

as amended (16 U.S.C. 1361 *et seq.*), and the Regulations Governing the Taking and Importing of Marine Mammals (50 CFR part 216).

Dated: May 31, 1995.

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Chief, Permits and Documentation Division,
Office of Protected Resources, National
Marine Fisheries Service.

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**Small Takes of Marine Mammals
Incidental to Specified Activities;
Offshore Seismic Activities 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 Exxon Company, U.S.A., Thousand Oaks, CA, for authorization to take small numbers of cetaceans by harassment incidental to conducting a three-dimensional (3-D) seismic survey in the Santa Ynez Unit (SYU), located in the western portion of the Santa Barbara Channel, offshore California, in Federal waters. Under the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to authorize Exxon to incidentally take, by harassment, small numbers of cetaceans in the above mentioned area for a period of 1 year.

DATES: Comments and information must be received no later than July 7, 1995.

ADDRESSES: Comments on the application should be addressed to Chief, Marine Mammal Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910-3225. A copy of the application and a list of references used in this document may be obtained by writing to this address or by telephoning one of the contacts listed below.

FOR FURTHER INFORMATION CONTACT: Kenneth Hollingshead, Office of Protected Resources at 301-713-2055, or Craig Wingert, Southwest Regional Office at 310-980-4021.

SUPPLEMENTARY INFORMATION:

Background

Section 101(a)(5)(A) 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 regulations are issued.

Permission may be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s); will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses; and the permissible methods of taking and requirements pertaining to the monitoring and reporting of such taking are set forth.

On April 30, 1994, the President signed Public Law 103-238, The Marine Mammal Protection Act Amendments of 1994. One part of this law added a new subsection 101(a)(5)(D) to the MMPA to establish 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 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.

New 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 May 11, 1995, NMFS received an application from Exxon requesting an authorization for the harassment of small numbers of cetaceans incidental to conducting a 3-D seismic survey within the SYU, located in the western portion of the Santa Barbara Channel, off Southern California, in U.S. waters. As described in their application (Exxon, 1995) Exxon's survey will cover an area of approximately 303 km² of the outer continental shelf and will require approximately 2 months, commencing in August 1995, to complete. The survey will provide subsurface data that will enable Exxon to more accurately assess the oil and gas reservoirs in order to optimally locate future development wells from existing platforms.

Deep seismic surveys obtain data about formations several thousands of meters deep, such as the hydrocarbon-bearing Monterey Formation in the SYU. 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 that releases compressed air into the water, creating an acoustical energy pulse that is directed into the earth. 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. On board the vessel, the signals are amplified, digitized, and recorded on magnetic tape.

The contract survey vessel will transverse the SYU area along east-west lines, approximately 24.9 km in length parallel to the coastline, with a few south-north lines approximately 9.65 km in length to be acquired over key geological features. There will be approximately 64 east-west transects and 6 south-north transects over the 2-month period. Field operations will be conducted 24 hours a day, although about half of that time will be consumed by turning the vessel and maneuvering. The airgun arrays will be shut down during turning and maneuvering and will be powered up slowly over a 5-minute period when turned back on. Eighty to 90 percent of the proposed survey will be accomplished with a single vessel. A second vessel will be used to undershoot platform structures and some complex subsurface geological features of limited areal extent. Two vessels abreast each other will be used for undershooting. The survey is designed to acquire the maximum amount of data in the minimum amount of time. Exxon plans to initiate the survey around August 1, 1995, and complete data collection approximately October 1, 1995, prior to the onset of adverse weather and gray whale migration in the Santa Barbara Channel area.

Exxon will employ a 90-m seismic vessel to acquire the survey data. The seismic source will consist of dual airgun arrays deployed 37.5 m apart and fired alternately to acquire separate records. Each array will consist of 18 airguns of differing strengths producing a total of 8.62 megapascals peak to peak energy. The airguns will be sleeve type guns towed at a depth of 5 to 10 m below the water surface. Paravanes will be deployed to separate the airgun arrays.

The proposed survey could potentially affect marine mammals due

to disturbance by sound (i.e., acoustic harassment).

Description of Habitat and Marine Mammal Affected by the Activity

The Southern California Bight (SCB) including the Channel Islands, supports a diverse assemblage of marine mammals including cetaceans (whales, dolphins, and porpoises) and pinnipeds (seals and sea lions). A detailed description of the SCB and its associated marine mammals can be found in the **Federal Register** (56 FR 1606, January 16, 1991) and need not be repeated here.

