

& Associates, Inc. for its failure to file an annual report. The Department has sent a letter, dated January 8, 1998, to notify Fabiano & Associates, Inc. of its determination. The revocation is effective thirty (30) days from the date of publication of this notice. Any person aggrieved by this decision may appeal to an appropriate U.S. district court within 30 days from the date on which this notice is published in the **Federal Register** (325.10(c)(4) and 325.11 of the Regulations, 15 CFR 324.10(c)(4) and 325.11 of the Regulations, 15 CFR 325.10(c)(4) and 325.11).

Dated: January 8, 1998.

**Morton Schnabel,**

*Acting Director, Office of Export Trading Company Affairs.*

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## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

[I.D. 080697A]

#### Small Takes of Marine Mammals Incidental to Specified Activities; Seismic Hazards Investigations in Puget Sound

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

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

**SUMMARY:** In accordance with provisions of the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that an Incidental Harassment Authorization (IHA) to take small numbers of marine mammals by harassment incidental to collecting deep-crustal marine seismic data in the Puget Sound/Straits of Juan de Fuca region of Washington State has been issued to the U.S. Geological Survey (USGS).

**DATES:** This authorization is effective from January 1, 1998, through March 31, 1998.

**ADDRESSES:** The application and monitoring plan, authorization, and environmental assessment (EA) are available by writing to the Chief, Marine Mammal Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Silver Spring, MD 20910-3225, or by telephoning one of the contacts listed (see **FOR FURTHER INFORMATION CONTACT**).

**FOR FURTHER INFORMATION CONTACT:** Kenneth R. Hollingshead, Office of

Protected Resources, NMFS, (301) 713-2055, or Brent Norberg, Northwest Regional Office, NMFS, (206) 526-6733.

#### 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, 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 taking are set forth. NMFS has defined "negligible impact" in 50 CFR 216.103 as "...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival."

Section 101(a)(5)(D) of the Marine Mammal Protection Act 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."

Section 101(a)(5)(D) establishes a 45-day time limit for NMFS review of an application followed by a 30-day public notice and comment period on any proposed authorizations for the incidental harassment of 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 July 2, 1997, NMFS received an application from the USGS, on behalf of

the Seismic Hazards Investigations in Puget Sound (SHIPS) project, requesting an authorization for the possible harassment of small numbers of several species of marine mammals incidental to conducting marine seismic surveys in Puget Sound, WA. The survey is to collect data on the earthquake hazards of the Puget Sound area. Geological features around the Puget Sound that might produce earthquakes lie obscured beneath water, city, forest, and thick glacial deposits. As a result, investigators must use sound waves that are produced by an array of airguns to indirectly view these features. Because seismic noise from the proposed survey's airguns could potentially affect marine mammals due to disturbance by sound (i.e., acoustic harassment), an incidental harassment authorization under the MMPA is warranted.

The main goals of the SHIPS project concern understanding earthquake processes and mitigating a potential disaster, not earthquake prediction. Geologists have clear evidence for past earthquakes, but basic geological information about earthquake processes is lacking. To close this critical information gap, the SHIPS consortium will collect seismic reflection and seismic refraction data in and near Puget Sound. Seismic reflection data will help locate potential earthquake faults, and seismic refraction data will show the speed of sound waves in deep rocks. These data together will reveal the structure and physical properties of rocks where earthquakes are likely to occur. Information from onshore seismometers will reveal where deep rocks could focus earthquake waves at the surface and where surface sediment is weak.

In places where these conditions of focusing and sediment weakness overlap, buildings and other infrastructure are at elevated risk of damage or destruction during a major earthquake. SHIPS will provide information needed to make maps, for city planners, to show areas of potentially strong ground motion so that scarce funds for seismic retrofitting can be allocated on a rational basis. Prime candidates for retrofitting are schools and hospitals. Additionally, freeway interchanges and major bridges, as well as structures housing police and firefighters, must withstand earthquakes so that survivors receive prompt assistance.

Dependent upon ship scheduling, the seismic survey is expected to take approximately 2 weeks sometime during late February and March 1998. A detailed description of the work planned is contained in the application

(USGS 1997) and the EA. These documents are available upon request (see ADDRESSES).

