network to the extent possible.

*Comment MRC7:* The MMC notes that the discussion of the aerial survey monitoring program does not, but should, describe by whom the aerial surveys would be conducted, what area or areas would be surveyed, what data would be collected, and, what would be considered biologically significant effects, and should describe the kind of changes in distribution and abundance that would trigger a review and suspension or termination of the project.

*Response:* NMFS agrees. A more complete description of the monitoring program protocols can be found in this document.

*Comment MRC8:* The MMC notes two things in regard to the following sentence found in the preamble to the proposed rule: "Based on an average of seven humpback sightings per survey observed during the 1998 season and assuming a moderate-sized effect due to NPAL transmissions, eight surveys should produce a minimum of 56 sightings of humpback whales, which would result in an estimated power of 0.80 (i.e., there would be an 80-percent probability of detecting a change in distribution if an effect is present)." First, that while the term "moderate-sized effect," found in discussion of the ability to monitor effects on humpback whales, is a standard statistical expression in estimating power, NMFS should indicate what it understands to be "moderate-sized" with respect to humpback abundance near the source. Second, NMFS should include a reference to size as well as distribution.

*Response:* Previous studies (Calambokidis, 1998) showed the mean distance from the ATOC source to be a relatively sensitive metric for assessing distributional changes of whales. However, no significant changes were noted for incidence (numbers) of whales in the "on" vs "off" experimental phases. Frankel and Clark (1998, 2000) also showed a similar effect in terms of distributional-related behaviors (i.e., distance and duration between surfacings). So the issue of statistical power was only applied to the distance from source variable, based on a difference on the order of 10 percent or greater. Though Scripps will report any differences in incidence, it is not expecting that metric to be particularly useful for later analysis, so the issue of power is not relevant there. In regard to the MMC's second point, it is not appropriate to calculate humpback whale abundance with the aerial survey

design. However, since the aerial survey tracklines will be constructed using the same rules as the baseline data surveys, it is possible to calculate a rate of incidence that is comparable between years. Therefore, although an overall abundance estimate cannot be estimated from these surveys, a relative incidence rate among years can be estimated.

*Comment MRC9:* The MMC asks what is meant by "an acute or short-term effect" on marine mammals that would trigger suspension of source operation and contacting NMFS. Also, what criteria would be used to determine whether the NPAL source was responsible for a stranding event.

*Response:* The Marine Mammal Monitoring and Studies Program would continue to monitor for acute, short-term effects, even though none were observed during the ATOC MMRP. Acute or short-term effects are defined as: (1) Animal dead or disabled (primary capability), (2) Increase in number of beached animals (potential/limited capability), (3) Increase in number of animals struck by vessels (potential/limited capability); (4) Repeated/prolonged activity (blowing, time on surface, etc.)(potential/limited capability), (5) Abnormal number of animals present/absent (primary capability), (6) Abnormal mother-calf activity (potential/limited capability). If at any time a Marine Mammal Monitoring and Studies Program team member positively identifies the occurrence of an acute or short-term effect, the information would be immediately communicated to the Marine Mammal Monitoring and Studies leader (Dr. J. Mobley, University of Hawaii). If the leader ascertains that an acoustic transmission (i.e., during the 5-min ramp-up or the 20-min transmission) coincided with the observed effect, he would contact the Barking Sands shore termination site and Scripps, and suspend source operations immediately until further notice by NMFS. The leader would collate all pertinent information relative to the incident and contact NMFS to inform them of the situation. NMFS, in consultation with the leader, would make the determination as to the severity of the situation, based upon the knowledge of the species type, the animal's location relative to the source, the source level at the time of the incident, the estimated received level at the animal, whether there were any other noise sources in the vicinity, etc. Based upon analysis of the information supplied, NMFS would recommend that one of the following options be executed: (1) Continue experiment as planned, (2) Continue experiment with

modifications to maximum source level or duty cycle, or (3) Suspend experiment pending consultation with NMFS. Regardless of the decision, within 24 hours, a written summary of the incident would be forwarded to ONR, Scripps, and NMFS.

If a dead or disabled animal is observed during the visual aerial surveys, this information would be provided to the Kauai stranding coordinator, who would follow his/her agency's protocols for handling of a dead or disabled animal.

*Comment MRC10:* The MMC questions the apparent discrepancy between NMFS statements that the 8 aerial surveys have an 80 percent chance of detecting a change in distribution (or abundance around the source) with the statement that the level of data from the monitoring program would not allow determinations to be made that the NPAL source was responsible for any decreases in abundance of humpback whales or other marine mammals in the vicinity of the source. The MMC believes that a monitoring program under a incidental taking authorization must be capable of detecting possible, non-negligible, project-related changes in distribution, abundance, or productivity of marine mammals.

