

**VIII. Other Requirements**

(A) Federal Policies and Procedures—Recipients and subrecipients are subject to all Federal laws and Federal and Department of Commerce (DOC) policies, regulations, and procedures applicable to Federal financial assistance awards.

(B) Past Performance—Unsatisfactory performance under prior Federal awards may result in an application not being considered for funding.

(C) Preaward Activities—If applicants incur any costs prior to an award being made, they do so solely at their own risk of not being reimbursed by the Government. Notwithstanding any verbal or written assurance that may have been received, there is no obligation on the part of DOC to cover preaward costs.

(D) No Obligation for Future Funding—If an application is selected for funding, DOC has no obligation to provide any additional future funding in connection with that award. Renewal of an award to increase funding or extend the period of performance is at the total discretion of DOC.

(E) Delinquent Federal Debts—No award of Federal Funds shall be made to an applicant who has an outstanding delinquent Federal debt until either:

(1) The delinquent account is paid in full,

(2) A negotiated repayment schedule is established and at least one payment is received, or

(3) Other arrangements satisfactory to DOC are made.

(F) Name Check Review—All non-profit and for-profit applicants are subject to a name check review process. Name checks are intended to reveal if any key individuals associated with the applicant have been convicted of or are presently facing criminal charges such as fraud, theft, perjury, or other matters which significantly reflect on the applicant's management honesty or financial integrity.

(G) False Statements—A false statement on an application is grounds for denial or termination of funds and grounds for possible punishment by a fine or imprisonment as provided in 18 U.S.C. 1001.

(H) Intergovernmental Review—Applications for support from the National Sea Grant College Program are not subject to Executive Order 12372, "Intergovernmental Review of Federal Programs."

(I) Purchase of American-Made Equipment and Products—Applicants are hereby notified that they will be encouraged to the greatest extent practicable, to purchase American-made

equipment and products with funding provided under this program.

**Classification**

Prior notice and an opportunity for public comments are not required by the Administrative Procedure Act or any other laws for this notice concerning grants, benefits, and contracts. Therefore, a regulatory flexibility analysis is not required for purposes of the Regulatory Flexibility Act.

This action has been determined to be not significant for purposes of E.O. 12866.

This notice contains collection of information requirements subject to the Paperwork Reduction Act. The Sea Grant Budget Form and Standard Forms 424, 424a and 424b have been approved under control numbers 0648-0362, 0348-0043, 0348-0044, and 0348-0040 with average responses estimated to take 15, 45, 180, and 15 minutes, respectively. These estimates include the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments on these estimates or any other aspect of these collections to National Sea Grant College Program, R/SG, NOAA, 1315 East-West Highway, Silver Spring, MD 20910 (Attention: Francis S. Schuler) and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503 (Attention: NOAA Desk Officer). Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number.

Dated: February 25, 1999.

**Louisa Koch,**

*Deputy Assistant Administrator, Office of Oceanic and Atmospheric Research, National Oceanic and Atmospheric Administration.*

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**DEPARTMENT OF COMMERCE****National Oceanic and Atmospheric Administration**

[I.D. 021699A]

**Small Takes of Marine Mammals Incidental to Specified Activities; Seismic Hazards Investigation in Southern California**

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

**ACTION:** Notice of receipt of application and proposed authorization for a small take exemption; request for comments.

**SUMMARY:** NMFS has received a request from the U.S. Geological Survey (USGS) for an authorization to take small numbers of marine mammals by harassment incidental to collecting marine seismic-reflection data offshore from southern California. Under the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to authorize the USGS to incidentally take, by harassment, small numbers of marine mammals in the afore mentioned area for a 2-week period between May and July 1999.

**DATES:** Comments and information must be received no later than April 5, 1999.

**ADDRESSES:** Comments on the application should be addressed to Donna Wieting, Acting Chief, Marine Mammal Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Silver Spring, MD 20910-3225. A copy of the application may be obtained by writing to this address or by telephoning one of the contacts listed here.

**FOR FURTHER INFORMATION CONTACT:** Kenneth R. Hollingshead, NMFS, (301) 713-2055, or Christina Fahy, NMFS, 562-960-4017.

**SUPPLEMENTARY INFORMATION:****Background**

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

Permission may be granted if NMFS finds that the taking will have a

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

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

...any act of pursuit, torment, or annoyance which (a) has the potential to injure a marine mammal or marine mammal stock in the wild; or (b) 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.