### Comments and Responses

A notice of receipt of the application and proposed authorization was published on September 17, 1997 (62 FR 48817), and a 30-day public comment period was provided on the application and proposed authorization. Comments were received from three organizations. Information on the activity, the authorization request and expected impact on marine mammal species, not subject to reviewer comments can be found in the proposed authorization notice and is not repeated here.

### MMPA Concerns

*Comment 1:* One commenter believes that, because the USGS estimates that more than 10,000 harbor seals, 2,000 California sea lions, 1,000 harbor porpoises, and 1,000 Dall's porpoises could be taken incidental to the proposed activities, that NMFS should address the issue of whether only "small numbers" of marine mammals will be harassed in the course of conducting surveys.

*Response:* In 1982 (47 FR 21248, May 18, 1982), NMFS defined "small numbers" to mean a portion of a marine mammal species or stock whose taking would have a negligible impact on that species or stock. NMFS believes that this is an appropriate definition because Congress, recognizing that the concept (i.e., small) was not capable of being expressed in absolute numerical numbers, was unable to offer a more precise formulation when section 101(a)(5)(A) of the MMPA was implemented that year (H. Rept. 97-228, p. 19). NMFS did not then, and does not now, believe that the term can be expressed as an absolute number or percentage or be defined in any absolute terms. While Congress noted that year that there were two separate safeguards in place under the small take exemption (i.e., "small" and "negligible impact"), NMFS believes that the 1986 MMPA amendments, wherein the definition of "negligible impact" was amended and taking authorizations were extended to include depleted, threatened, and endangered species, that taking authorizations should be based on a population's size and status and the stock's reproductive potential, rather than on a simple numerical level. Therefore, while the number of takings may not be viewed by some to be small numerically, they can be considered small in relation to the impact on marine mammal species and stocks. When takings are limited to short-term

harassments, such as the Puget Sound seismic survey, this determination can be more easily made than in situations where the numbers represent mortalities.

### Monitoring Concerns

*Comment 2:* Three commenters were concerned that the proposed monitoring program was currently unfunded. Two of these commenters recommended that the IHA be conditioned to require sufficiently funded monitoring to examine the effects on the resident marine mammals.

*Response:* While the **Federal Register** notice stated that "the monitoring program is unfunded," this was not entirely correct. The USGS has responded to this concern by noting that there is sufficient funding to conduct the monitoring required under section 101(a)(5)(D) of the MMPA. This required monitoring, discussed in more detail below (see Monitoring), is necessary to ensure that the take is small and not having more than a negligible impact on Puget Sound marine mammal stocks. However, funding is still unavailable to meet certain planned research objectives. At this time, the USGS is seeking this funding from Federal and private sources. It should be noted that this activity would provide a platform of opportunity for interested marine mammal researchers.

*Comment 3:* One commenter recommended that the monitoring program be expanded to include (a) some allocation for aerial surveys of marine mammal reactions; (b) the use of a third boat that can survey for marine mammals ahead of the seismic vessel; (c) the use of marine mammal observers at night who are equipped with night vision devices, and (d) some attempt to avoid close approaches to critical habitat areas, such as San Juan County's Bottom Fish Recovery site at Point Lawrence, Orcas Island in Rosario Strait. Another commenter recommended that either a nighttime mitigation measure be developed or nighttime operations be disallowed.

*Response:* (a) Aerial surveys and detailed behavioral observations will be conducted by the USGS. However, expanded acoustic experiments, involving the measurement of sound levels that marine mammals actually receive, are part of the unfunded research activities mentioned above. While this research has long had strong support from within the USGS (because of the need for better data on the potential impact of seismic operations on the marine environment), the USGS does not have the funds to pay for acoustic research, but is working closely

with marine mammal experts to obtain funding from other Federal agencies.

(b) Part of the operational plan for the Canadian ship *Tully* is for it to take part in observing marine mammals at various distances from the airgun array. In addition, when conditions are safe, small boats will be deployed from the two ships to observe marine mammals; however, March is not a good time of the year for boats to be out on open water. The tight USGS budget cannot cover the leasing and staffing of a third boat large enough to operate safely everywhere the airguns will be fired. The operational area includes the Straits of Juan de Fuca, which can become dangerous with high wind and seas.