*Response:* The MMC quoted the sentence out of context. The entire statement from the proposed rule reads:

NMFS does not believe that the level of data from the monitoring program will allow determinations to be made that the NPAL acoustic source was responsible for any decreases in abundance of humpback whales or other marine mammals in the vicinity of the source. At this time, evidence indicates that the numbers of humpback whales and Hawaiian monk seals off Kauai are increasing, however, it is unclear whether this is due to total abundance increases or geographic shifts due to oceanographic changes. Similarly, a cause and effect between operation of the NPAL source and any decrease in abundance of marine mammals in the offshore Hawaiian Islands over the short-term period of 5 years is unlikely.

The aerial monitoring program is designed to detect a change in distribution and abundance of humpback whales in the vicinity of the NPAL source due to the source being on at the time of overflight versus the acoustic source being off. This will be done by "distance from shore" analyses. The aerial monitoring program will not detect changes in distribution for other marine mammals because the numbers of animals detected will be too low. However, the best scientific information indicates that these other species will not be affected by the NPAL acoustic source.

NMFS believes that the NPAL monitoring program has been designed to conform to the greatest extent practicable with the guidelines found in the MMC's monitoring paper by Swartz and Hofman (1991). By using the information collected over the past five years, along with information collected by the aerial monitoring program north of Kauai and the Hawaii-wide aerial surveys, NMFS believes that determinations in trends in abundance for humpback whales will be attainable.

*Comment MRC11:* The MMC recommends that the final rule should contain a specific date by which annual reports under the LOA are to be submitted.

*Response:* A date for receipt of an annual report under a LOA is a condition for an LOA, not rulemaking. This allows NMFS the ability to modify the timing for the annual report, if necessary, without the need to undertake lengthy rulemaking. However, renewal of an LOA is conditional upon receipt of an annual report that is acceptable to NMFS.

#### *NEPA, ESA and Other Concerns*

*Comment NEC1:* The WDCS, while pleased that the ONR and Scripps will include a discussion on Hawaiian monk seals in the final EIS and in the AIM calculations, is nevertheless dissatisfied considering the endangered status of the monk seal that data were not made available at the time of the writing of the draft EIS.

*Response:* A draft EIS is, as its title suggests, a draft document. When information is lacking, incomplete or inaccurate, corrections are made in the final EIS, if noted by commenters and provided the information in the draft EIS is not so inadequate to preclude meaningful analysis (40 CFR 1502.9(a)). Information was provided in the draft EIS on the status of the monk seal in one of the NEPA alternatives, that is, use of the NPAL source at Midway Island. Recent information (Forney *et al.*, 1999) indicates that the monk seal population at the Main Hawaiian Islands (MHI) is approximately 40 animals which includes the 21 animals relocated to the MHI from Laysan Island in 1994. More recently, in August 2000, NMFS conducted a statewide aerial survey which observed 17 beached seals in Kauai County and 3 births which were all on the island of Kauai. To account for animals that may not have been observed for a reasonable estimate of the actual population size, NMFS normally multiplies the beach counts by a correction factor of 3. This recent information has been included in the ONR's final EIS. However, as stated

previously, NMFS does not believe that Hawaiian monk seals will be impacted by the NPAL source considering that monk seals are believed to be mid-frequency-specialist hearers, the relatively low SPL of the NPAL source at the water surface in the offshore vicinity of the source (less than 136 dB), and the coastal nature of the Hawaiian monk seal, where SPLs will be even lower.

*Comment NEC2:* The MMC notes that a reference was not provided with the statement that Hawaiian monk seals are "high-frequency" (HF) specialists. Also countering NMFS' statement that the Agency did not believe that monk seals would be impacted by the NPAL source, the MMC is unaware of studies on monk seal hearing, at-sea movements, diving behavior and behavioral responses to LF sound. The MMC believes that without additional analyses, installation and operation of a sound source at the Midway location would be contrary to the provisions of the ESA and NEPA and the regulations should not authorize operation of the NPAL acoustic source in the Midway Island area until such information is available.

*Response:* The reference for monk seals being HF specialists is Thomas *et al.* (1990). These authors found auditory thresholds for monk seals from 2 to 48 kHz, with best sensitivity between 12 and 28 kHz. For marine mammals, this best-sensitivity range means that monk seals are considered mid-frequency specialists, not HF specialists. Nonetheless, this continues to support NMFS' belief that monk seals are unlikely to be affected by a LF source such as NPAL, which transmits at 75 Hz (.075 kHz).

It is not clear to NMFS how locating the source at Midway would be contrary to NEPA and the ESA. The draft and final EISs prepared for this action by ONR describe the impacts of locating the source at either Kauai or Midway. The Council on Environmental Quality regulations implementing NEPA (40 CFR 1502.22) addressed the issue of proceeding with incomplete or inadequate information.

In addition, NMFS has completed consultation under section 7 of the ESA on conducting the activity off Kauai. If Scripps and ONR decided to relocate the activity to Midway, then ONR would need to reinstate consultation under section 7 of the ESA. In addition, because this small take rule has now been finalized, a new rule would need to be proposed in order for a small take authorization to be issued for NPAL operations at Midway.