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

#### Summary of Request

On January 15, 1999, NMFS received a request from the USGS for authorization to take small numbers of several species of marine mammals by harassment incidental to collecting marine seismic-reflection data offshore from southern California. Seismic data will be collected during a 2-week period between May and July 1999, to support studies of the regional landslide and earthquake hazards and to understand how saltwater invades

coastal aquifers. A revised request was received on February 11, 1999.

#### Background

The USGS proposes to conduct a high-resolution seismic survey offshore from Southern California, for a 2-week period between May and July 1999. The USGS would like to collect seismic-reflection data to investigate: (1) the hazards posed by landslides and potential earthquake faults in the nearshore region from Santa Barbara to

San Diego and (2) the invasion of seawater into freshwater aquifers that are critical to the water supply for people within the Los Angeles-San Pedro area. Both of these tasks are multi-year efforts that require using a small airgun.

Coastal Southern California is the most highly populated urban area along the U.S. Pacific coast. The primary objective of the USGS research is to provide information to help mitigate the earthquake threat to this area. The USGS emphasizes that the goal is not earthquake prediction but rather an assistance in determining what steps might be taken to minimize the devastation should a large quake occur. The regional earthquake threat is known to be high, and a major earthquake could adversely affect the well being of a large number of people.

Important geologic information that the USGS will derive from this project's seismic-reflection data concerns how earthquake deformation is distributed offshore, that is, where the active faults are and what the history of movement along them has been. This should improve understanding of the shifting pattern of deformation that occurred over both the long term (approximately the last 100,000 years) and short term (the last few thousand years). The USGS seeks to identify actively deforming structures that may constitute significant earthquake threats. The USGS also proposes to locate offshore landslides that might affect coastal areas. Not only major subsea landslides might affect the footings of coastal buildings, but also very large slides can generate local tsunamis. These large sea waves can be generated by seafloor movement that is produced either by landslides or by earthquakes. Knowing where large slides have occurred offshore will help locate areas susceptible to wave inundation.

Some faults that have produced earthquakes lie entirely offshore or extend into offshore areas where they can be studied using high-resolution seismic-reflection techniques. An example is the Rose Canyon fault, which extends through the San Diego area, and is considered to be the primary earthquake threat. This fault extends northward from La Jolla, beneath the inner continental shelf, and appears again onshore in the Los Angeles area. This fault and others like it near shore could generate moderate (M5-6) to large (M6-7) earthquakes.

Knowing the location and geometry of fault systems is critical to estimating the location and severity of ground shaking. Therefore the results of this project will contribute to decisions involving land

use, hazard zonation, insurance premiums, and building codes.

The proposed work is in collaboration with scientists at the Southern California Earthquake Center, which analyzes faults and earthquakes in onshore regions, and with scientists at the Scripps Institute of Oceanography, who measure strain (incremental movement) on offshore faults.

The USGS also wants to collect high-resolution seismic-reflection data to locate the sources and pathways of seawater that intrudes into freshwater aquifers below San Pedro. Ground water usage in the Los Angeles basin began in the mid-1800s. Today, more than 44,000 acre-feet of freshwater each year are extracted from the aquifers that underlie just the city of San Pedro. Extracting freshwater from coastal aquifers causes offshore salt water to flow toward areas of active pumping. To limit this salt-water intrusion, the Water Replenishment District and water purveyors in San Pedro are investing \$2.7 million per year to inject freshwater underground to establish a zone of high water pressure in the aquifer. The resulting zone of high pressure will form a barrier between the invasive saltwater and the productive coastal aquifers.

USGS scientists in San Diego are working with the Los Angeles County Department of Public Works and the Water Replenishment District to develop a ground-water simulation model to predict fluid flow below San Pedro and nearby parts of the Los Angeles Basin. This model will eventually be used in managing water resources. The accuracy of the present model, however, is compromised by a paucity of information about aquifer geometry and about other geologic factors that might affect fluid flow. Data the USGS collects will be used to improve three-dimensional, fluid-flow models to aid management of water resources.

Fieldwork described here will be the third airgun survey that the USGS has conducted under close supervision by marine-mammal biologists. In March 1998, the USGS used a large (6500 in<sup>3</sup>; 106 liters) airgun array in and around Puget Sound to study the regional earthquake hazard. The USGS employed 12 biologists, who worked on two ships continuously to oversee airgun operations. On several occasions the USGS shut off the airguns when marine mammals entered safety zones that had been stipulated by NMFS under an Incidental Harassment Authorization (IHA), and, when mammals left these zones, the USGS gradually ramped up the array as required to avoid harming

wildlife. Marine-mammal biologists reported that, during the survey, no overt distress was evident among the dense marine mammal populations, and, afterward, no unexplained marine mammal strandings occurred.