(c) During nighttime, observers will be required to monitor the appropriate safety zones whenever the seismic array is powered up, to protect marine mammals from potential injury (Level A harassment). At other times during the night, observations are optional at the discretion of the applicant. Depending upon meteorological and oceanographic conditions, observations can be made by biologists; alternatively, crew members on watch can alert scientists to marine mammal presence. As discussed in the proposed authorization and EA (Alternative C), suspension of nighttime operations is impractical and costly to the USGS, and it may not result in reduced impacts to marine mammals by extending surveys either into a period of greater marine mammal abundance or into a future year when funding and ship time become available, or both. NMFS believes that through proper ramp-up, no marine mammals will be acoustically injured by the seismic array. However, because a mitigation requirement of the IHA is for the safety zone to be monitored for 30 minutes prior to the time the array is scheduled to exceed 160 dB re 1  $\mu$ Pa-m, and during ramp-up, if the source is powered up at night, the entire 200-m (500-m when in areas of known mysticete whale habitation-see EA) safety zone needs to be visible, either visually or acoustically or both, to the biological observers. Otherwise, the source must remain below 160 dB re 1  $\mu$ Pa-m, until daylight provides sufficient light to observe the safety zone. Alternatives include lighting the safety zone with high intensity lights and night vision equipment, both of which have proven less than optimal. Partially as a result of this short-coming, to aid in monitoring safety zones at night, the USGS has arranged with the U.S. Navy to borrow infra-red scopes, which operate differently than most light-enhancement devices. Infra-red scopes were tested by biologists in 1997 and found to be

useful in detecting marine mammals at night.

(d) Airguns were specifically designed to eliminate the fish kills that were caused during the 1950s by underwater explosions used during geophysical exploration. Explosives caused a rapid rise to peak pressure, measured in microseconds, whereas the airgun rise time is measured in milliseconds. The difference is that the rapid rise time involves very high pressures at high frequencies, which kills fish at substantial range. The main sonic injury to fish involves a damaging resonance of their air-gilled swim bladders by high frequency pressure waves. In contrast, large fish need to be within about 3 m (9 ft) of an airgun array to be injured or killed, and at distances between 3 m and 100 m (9 ft and 328 ft), large fish exhibit only a change in behavior. The low frequency sound of the SHIPS airgun array should have little effect on fish. For example, the wavelength of 100 Hz sound in water is 15 m (49 ft), which is far too long to cause the swim bladders of fish to resonate. The airgun array will stay at least 1,000 m (3,281 ft) from most shorelines. At this distance, there will be little or no effect on fish at the recovery site.

#### Mitigation Concerns

**Comment 4:** One commenter recommended that, if dead or injured marine animals are found, the USGS should suspend the activities and consult NMFS before proceeding. This same commenter recommended that NMFS advise the USGS that, if there is any indication that mortalities of marine mammals may be occurring, survey activities must be suspended while NMFS considers whether an authorization under section 101(a)(5)(A) of the MMPA is needed.

**Response:** There is no scientific evidence that seismic arrays will result in an immediate death or serious injury to a marine mammal, although there is a remote potential that mortality could eventually result from permanent injury to an animal's auditory organs. Therefore, it is not necessary for the USGS to immediately suspend activities whenever a seriously injured or dead marine mammal is found in the vicinity of the survey's trackline.

Of more concern to NMFS, because of the topography of Puget Sound and the Straits of Juan de Fuca, are marine mammals that strand or beach themselves coincident with the seismic survey's passage. If this occurs, the USGS is required to immediately suspend the survey and contact NMFS. Also, if NMFS is notified by a local stranding network representative that a

beaching/ stranding has occurred at a time when the seismic array is operating in the vicinity of the stranding(s), NMFS will immediately investigate the stranding to determine whether a reasonable chance exists that the array caused the animal's death. If NMFS determines, based upon a review and possible necropsy of the animal(s), that the death was likely due to the seismic source, the survey must cease until procedures are altered to eliminate the potential for additional mortalities. However, it must be recognized that there must be a close spatial or temporal connection that suggests acoustic disturbance as the proximal cause of injury or death before the survey's incidental harassment authorization can be suspended.

**Comment 5:** This same commenter also recommended that the USGS monitor all pinniped approaches and suspend activities if there is any indication that the active array is adversely affecting pinnipeds.