*Comment NEC3:* The State of Hawaii noted that pursuant to 15 CFR 930,

Coastal Zone Management federal consistency concurrence is prerequisite to the issuance of the Letter of Authorization.

*Response:* Because the State consistency finding is being undertaken by Scripps, and because Scripps has applied for the small take authorization (a permit) under the MMPA, this action comes under subpart D of 15 CFR Part 930, as revised on December 8, 2000 (65 FR 77124). In consideration of § 930.62(c), NMFS processes applications for small take authorizations and, if a state consistency process has not been completed by the time a small take authorization has been completed, NMFS conditions that small take authorization's effectiveness upon the written concurrence of the appropriate state that the activity proposed is consistent with the state's Coastal Zone Management program. That policy applies to this action.

*Comment NEC4:* The HSUS is concerned that ONR and Scripps would proceed with this project even if they did not receive an LOA from NMFS. The HSUS quotes the proposed rule that: "Without an authorization under the MMPA, NMFS and the public may not receive this information" from reports. The HSUS presumes this means that the public would not receive the information because the project would not proceed because any taking of marine mammals would be illegal.

*Response:* In the proposed rule NMFS simply provided a summary statement of the costs and benefits of the proposed action in compliance with E.O. 12866-Regulatory Planning and Review. Whether or not an activity would take place without a small take authorization is the decision of the activity participants. If an activity were to take marine mammals without an authorization, NMFS would investigate to determine whether there was a violation of the MMPA. The statement regarding receipt of information is simply a statement that, without a small take authorization, there would be no requirement to monitor the activity nor to submit reports to NMFS.

#### **Description of Affected Marine Mammals**

A summary of the marine mammal species that may potentially be found in the vicinity of the NPAL acoustic source at either Kauai or Midway is presented here. For more detail on marine mammal abundance, density, and the methods used to obtain this information, reviewers are requested to refer to ONR's draft EIS. For general information on North Pacific Ocean marine mammals, reviewers may refer

to Forney *et al.* (2000) or many other references commonly available. For information on distribution and abundance of marine mammals in Hawaiian waters, reviewers are encouraged to review Mobley *et al.* (2000).

Six species of baleen whales, humpback (*Megaptera novaengliae*), fin (*Balaenoptera physalus*), blue (*B. musculus*), Bryde's (*B. edeni*), minke (*B. acutorostrata*), and the North Pacific right (*Balaena japonicus*) whales, may occur in the Kauai or Midway Atoll areas. Although not reported near Midway Atoll, the humpback whale is the only balaenopterid whale known to be present in reasonably large numbers. Humpback whales are considered abundant in coastal waters of the main Hawaiian Islands from November through April. Fin whales and blue whales have the potential to occur in the area; however, their distribution and abundance in the region is believed to be uncommon (Balcomb, 1987), although only a single fin whale was observed during recent ATOC marine mammal research. Right whales in the North Pacific Ocean are extremely rare and therefore, would also be rare in the Hawaiian Islands. Bryde's whales, and minke whales may be occasionally seen in the area of Midway Atoll (Leatherwood *et al.*, 1988), but are not usually found off Kauai.

Sixteen species of odontocetes (toothed whales, dolphins and porpoises) may be found in the Kauai and Midway areas. These species are sperm whales (*Physeter macrocephalus*), short-finned pilot whales (*Globicephala macrorhynchus*), beaked whales (*Ziphius cavirostris*, *Berardius bairdi*, and *Mesoplodon spp.*), spinner dolphins (*Stenella longirostris*), spotted dolphins (*Stenella attenuata*), striped dolphins (*Stenella coeruleoalba*), bottlenose dolphins (*Tursiops truncatus*), rough-toothed dolphins (*Steno bredanensis*), pygmy sperm whales (*Kogia breviceps*), dwarf sperm whales (*Kogia simus*), killer whales (*Orcinus orca*), false killer whales (*Pseudorca crassidens*), pygmy killer whales (*Feresa attenuata*), and melon-headed whales (*Peponocephala electra*). It should be noted, however, that the latter 7 species were not sighted in or near the proposed Kauai area during marine mammal surveys conducted between 1993 and 1998.

The Hawaiian monk seal (*Monachus schauinslandi*) occurs in the area of the Leeward Hawaiian Islands and, more recently in the main Hawaiian Islands, including the island of Kauai.

### Assessment of Potential Impacts on Marine Mammals

The effects of underwater 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 behavioral reactions of variable conspicuousness and variable relevance to the well being of the animal; these can range from subtle effects on respiration or other behaviors (detectable only by statistical analysis) to active avoidance reactions; (4) upon repeated exposure, animals may exhibit diminishing responsiveness (habituation), or disturbance effects may persist (the latter is most likely with sounds that are highly variable in characteristics, unpredictable in occurrence, and associated with situations that the animal perceives as a threat); (5) any noise that is strong enough to be heard has the potential to reduce (mask) the ability of marine mammals to hear natural sounds at similar frequencies, including calls from conspecifics and/or echolocation sounds, and environmental sounds such as storms and surf noise; and (6) very strong sounds have the potential to cause either a temporary or a permanent reduction in hearing sensitivity (i.e., TTS or PTS, respectively). 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.