In August 1998, the USGS surveyed offshore from Southern California, using a small airgun (40 in<sup>3</sup>; 655 cm<sup>3</sup>). Two marine mammal biologists oversaw this activity, and the survey the USGS proposes will be conducted with similar oversight.

#### *Experimental Design*

Marine studies conducted by the USGS focus on areas where natural hazards have their greatest potential impact on society. In Southern California, USGS studies will concern four areas. The first area in priority is the coastal zone and continental shelf between Los Angeles and San Diego, where much of the hazard appears to be associated with strike-slip faults, such as the Newport-Inglewood and Palos Verdes faults. The second study area lies offshore, in the Santa Monica, San Pedro, and San Diego Trough deeps, where rapid sedimentation has left a more complete record, relative to shallow-water areas, that the USGS can use to decipher earthquake history. The third area is the extension into the Santa Barbara Channel of major elements of onshore geology, including some large faults. The fourth area is the geologic boundary, marked generally by the Channel Islands, between the inner California Borderland (dominated by strike-slip faults) and the Santa Barbara Channel (dominated by compressional faults). The study proposed here focuses on the highest priority area, which lie near shore between Los Angeles and San Diego.

The seismic-reflection survey will last 14 days. From its experience collecting seismic-reflection data in this general area during 1998, the USGS has decided to conduct the 1999 survey sometime within the May through July window. The basis for this decision is its desire to avoid the gray whale migrations and the peak arrival of other mysticete whales during late summer.

The USGS has not yet determined the exact tracklines for the survey, but the USGS does know the areas where airgun use will be concentrated. Two of these areas are southwest and southeast of Los Angeles, and the third and largest one is west and northwest of San Diego. In these areas seismic-reflection data will be collected along a grid of lines that are about 2 km (1.2 mi) apart.

The USGS proposes to use a small airgun and 200-m (656-ft) long streamer to collect seismic-reflection data. The

potential effect on marine mammals is from the airgun; mammals cannot become entangled in the streamer. The USGS will also use a low-powered, high-resolution seismic system to obtain detailed information about the very shallow geology. The seismic-reflection system will be aboard a vessel owned by a private contractor. Ocean-bottom seismometers will be deployed to measure the velocity of sound in shallow rocks to help unravel the recent history of fault motion. These seismometers are passive recorders and pose no threat to the environment.

Ship navigation will be accomplished using satellites of the Global Positioning System. The survey ship will be able to report accurate positions, which is important to mitigating the airgun's effect on marine mammals and to analyzing what impact, if any, airgun operations had on the environment.

#### *The Seismic Sound Sources*

During this survey the USGS will operate two sound sources—an airgun and a high-resolution Hunttec<sup>(TM)</sup> system. The main sound source will be a single small airgun of special type called a generator-injector, or GI-gun (trademark of Seismic Systems, Inc., Houston, TX). This type of airgun consists of two small airguns within a single steel body. The two small airguns are fired sequentially, with the precise timing required to stifle the bubble oscillations that typify sound pulses from a single airgun of common type. These oscillations impede detailed analysis of fault and aquifer structure. For arrays consisting of many airguns, bubble oscillations are cancelled by careful selection of airgun sizes. The GI-gun is a mini-array that is carefully adjusted to achieve the desired bubble cancellation. Airguns and GI-guns with similar chamber sizes have similar peak output pressures.

The GI-gun for this survey has two equal-sized chambers of 35 in<sup>3</sup> (57 mm<sup>3</sup>), and the gun will be fired every 12 seconds. Compressed air delivered to the GI-gun will have a pressure of about 3000 psi. The gun will be towed 12 meters (39.4 ft) behind the vessel and suspended from a float to maintain a depth of about 1 m (3.3 ft).

The manufacturer's literature indicates that a GI-gun of the size the USGS will use has a sound-pressure level (SPL) of about 220 dB re 1  $\mu$ Pa-m. In comparison, a 40-in<sup>3</sup> (65 mm<sup>3</sup>) airgun has an SPL of 216 dB re 1  $\mu$ Pa-m (Richardson *et al.*, 1995). The GI-gun's output sound pulse has a duration of about 10 ms. The amplitude spectrum of this pulse, as shown by the manufacturer's data, indicates that most

of the sound energy is at frequencies below 500 Hz. Field measurements by USGS personnel indicate that the GI-gun's output is low amplitudes at frequencies above 500 Hz. Thus high-amplitude sound from this source is at frequencies that are outside the main hearing band of odontocetes and pinnipeds (Richardson *et al.*, 1995).