**Response:** The IHA requires the USGS to monitor all pinniped (and cetacean) approaches, and record behavioral reactions. If pinnipeds are within 100 m (328 ft) of the outer edge of the seismic array, any instances of repetitive aberrant behavior (e.g., rapid swimming away while conspecifics remain in the vicinity of the array, lack of diving behavior), as recorded by the trained biological observer, requires an immediate implementation of a 100-m (328-ft) safety zone and notification of NMFS within 24 hours. NMFS will review the information in a timely manner and will notify the USGS by letter that a safety zone for pinnipeds is necessary for the duration of the survey or that, upon review by NMFS scientists, a safety zone is unnecessary for the protection of pinnipeds from serious injury or mortality.

**Comment 6:** One commenter cautioned that El Nino may affect the involved species either directly or through the food chain and that these effects could exacerbate or mask possible effects of the seismic survey.

**Response:** The scientific body of knowledge on marine mammal distribution and abundance and the species relationship to changes in spatial distribution of food sources is in general insufficient to make more than general assumptions on the effects of El Nino on marine mammals in the North Pacific Ocean. Where long-term monitoring programs for marine mammals have been established (e.g., San Miguel Island, Northern Channel Islands, CA), the effects from El Nino are being monitored and impacts estimated. However, with a short-term

event, such as the SHIPS seismic survey, NMFS believes that El Nino would have little noticeable effect for the short-term (2 weeks) seismic survey, although some mortality and distributional effects caused by temperature or food source shifts may be noticeable during survey monitoring studies.

#### Marine Mammals

The species of marine mammals that are likely to be present in Puget Sound and Straits of Juan de Fuca, and may potentially be harassed incidental to the USGS seismic survey, include the harbor porpoise (*Phocoena phocoena*), killer whale (*Orcinus orca*), Dall's porpoise (*Phocoenoides dalli*), and harbor seal (*Phoca vitulina*). Additional species that are rare or only occasionally seen in the area at the time of the survey include: Minke whale (*Balaenoptera acutorostrata*), elephant seal (*Mirounga angustirostris*) Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), northern sea lion (*Eumetopias jubatus*), California sea lion (*Zalophus californianus*), humpback whale (*Megaptera novaengliae*), and gray whale (*Eschrichtius robustus*). General information on these latter species can be found in Barlow *et al.* (1995). Information relevant to the distribution, abundance, and behavior of those species most likely to be impacted by the experiment in Puget Sound and the Straits of Juan de Fuca is provided in the application and EA. Please refer to those documents for information on the biology, distribution, and abundance of these species and the potential impact by the activity on these species.

#### Mitigation

Several mitigation measures to reduce the potential for marine mammal harassment will be implemented by USGS as part of their proposed activity. These include—

(1) Scheduling the survey for the period of February/March, when marine mammal abundance in Puget Sound/ Straits of Juan de Fuca is low;

(2) Establishing and monitoring safety zones continuously to avoid potential Level A harassment of, or injury to, marine mammals. Whenever the seismic vessel approaches a marine mammal closer than the distance mentioned below and described in more detail in both the application and the EA, the USGS would shut off airguns.

(3) Ceasing airgun operations when gray, minke, and humpback whales, the marine mammal species that are considered to be most sensitive to the frequency and intensity of sound that will be emitted by the airgun array,

approach within 500 m (1,640 ft) of the seismic vessel.

(4) Ceasing airgun operations when odontocetes, with their lower sensitivity to low-frequency sound, approach a safety zone of 200 m (656 ft), twice the calculated radius for preventing any temporary threshold shift injury.

(5) Maintaining a safety radius of 100 m (328 ft) when pinnipeds (seals and sea lions) are approached by the SHIPS seismic vessel. However, if a pinniped approaches the towed airgun array, the USGS will not be required to shutdown the airguns. Experience indicates that pinnipeds will come from great distances to scrutinize seismic operations. Seals have been observed swimming within airgun bubbles, 10 m (33 ft) away from active arrays and, more recently, Canadian scientists, who were using a high-frequency seismic system that produced sound closer to pinniped hearing than will the USGS airgun array, describe how seals frequently approached close to the seismic source, presumably out of curiosity. Therefore, because the seismic survey could be severely hampered by delays, because turning across marine traffic lanes to resume work after a shutdown will be risky and costly, and because pinnipeds indicate no reaction to seismic noise, the above-mentioned mitigation plan has been proposed. Instead, the USGS will gather information on how often pinnipeds approach the airgun array on their own volition, and what effect the airguns appear to have on them.