Few data on the effects of non-explosive sounds on hearing thresholds of marine mammals have been obtained. However, in terrestrial mammals (and presumably in marine mammals), received sound levels must far exceed the animal's hearing threshold for there to be any TTS and must be even higher for there to be risk of PTS (Richardson *et al.*, 1995). In this proposed action, Scripps has calculated that a marine mammal would have to receive one ping greater than, or equal to 180 dB in order to be considered receiving a non-serious injury (Level A harassment), or many pings at an RL slightly lower than 180 dB in order to potentially incur a significant biological response (Level B harassment) to the noise.

In order to understand the biological significance of the risk of Level A or

Level B harassment, it is necessary to determine how this risk might affect a population of marine mammals, starting with acoustic criteria. First, the marine mammal must be able to hear LF sound. Second, the animal must incur a reaction to the LF sound that is more than momentary. Third, any effect from LF sound must involve a significant behavioral change in a biologically important activity, such as feeding, breeding, or migration, all of which are potentially important for reproductive success of the population.

Based on California and Hawaii ATOC MMRPs, Scripps found no overt or obvious short-term changes: (1) In the abundance and distribution of marine mammals in response to the ATOC transmissions (intensive statistical analyses of aerial survey data showed some subtle shifts in distribution of humpback (and possibly sperm) whales away from the California site (Calambokidis *et al.*, 1998) and humpback whales away from the Kauai site); (2) in the behavior of humpback whales in response to the playback of ATOC-like sounds (intensive statistical analyses revealed some subtle changes in the behavior of humpback whales (Frankel and Clark, 1998; 2000)); or (3) in the singing behavior of humpback whales in the vicinity of the Kauai ATOC sound source. Bioacoustic experts concluded that these subtle effects would not adversely affect the survival of an individual whale or the status of the North Pacific humpback whale population (Frankel and Clark, 2000).

To assess the potential environmental impact of the NPAL sound source on marine mammals, it was necessary for Scripps to predict the sound field that a given marine mammal species could be exposed to over time. This is a multi-part process involving (1) the ability to measure or estimate an animal's location in space and time, (2) the ability to measure or estimate the three-dimensional sound field at these times and locations, (3) the integration of these two data sets to estimate the potential impact of the sound field on a specific animal in the modeled population, and (4) the conversion of the resultant cumulative exposures for a modeled population into an estimate of the level of risk associated with a disruption of a biologically important activity.

Next, a methodology for converting the resultant cumulative exposures for a modeled population into an estimate of the risk to the entire population associated with a significant disruption in a biologically important activity and or injury was developed. This process

assessed risk in relation to RL and repeated exposure. The resultant "risk continuum" is based on the assumption that the threshold of risk is variable and occurs over a range of conditions rather than at a single threshold.

Taken together, the recent results on marine mammals from LF sounds, the acoustical modeling, and the risk assessment, provide an estimate of potential environmental impacts to marine mammals.

The acoustical modeling process was accomplished by Scripps using the U.S. Navy's standard acoustical performance prediction transmission loss model-Parabolic Equation (PE) version 3.4. The results of this model are the primary input to the AIM model. AIM was used in this analysis to estimate marine mammal sound exposures and integrate simulated characteristics of marine mammals (e.g., species distribution, density, dive profiles, and general movement), NPAL sound transmissions (e.g., duty cycle, transmission length), and the predicted sound field for each transmission to estimate acoustic exposure during a typical NPAL source transmission. A description of the PE and AIM models (including AIM input parameters for animal movement, diving behavior, and marine mammal distribution, abundance, and density) and the risk continuum analysis are described in detail in the Scripps' application and ONR's final EIS and are not discussed further in this document. For copies of these documents see **ADDRESSES**.

Scripps has drawn some general conclusions about the potential impact of the NPAL sound source on marine mammals from the relative abundance of various marine mammal species in relationship to the NPAL sound field. The only mysticete (baleen) whale species expected in the waters off the north shore of Kauai in substantial numbers is the humpback whale. Scripps believes however, that because humpback whales usually prefer nearshore locations (inside the 100-fathom (188 m) depth contour) and not the offshore location of the NPAL source, few humpbacks are expected to be exposed to received levels greater than 120 dB (i.e., the SPL level presumed by Scripps in its risk continuum (explained in Scripps' application) to be almost zero for marine mammals to have a potential to incur significant behavioral disturbance). Similarly, sperm whales are the most common deep-diving odontocete (toothed) whale in Hawaiian Islands area, but because they usually prefer offshore waters (i.e., water depths greater than 4,000 m (12,700 ft)), few are

expected to be exposed to received levels greater than 120 dB. According to Scripps, these distributional preferences are supported by the Kauai ATOC MMRP (Mobley, 1999).