The high-resolution Hunttec<sup>(TM)</sup> system uses an electrically powered sound source. In operation, the sound producing and recording hardware are towed behind the ship near the seabottom. The unit emits sound about every 0.5 sec. This system provides highly detailed information about stratified sediment, so that dates obtained from fossils in sediment samples can be correlated with episodes of fault offset. The SPL for this unit is 210 dB re 1  $\mu$ Pa-m. The output-sound bandwidth is 0.5 kHz to 8 kHz, with the main peak at 4.5 kHz.

#### *The Need for 24-hour Seismic Operations*

Operating less than 24 hours each day incurs substantially increased cost for the leased ship, which the USGS cannot afford. The ship schedule provides a narrow time window for this project; other experiments are already scheduled to precede and follow this one. Thus, the USGS is not able arbitrarily to extend the survey time to include large delays for dark or poor visibility. Reasons for around-the-clock operation that benefit the environment are (1) when the airgun ceases to operate, marine mammals might move back into the survey area and incur an increased potential for harm when operations resume and (2) daylight-only operations prolong activities in a given area, thus increasing the likelihood that marine mammals will be harassed. The 1999 survey will require only 2 weeks, and it will be spread out geographically from Los Angeles to San Diego, so no single area will see long-term activity. In the view of the USGS, the best course is to complete the experiment as expeditiously as possible. For these reasons, the USGS requests that the IHA allow 24-hour operations.

#### **Description of Habitat and Marine Mammals Affected by the Activity**

The Southern California Bight supports a diverse assemblage of 29 species of cetaceans (whales, dolphins and porpoises) and 6 species of pinnipeds (seals and sea lions). The species of marine mammals that are likely to be present in the seismic research area include the bottlenose dolphin (*Tursiops truncatus*), common dolphin (*Delphinus delphis*), killer

whale (*Orcinus orca*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), northern right whale dolphin (*Lissodelphis borealis*), Risso's dolphin (*Grampus griseus*), pilot whales (*Globicephala macrorhynchus*), Dall's porpoise (*Phocoenoides dalli*), sperm whale, humpback whale (*Megaptera novaengliae*), gray whale (*Eschrichtius robustus*), blue whale, minke whale (*Balaenoptera acutorostrata*), fin whales (*Balaenoptera physalus*), harbor seal (*Phoca vitulina*), elephant seal (*Mirounga angustirostris*), northern sea lion (*Eumetopias jubatus*), and California sea lion (*Zalophus californianus*), northern fur seal (*Callorhinus ursinus*) and sea otters (*Enhydra lutris*). General information on these latter species can be found in the USGS application and in Barlow *et al.* (1997). Please refer to those documents for information on the biology, distribution, and abundance of these species.

#### Potential Effects of Seismic Surveys on Marine Mammals

##### Discussion

Seismic surveys are used to obtain data about rock formations up to several thousands of feet deep. These surveys are accomplished by transmitting sound waves into the earth, which are reflected off subsurface formations and recorded with detectors in the water column. A typical marine seismic source is an airgun array, which releases compressed air into the water creating an acoustical energy pulse that is directed downward toward the seabed. Hydrophones spaced along a streamer cable just below the surface of the water receive the reflected energy from the subsurface formations and transmit data to the seismic vessel. Onboard the vessel, the signals are amplified, digitized, and recorded on magnetic tape.

Disturbance by seismic noise is the principal means of taking by this activity. Vessel noise may provide a secondary source. Also, the physical presence of vessel(s) could also lead to some non-acoustic effects involving visual or other cues.

Depending upon ambient conditions and the sensitivity of the receptor, underwater sounds produced by open-water seismic operations may be detectable some distance away from the activity. Any sound that is detectable is (at least in theory) capable of eliciting a disturbance reaction by a marine mammal or of masking a signal of comparable frequency. An incidental harassment take is presumed to occur when marine mammals in the vicinity

of the seismic source (or vessel) react to the generated sounds or to visual cues.

Seismic pulses are known to cause some species of whales, including gray whales, to behaviorally respond within a distance of several kilometers (Richardson *et al.*, 1995). Although some limited masking of low-frequency sounds is a possibility for those species of whales using low frequencies for communication, the intermittent nature of seismic source pulses will limit the extent of masking. Bowhead whales, for example, are known to continue calling in the presence of seismic survey sounds, and their calls can be heard between seismic pulses (Richardson *et al.*, 1986).