(6) Turning on the airguns sequentially at a rate no greater than 6 dB/minute, so that peak power is achieved gradually to give marine mammals a chance to move away from the source, in order to ensure no marine mammals are inadvertently harmed when data collection first begins, or resumes, after operations have ceased.

(7) Maintaining the ship's speed at 4 to 5 knots during seismic survey operations, so that nearby marine mammals will have gradual warning of the ship's approach and can move away.

(8) Having marine biologists aboard the seismic vessel who will have the authority to stop airgun operations when a mammal enters the safety zone. These observers will monitor the safety zone to ensure no marine mammals enter the zone, and record observations on marine mammal abundance and behavior.

(9) Performing emergency shutdowns. If observations are made that one or more marine mammals of any species are attempting to beach themselves when the seismic source is operating in the vicinity of the beaching,

the airgun array will be immediately shut off and NMFS contacted.

(10) Investigate strandings of marine mammals upon notification by a local stranding network that a marine mammal has been found dead within the waters of Puget Sound, the San Juan Archipelago, or the Straits of Juan de Fuca when the array is operating within that body of water, to determine whether a reasonable chance exists that the SHIPS project caused the animal's death. If NMFS determines, based upon a necropsy of the animal(s), that the death was likely due to the seismic source, the survey must cease until procedures are altered to eliminate the potential for future deaths.

### Monitoring

The objectives of the monitoring program will be: To mitigate potential harassment of marine mammals, to document the number of animals of each species present in the vicinity of the sound transmissions, and to evaluate the reactions of marine mammals to these transmissions. Focused surveys will be conducted in geographic areas of particular concern, especially for gray whales that migrate past the western entrance to the Straits of Juan de Fuca and other members of this species that spend the summer in the survey area (near south Whidbey Island and the Straits of Juan de Fuca), humpback whales near Swiftsure Bank and the waters west of the Straits, harbor porpoise that tend to congregate along western Whidbey Island and elsewhere, and minke whales that frequent shallow banks in the Strait of Juan de Fuca. All species of large whales (humpback, gray, minke, or killer whales) will be photographed to identify the individual using the area. For a more detailed description of the monitoring program, please refer to the EA. In addition, if funding becomes available, hydrophones will be used to measure sound levels, to correlate mammal behavior with actual, received sound levels.

### Consultation

Under section 7 of the Endangered Species Act, NMFS has completed consultation on the issuance of this authorization.

### National Environmental Policy Act

In conjunction with the notice of proposed authorization, NMFS released a draft EA that addressed the impacts on the human environment from issuance of the authorization and the alternatives to the proposed action. No comments received on the draft EA during the comment period. Therefore, as a result

of the findings made in the EA, NMFS has concluded that implementation of either the preferred alternative or other identified alternatives would not have a significant impact on the human environment. As a result of that finding, an Environmental Impact Statement will not be prepared. A copy of the EA is available upon request (see ADDRESSES).

### Conclusions

NMFS has determined that the short-term impact of conducting deep crustal marine seismic surveys will result, at worst, in a temporary modification in behavior by certain species of pinnipeds and possibly, some individual cetaceans. While behavioral modifications may be made by certain species of marine mammals to avoid the resultant noise from airgun array, 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 incorporation of mitigation measures. 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.

Since NMFS is assured that the taking would not result in more than the incidental harassment (as defined by the MMPA) of small numbers of certain species of marine mammals, would have only a negligible impact on these stocks, and would result in the least practicable impact on the stocks, NMFS has determined that the requirements of section 101(a)(5)(D) of the MMPA have been met and the authorization can be issued.

### Authorization

Accordingly, NMFS has issued an IHA to the USGS for the possible harassment of small numbers of several species of marine mammals incidental to collecting deep-crustal marine seismic data in the Puget Sound/Straits of Juan de Fuca region of Washington State, provided the mitigation, monitoring and reporting requirements described in the authorization are undertaken.

Dated: December 30, 1997.

**Hilda Diaz-Soltero,**

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

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