Using the risk continuum and acoustic modeling, Scripps estimated the potential for biologically significant reactions by marine mammals under the proposed action. Scripps determined that of all the species found in the NPAL source area only humpback whales that remain in the vicinity of the sound source for a full day of transmissions may potentially experience any effect from the source transmissions. However, humpback whales typically travel parallel to the coast of Kauai, and, therefore, Scripps believes, would probably not receive sound from more than a single transmission. NMFS, having reviewed Mobley *et al.* (1999, 2000), and the information contained in ONR's draft and final EISs, concurs with this assessment and therefore concludes that operation of the NPAL source by Scripps will have no more than a negligible impact on the affected marine mammal stocks and habitats.

#### Mitigation

Scripps' proposed action includes mitigation that would minimize the potential effects of the NPAL sound source to marine mammals. First, the sound source would operate at the minimum duty cycle (2 percent during the humpback whale season) necessary to support the large-scale acoustic thermometry and long-range propagation objectives (described previously in this document). Any increases in the duty cycle beyond the nominal 2 percent (with a maximum of 8 percent) would not occur during the humpback whale season (January-April). However the proposed action includes the possibility of an 8-percent duty cycle for up to 2 months out of each year; this action, which would not occur during the period of time humpback whales inhabit Hawaiian waters. Second, NPAL transmissions would continue with approximately the same transmission schedule as that used during the first feasibility phase of the ATOC study. Third, the sound source would operate at the minimum power level necessary to support large-scale acoustic thermometry and long-range sound transmission objectives (It should be recognized that signal length and power trade off with each other; a shorter signal length would require increased power to accomplish the project's objectives-for that reason it is considered as a mitigation measure to prevent potential injury to marine

mammals). The fourth mitigation measure proposed is to ramp-up the NPAL sound source transmissions over a 5-min period. This is believed to reduce the potential for startling marine mammals in the vicinity of the NPAL sound source and provides them an opportunity to move away from the sound source before transmitting at the maximum power levels.

#### Monitoring and Reporting

In an effort to understand the potential for long-term effects of man-made sound on marine mammals, Scripps will monitor the distribution and abundance of marine mammals in the vicinity of the sound source by conducting eight surveys each year from February through early April. In order to maintain a basis for comparison with previous aerial surveys conducted in the area off the north shore of Kauai, the proposed survey protocol would follow the protocol used in the earlier 1993-1998 surveys (see Mobley *et al.*, 1999). North-south tracklines spaced 13 km (7 nm) apart would be surveyed within a 40-km (21.6 nm) radius of the NPAL source. One or two additional lines spaced 6.5 km (3.5 nm) apart would be added in the immediate vicinity of the Kauai source. Sightings of all marine mammal and sea turtle species would be made by two experienced observers, one on each side of the aircraft. Sightings would be called to a data recorder who would note the species sighted, number of individuals, presence or absence of a calf, angle to the sighting, and any apparent reaction to the aircraft. Additionally, GPS locations and aircraft altitude, measured by a radar altimeter) would be automatically recorded at 30-sec intervals and whenever a sighting is made.

The 8 aircraft surveys would be scheduled eight days apart to match the NPAL transmission schedule. Based on an average of seven humpback sightings per survey observed during the 1998 season, and assuming a moderate sized effect due to NPAL transmissions, eight surveys should produce a minimum of 56 sightings of humpback whales, which would result in an estimated power of 0.80 (i.e., there would be an 80-percent probability of detecting a change in distribution if an effect is present). The estimate of 56 sightings is presumed to be a minimum, given previously reported evidence that the Hawaiian wintering population of humpback whales is increasing (Mobley *et al.*, 1999).

During the aerial surveys, the location (lat/long) of each sighting of a marine mammal or sea turtle will be recorded with GPS. Therefore, since the lat/long

location of the sound source is known, one can calculate distance of the marine mammal sighting from the sound source. Similarly, with the lat/long position of the sighting, a distance offshore can be calculated from a digitized map. These distances can then be compared to the baseline data that was collected during the 2001 field season, and a comparison between source "on" and source "off" distribution can be determined. As for the received level that a sighted animal was exposed to, during ATOC a detailed transmission loss (TL) study was conducted in the waters shoreward of the sound source, and the PE plots show the TL seaward of the sound source. Therefore, knowing the lat/long position, one can estimate what sound level an animal would receive during a transmission.

If humpback whales, or other marine mammals, are observed exhibiting avoidance reactions in response to NPAL source transmissions, the received level at the whale must be estimated and included in the required annual report. If acute effects such as injury or mortality of listed species are observed relative to the initiation of the sound source, then Scripps must immediately initiate the source shut-down procedure in the research protocol. Avoidance reactions must also be reported in the annual reports. Finally, since the aerial surveys will be scheduled to coincide with days that the source will be transmitting, if any injured or dead animals are observed, the Kauai stranding coordinator must be notified and informed of the location of the stranding, or the offshore location of the animal.