When the received levels of noise exceed some behavioral reaction threshold, cetaceans will show disturbance reactions. The levels, frequencies, and types of noise that will elicit a response vary between and within species, individuals, locations and seasons. Behavioral changes may be subtle alterations in surface-dive-respiration cycles. More conspicuous responses include changes in activity or aerial displays, movement away from the sound source, or complete avoidance of the area. The reaction threshold and degree of response are related to the activity of the animal at the time of the disturbance. Whales engaged in active behaviors, such as feeding, socializing, or mating are less likely than resting animals to show overt behavioral reactions, unless the disturbance is directly threatening.

Hearing damage is not expected to occur during the project. While it is not known whether a marine mammal very close to the airgun would be at risk of permanent hearing impairment, temporary threshold shift is a theoretical possibility for animals very close to the airgun. However, planned monitoring and mitigation measures (described later in this document) are designed to detect marine mammals occurring near the seismic source(s) and to avoid, to the greatest extent practicable, exposing them to sound pulses that have any possibility of causing hearing damage.

##### Maximum Sound-Exposure Levels for Marine Mammals

At this time, the USGS lacks detailed measurement of sound-transmission loss for the southern California offshore, so the USGS estimated how SPL varies with distance from the airgun by assuming that sound decays according to  $25\log(R)$ . The coefficient 25 accounts approximately for the attenuation that is caused by the sound interacting with the seabottom. The USGS used this

procedure to derive safety zone estimates based on the 220 dB SPL produced by the GI-gun, the larger of the two sound sources the USGS plans to use.

Loud continuous sounds can damage the hearing of marine mammals. However, the adverse effects of sound on mammals have been documented for exposure times that last for tens of seconds or minutes, but effects have not been documented for the brief pulses typical of the GI-gun (10 ms) and the Hunttec<sup>(TM)</sup> system (0.3 ms). NMFS considers that the maximum SPLs to which marine mammals can be exposed from impulse sounds are 180 dB re 1  $\mu$ Pa-m RMS for mysticetes and sperm whales, and 190 dB re 1  $\mu$ Pa-m RMS for odontocetes and pinnipeds.

Assuming that the 25LogR decay that the USGS used to estimate safe distances from the airgun is correct, this indicates that an SPL of 190 dB re 1  $\mu$ Pa-m is attained about 16 m (52.5 ft) away from the airgun, and an SPL of 180 dB re 1  $\mu$ Pa-m is attained at about 40 m (131 ft) away. However, for precautionary reasons during field operations, the USGS proposes that, at all times, the safe distance for odontocetes and pinnipeds be 50 m (164 ft) and for mysticetes, 100 m (328 ft).

##### Estimated Number of Potential Harassments of Marine Mammals

The zone of influence for the GI-gun is defined to be the circle whose radius is the distance from the gun where the SPL reduces to 160 dB re 1  $\mu$ Pa-m. For the assumed 25LogR, the zone of influence is a circle with a radius of 250 m (820 ft). Based on estimated marine mammal populations within the survey area and on the number of individuals that were observed during the 1998 survey, the USGS estimates that up to 5 killer whales, 10 minke whales, 10 sea otters, 50 northern sea lions, 100 northern fur seals, 100 northern elephant seals, 100 Dall's porpoise, 100 Risso's dolphins, 100 northern right-whale dolphins, 100 Pacific white-sided dolphins, 100 bottlenosed dolphins, 200 California sea lions, 200 Pacific harbor seals, and 6,000 common dolphins may be harassed incidental to the USGS survey. No marine mammals will be seriously injured or killed as a result of the survey.

##### Proposed Mitigation of Potential Environmental Impact

To avoid potential harassment of marine mammals, a safety zone will be established and monitored continuously by biologists, and the USGS will shut off the airguns whenever the ship and a marine mammal converge closer than

the previously mentioned safety distance. For pinnipeds, if the seismic vessel approaches a pinniped, the 50 m (164 ft) safety radius will be maintained; however, if a pinniped approaches the towed airgun, NMFS proposes that it will not require the USGS to shutdown the airgun, but will require the USGS to monitor the interaction to ensure the animal does not show signs of distress. Experience indicates that pinnipeds will come from great distances to inspect seismic operations. Seals have been observed swimming within airgun bubbles, 10 m (33 ft) away from active arrays, apparently unaffected. Although airgun operations will be terminated if the pinnipeds show obvious distress, the USGS will conduct observations on effects the airguns may have on the animals.