A report on activities will be provided to NMFS annually upon the conclusion of that year's aerial surveys. Reports on the aerial survey results will be available to the public.

#### NEPA

The ONR has released a final EIS under NEPA (see **ADDRESSES**). NMFS is a cooperating agency, as defined by the Council on Environmental Quality (40 CFR 1501.6), in the preparation of the draft and final EISs.

#### Endangered Species Act (ESA)

On June 23, 2000, ONR submitted a Biological Assessment to NMFS to initiate consultation under section 7 of the ESA. In that regard, NMFS concluded consultation with ONR on this action on April 26, 2001. The finding of that consultation was that funding, and continuation of, the NPAL sound source located off Kauai, HI and the issuance by NMFS of a small take

authorization for this activity are not likely to jeopardize the continued existence of any endangered or threatened species under the jurisdiction of NMFS. A copy of the Biological Opinion issued as a result of that consultation is available upon request (see **ADDRESSES**).

#### Determinations

Based on the scientific analyses detailed in Scripps' application and further supported by information and data contained in ONR's final EIS, and discussed in this document, NMFS has determined that the taking of marine mammals potentially harassed incidental to the continued operation of an LF acoustic source previously installed off the north shore of Kauai by the NPAL project would result in only small numbers (as the term is defined in § 216.103) of marine mammals being taken. In addition, this incidental harassment would have no more than a negligible impact on the affected marine mammal stocks or habitats and would not have an unmitigable adverse impact on Arctic subsistence uses of marine mammals.

The following factors have been considered when making the determination that the taking by the NPAL acoustic source at Kauai would result in small numbers being harassed and having no more than a negligible impact: (1) The limited duty cycle of the source (2-8 percent); (2) the information that most species of marine mammals are relatively insensitive to acoustic sounds as low as the NPAL source; (3) the fact that relatively few marine mammals that inhabit the acoustic source area are known to dive to depths that would put them in the proximity of sound fields that could disrupt biologically significant behavior; and (4) the low potential that a marine mammal actually would be within the acoustic sound field during sound transmissions. In consideration of these factors, NMFS has concluded that the operation of the acoustic source at Kauai would result in no more than small numbers of marine mammals being affected, and that the operation of the NPAL source offshore Kauai, HI for the next five years would have a negligible impact on affected marine mammal species and stocks. Finally, because no marine mammals potentially affected by the NPAL acoustic source are also utilized for subsistence by Alaskan natives, the NPAL project will not have an unmitigable adverse impact on subsistence uses of marine mammals. Therefore, in accordance with section 101(a)(5)(A) of the MMPA, a Letter of Authorization for the taking of small

numbers of marine mammals incidental to operation of the NPAL source off Kauai, HI can be issued to Scripps under these regulations.

#### Costs and Benefits

In addition to allowing Scripps to take a small number of marine mammals incidental to conducting scientific research using the NPAL acoustic source off Hawaii, this rule would require Scripps to provide NMFS and the public with information on the NPAL source's effect on certain species of marine mammals. Without an authorization under the MMPA, NMFS and the public might not receive this information. NMFS believes that obtaining this information is important because scientific findings resulting from the monitoring program are likely to be directly applicable to other oceanographic research activities that employ LF acoustic sources. The cost to ONR and Scripps cannot be fully determined at this time but these costs would be incurred through implementation of the aerial monitoring program that will be required under this proposed rule. Preliminarily, NMFS estimates that the cost would be approximately \$300,000 during the 5-year program.

Finally, NMFS agrees with Scripps and ONR that, while direct effects on the economy could occur through a reduction in whale-watching and other tourism if changes in marine mammal abundance or behavior occurred, because the Kauai ATOC MMRP demonstrated that no overt or obvious short-term change in abundance, distribution, or behavior occurred as a result of the ATOC sound transmissions, no effects on the economy are anticipated.

#### Classification

This action has been determined to be not significant for purposes of Executive Order 12866.

The Assistant General Counsel for Legislation and Regulation of the Department of Commerce certified to the Chief Counsel for Advocacy of the Small Business Administration, at the proposed rule stage, that this rule, if adopted, would not have a significant economic impact on a substantial number of small entities since it would apply only to Scripps and would have no effect, directly or indirectly, on small businesses. It will also affect a small number of contractors providing services related to reporting the impact of the NPAL source on marine mammals. Some of the affected contractors may be small businesses, but the number involved would not be

substantial. Further, since the monitoring and reporting requirements are what would lead to the need for their services, the economic impact on them would be beneficial. Because of this certification, a regulatory flexibility analysis is not required.

Notwithstanding any other provision of law, no person is required to respond to nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act (PRA) unless that collection of information displays a currently valid OMB control number. This proposed rule contains collection-of-information requirements subject to the provisions of the PRA. This collection has been approved previously by OMB under section 3504(b) of the PRA issued under OMB control number 0648-0151. These requirements include an application for an LOA and an annual report on monitoring. Other information requirements in the rule are not subject to the PRA since they apply only to a single entity and, therefore, are not contained in a rule of general applicability.

The reporting burden for this collection is estimated to be approximately 80 hours, including the time for gathering and maintaining the data needed, and completing and reviewing the collection of information. It does not include time for monitoring the activity.

#### List of Subjects in 50 CFR Part 216

Administrative practice and procedure, Imports, Indians, Marine mammals, Penalties, Reporting and recordkeeping requirements, Transportation.

August 10, 2001.

**William T. Hogarth,**

Acting Assistant Administrator for Fisheries,  
National Marine Fisheries Service.

For reasons set forth in the preamble, 50 CFR part 216 is amended as follows:

#### PART 216—REGULATIONS GOVERNING THE TAKING AND IMPORTING OF MARINE MAMMALS

1. The authority citation for part 216 continues to read as follows:

**Authority:** 16 U.S.C. 1361 *et seq.*

2. Subpart P is added to read as follows:

#### Subpart P—Taking of Marine Mammals Incidental to Operating A Low Frequency Acoustic Source by the North Pacific Acoustic Laboratory

Sec.

216.170 Specified activity and specified geographical region.

216.171 Effective dates.

216.172 Permissible methods of taking.

216.173 Prohibitions.

216.174 Mitigation.

216.175 Requirements for monitoring and reporting.

216.176 Letter of authorization.

216.177 Renewal of a letter of authorization.

216.178 Modifications to a letter of authorization.

#### Subpart P—Taking of Marine Mammals Incidental to Operating A Low Frequency Acoustic Source by the North Pacific Acoustic Laboratory

##### § 216.170 Specified activity and specified geographical region.

(a) Regulations in this subpart apply only to the incidental taking of small numbers of marine mammals specified in paragraph (b) of this section by U.S. citizens engaged in conducting acoustic research using a moored, low-frequency acoustic source by the North Pacific Acoustic Laboratory off Kauai, Hawaii.

(b) The incidental harassment of marine mammals under the activity identified in paragraph (a) of this section is limited to small numbers of the following species: humpback whales (*Megaptera novaengliae*), fin whales (*Balaenoptera physalus*), blue whales (*B. musculus*), Bryde's whales (*B. edeni*), minke whales (*B. acutorostrata*), North Pacific right whales (*Balaena japonicus*), sperm whales (*Physeter macrocephalus*), short-finned pilot whales (*Globicephala macrorhynchus*), beaked whales (*Ziphius cavirostris*, *Berardius bairdi*, and *Mesoplodon spp.*), spinner dolphins (*Stenella longirostris*), spotted dolphins (*Stenella attenuata*), striped dolphins (*Stenella coeruleoalba*), bottlenose dolphins (*Tursiops truncatus*), rough-toothed dolphins (*Steno bredanensis*), pygmy sperm whales (*Kogia breviceps*), dwarf sperm whales (*Kogia simus*), killer whales (*Orcinus orca*), false killer whales (*Pseudorca crassidens*), pygmy killer whales (*Feresa attenuata*), and melon-headed whales (*Peponocephala electra*), and Hawaiian monk seals (*Monachus schauinslandi*).

##### § 216.171 Effective dates.

Regulations in this subpart are effective from September 17, 2001, through September 17, 2006.

##### § 216.172 Permissible methods of taking.

(a) Under a Letter of Authorization issued pursuant to §§ 216.106 and 216.176, the Holder of this Letter of Authorization may incidentally, but not

intentionally, take marine mammals by harassment within the area described in § 216.170(a), provided the activity is in compliance with all terms, conditions, and requirements of these regulations and the Letter of Authorization.

(b) The activities identified in § 216.170(a) must be conducted in a manner that minimizes, to the greatest extent practicable, any adverse impacts on marine mammals and their habitat.

##### § 216.173 Prohibitions.

Notwithstanding takings authorized by § 216.170(b) and by a Letter of Authorization issued under §§ 216.106 and 216.176, no person in connection with the activities described in § 216.170(a) shall:

(a) Take any marine mammal not specified in § 216.170(b);

(b) Take any marine mammal specified in § 216.170(b) other than by incidental, unintentional harassment;

(c) Take any marine mammal specified in § 216.170(b) if such take results in more than a negligible impact on the species or stocks of such marine mammal; or

(d) Violate, or fail to comply with, the terms, conditions, and requirements of these regulations or a Letter of Authorization issued under §§ 216.106 and 216.176.

##### § 216.174 Mitigation.

As described in the Letter of Authorization issued under §§ 216.106 and 216.176., the North Pacific Acoustic Laboratory acoustic source must:

(a) Operate at the minimum duty cycle necessary for conducting large-scale acoustic thermometry and long-range propagation objectives.

(b) Not increase the duty cycle during the months of January through April.

(c) Operate at the minimum power level necessary for conducting large-scale acoustic thermometry and long-range propagation objectives, but no more than 260 Watts.