The USGS plans to have marine biologists aboard the ship who will have the authority to stop airgun operations when a mammal enters the safety zone.

During seismic-reflection surveying, the ship's speed will only be 4 to 5 knots, so that when the airgun is being discharged, nearby marine mammals will have gradual warning of the vessel's approach and can move away. Finally, NMFS will coordinate with the local stranding network to determine whether strandings can be related to the seismic operation.

#### Monitoring and Reporting

Biologists who oversaw the previous USGS airgun surveys were affiliated with the Cascadia Research Collective in Olympia, Washington. Because of their experience with the operations, the USGS prefer to employ these scientists again, but this preference is subject to contracting arrangements.

Monitoring marine mammals while the airguns are active will be conducted 24 hours each day. Two trained marine mammal observers will be aboard the seismic vessel to mitigate the potential environmental impact from airgun use and to gather data on the species, number, and reaction of marine mammals to the airgun. Each observer will work 6 hours during daylight and 6 hours at night. During daylight, observers will use 7x50 binoculars with internal compasses and reticules to record the horizontal and vertical angle to sighted mammals. Night-time operations will be conducted with a commercial hand-held light magnification scope. Monitoring data to be recorded during airgun operations include the observer on duty, weather conditions (such as Beaufort sea state, wind speed, cloud cover, swell height, precipitation, and visibility). For each mammal sighting, the observer will

record the time, bearing and reticule readings, species, group size, and the animal's surface behavior and orientation. Observers will instruct geologists to shut off the airgun array whenever a marine mammal enters its respective safety zone.

#### Possible Modifications or Alternatives to the Proposed Survey

The instructions for this permit request stipulate that the USGS consider alternatives to the proposed experiment. Options to change the activity are limited, but the USGS might conduct it in some other way, such as with a low-powered source or in a different season.

To abandon this study altogether is a poor option. In the introductory section of this application, the USGS described the societal relevance of this project and the benefits to scientists in

understanding the regional earthquake hazard and to city planners in establishing building codes. Another facet of this study is understanding coastal aquifers and knowing how to stem the intrusion of salt water into them. If the project were canceled, such information would be unavailable.

The source strength might be reduced to limit the environmental impact. However, the proposed airgun size is already small, and the problem with this option is that the USGS cannot significantly reduce the source strength without jeopardizing the success of this survey. This judgment is based on USGS decades-long experience with seismic-reflection surveys, but especially on the 1998 survey that was conducted in the same general area as outlined here. If the USGS were to reduce the airgun size and then fail to obtain the required information, another survey would need to be conducted, and this would double the potential impact on marine mammals.

This project could be carried out at some other time of year, and the USGS is open to suggestions. In this pursuit, the USGS talked with biologists to find out the best time for the project to be conducted. The USGS wants to avoid the gray whale migrations and the mid-summer arrival of other mysticete species because, while these other species remain mostly in the area of the Channel Islands, some individuals venture closer to the mainland. An important point is that biologists can best prevent harm to mammals when daylight is long, that is, near the solstice.

#### Consultation

Under section 7 of the Endangered Species Act, NMFS has begun consultation on the proposed issuance

of an IHA. Consultation will be concluded upon completion of the comment period and consideration of those comments in the final determination on issuance of an authorization.

#### Conclusions

NMFS has preliminarily determined that the short-term impact of conducting marine seismic-reflection data in offshore southern California will result, at worst, in a temporary modification in behavior by certain species of pinnipeds and cetaceans. While behavioral modifications may be made by certain species of marine mammals to avoid the resultant noise from the seismic airgun, this behavioral change is expected to have a negligible impact on the animals.

In addition, no take by injury and/or death is anticipated, and takes will be at the lowest level practicable due to the incorporation of the mitigation measures previously mentioned. No known rookeries, mating grounds, areas of concentrated feeding, or other areas of special significance for marine mammals occur within or near the planned area of operations during the season of operations.

#### Proposed Authorization

NMFS proposes to issue an IHA to the USGS for the possible harassment of small numbers of several species of marine mammals incidental to collecting marine seismic-reflection data offshore from southern California, provided the above-mentioned mitigation, monitoring, and reporting requirements are incorporated. NMFS has preliminarily determined that the proposed activities would result in the harassment of only small numbers of each of several species of marine mammals and will have no more than a negligible impact on these marine mammal stocks.

#### Information Solicited

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

Dated: March 1, 1999.

#### P. Michael Payne,

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