(d) Precede all transmissions from the acoustic source by a 5-minute ramp-up of the acoustic source's power.

##### § 216.175 Requirements for monitoring and reporting.

(a) The holder of the Letter of Authorization is required to cooperate with the National Marine Fisheries Service and any other Federal, state or local agency monitoring the impacts of the activity on marine mammals. The holder must notify the Southwest Regional Administrator at least 2 weeks prior to commencing monitoring activities.

(b) The Holder of this Authorization must conduct a minimum of eight

surveys each year from February through early April in the area off the north shore of Kauai, Hawaii, as specified in the Letter of Authorization issued under §§ 216.106 and 216.176.

(c) The Holder of this Authorization must, through coordination with marine mammal stranding networks in Hawaii, monitor strandings of marine mammals to detect long-term trends in stranding and the potential relationship to the North Pacific Acoustic Laboratory acoustic source.

(d) Activities related to the monitoring described in paragraphs (b) and (c) of this section, or in the Letter of Authorization issued under §§ 216.106 and 216.176 may be conducted without the need for a separate scientific research permit.

(e) In coordination and compliance with marine mammal researchers operating under this subpart, at its discretion, the National Marine Fisheries Service may place an observer on any aircraft involved in marine mammal surveys in order to monitor the impact on marine mammals.

(f) The holder of a Letter of Authorization must annually submit a report to the Director, Office of Protected Resources, National Marine Fisheries Service, no later than 120 days after the conclusion of the humpback whale aerial survey monitoring program. This report must contain all the information required by the Letter of Authorization, including the results, if any, of coordination with coastal marine mammal stranding networks.

(g) A final comprehensive report must be submitted to the Director, Office of Protected Resources, National Marine Fisheries Service no later than 240 days after completion of the final year of humpback whale aerial survey monitoring conducted under § 216.175. This report must contain all the information required by the Letter of Authorization.

#### **§ 216.176 Letter of authorization.**

(a) A Letter of Authorization, unless suspended or revoked, will be valid for a period of time specified in the Letter

of Authorization but may not exceed the period of validity of this subpart.

(b) A Letter of Authorization with a period of validity less than the period of validity of this subpart may be renewed subject to renewal conditions in § 216.177.

(c) A Letter of Authorization will set forth:

(1) Permissible methods of incidental taking;

(2) Authorized geographic area for taking;

(3) Means of effecting the least practicable adverse impact on the species of marine mammals authorized for taking and its habitat; and

(4) Requirements for monitoring and reporting incidental takes.

(d) Issuance of a Letter of Authorization will be based on a determination that the number of marine mammals taken by the activity will be small, and that the number of marine mammals taken by the activity, specified in § 216.170(b), as a whole, will have no more than a negligible impact on the species or stocks of affected marine mammal(s).

(e) Notice of issuance or denial of a Letter of Authorization will be published in the **Federal Register** within 30 days of a determination.

#### **§ 216.177 Renewal of a letter of authorization.**

(a) A Letter of Authorization issued under § 216.106 and § 216.176 for the activity identified in § 216.170(a) will be renewed annually upon:

(1) Notification to the National Marine Fisheries Service that the activity described in the application for a Letter of Authorization submitted under § 216.176 will be undertaken and that there will not be a substantial modification to the described work, mitigation, or monitoring undertaken during the upcoming season;

(2) Timely receipt of the monitoring reports required under § 216.175, which have been reviewed by the National Marine Fisheries Service and determined to be acceptable;

(3) A determination by the National Marine Fisheries Service that the mitigation, monitoring, and reporting

measures required under §§ 216.174 and 216.175 and the Letter of Authorization were undertaken and will be undertaken during the upcoming period of validity of a renewed Letter of Authorization; and

(4) Renewal of a Letter of Authorization will be based on a determination that the number of marine mammals taken by the activity continues to be small and that the number of marine mammals taken by the activity, specified in § 216.170(b), will have no more than a negligible impact on the species or stock of affected marine mammal(s).

(b) A notice of issuance or denial of a renewal of a Letter of Authorization will be published in the **Federal Register** within 30 days of a determination.

#### **§ 216.178 Modifications to a letter of authorization.**

(a) In addition to complying with the provisions of §§ 216.106 and 216.176, except as provided in paragraph (b) of this section, no substantive modification (including withdrawal or suspension) to the Letter of Authorization issued pursuant to §§ 216.106 and 216.176 and subject to the provisions of this subpart shall be made by the National Marine Fisheries Service until after a notification and an opportunity for public comment has been provided. For purposes of this paragraph, a renewal of a Letter of Authorization under § 216.177 without modification, except for the period of validity, is not considered a substantive modification.

(b) If the Assistant Administrator determines that an emergency exists that poses a significant risk to the well-being of the species or stocks of marine mammals specified in § 216.170(b), a Letter of Authorization issued pursuant to §§ 216.106 and 216.176 may be substantively modified without prior notification and an opportunity for public comment. Notification will be published in the **Federal Register** within 30 days subsequent to the action.

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