Approximately 34 species of marine mammals inhabit the SCB. They include 6 species of pinnipeds and 27 species of cetaceans. The status of these species has been reviewed previously (NMFS, 1991¹). Recently, NMFS released draft revised stock assessment reports (59 FR 40527; August 9, 1994).² These reports include information on status and trends of marine mammals and an assessment of all human-caused mortality and serious injury of the various stocks of marine mammals.

It is possible that acoustic harassment by seismic survey operations could potentially occur for mysticete whales and possibly the sperm whale, since they represent the only species assumed to hear well the noise associated with airguns. Given the survey location and the time period within which the survey will be conducted, the species of whales that could be potentially affected are the following: (1) Blue whale (*Balaenoptera musculus*); (2) fin whale (*Balaenoptera physalus*); (3) humpback whale (*Megaptera novaeangliae*); (4) minke whale (*Balaenoptera acutorostrata*); (5)

sperm whale (*Physeter macrocephalus*); (6) pygmy sperm whale (*Kogia breviceps*); (7) sei whale (*Balaenoptera borealis*); and (8) Bryde's whale (*Balaenoptera edeni*). In addition, because this proposed authorization may extend into the period of time when gray whales (*Eschrichtius robustus*) may be present, that species may also be affected. Detailed descriptions of the distribution and abundance of these species in California waters can be found in Barlow (1994, 1995), Forney (1994) Forney et al. (1995) and NMFS (1993).

Potential Effects of Seismic Surveys on Marine Mammals

The airguns emit pulsed energy primarily at frequencies in the 10 to 300 Hz range. Dolphin, porpoise, seal, and sea lion hearing is believed to be poor at frequencies less than 1,000 Hz, and thus it is unlikely that the airgun noise would significantly affect them. Acoustic harassment takes, therefore, need to be assessed only for mysticete whales and the sperm whale, because they represent the only group that is believed to be able to hear or possibly react to the sound associated with seismic activities.

To determine the numbers of whales that could potentially be subject to acoustic harassment, marine mammal densities were applied over the anticipated zone of potential disturbance (ZPD). The densities utilized (Barlow, 1995) were obtained along the California coast during the summer and fall seasons of the year, which is consistent with the time period of the proposed survey.

The ZPD was conservatively assumed to be the entire survey area (303 km²) plus an additional area to account for the travel of sound outside the survey area perimeter. To determine the outer boundary of the affected area, it was concluded that the 160 dB level could be considered a conservative end point for potential marine mammal acoustic harassment. Tyack (1988) indicates that avoidance behavior occurs only at relatively close ranges at decibels greater than 160–170 dB for pulsed sounds such as those from airguns. It has been presumed that less than 10 percent of animals located beyond the 160 dB range would be subjected to acoustic harassment (Malme et al., 1984; LGL Assoc., 1991). Therefore, NMFS has adopted a level of 160 dB (re 1µPa) as an acceptable level for impulsive noise based upon the best scientific evidence available.

For the proposed survey, the 160 dB isopleth occurs at a radius of approximately 5.2 km from the seismic source (Exxon, 1995). The ZPD was calculated by expanding the entire perimeter of the SYU survey area by 5.2 km. This area was calculated to be 470 km², and when added to the survey area 303 km², resulted in a total ZPD of 773 km². However, at any instant of time, harassment would be limited to an area approximately 84.9 km², with a radius of 5.2 km around the airgun array when the array is generating sound.

Using the above information and assumptions, the number of marine mammals that could potentially be subject to acoustic harassment is as follows:

Whale species	Density ³ (number/km ²)	Number of animals ⁴ acoustic harassment
Blue whale	0.033	26
Fin whale	0.013	10
Humpback whale	0.009	7
Minke whale	0.008	6
Sperm whale	0.011	9
Pygmy sperm whale	0.013	10
Sei whale	0.001	1
Bryde's whale	0.001	1
Gray whale	0.014	11
Total	81

³ From Barlow (1995).

⁴ Density X ZPD = No. Animals.

¹ A list of references used in this document can be obtained by writing to the address provided above (see ADDRESSES).

² NMFS has established a bulletin board for electronic retrieval of marine mammal stock

assessment reports. The reports are stored as Wordperfect 5.1 files and may be downloaded by a modem link to the following telephone number: (703) 218-2595. Within your communications software, specify 8 data bits, no parity, and 1 stop bit. Set up as an ANSI terminal and use your

appropriate baud rate up to 19,200. Instructions to download files are available on screen.

However, because the potential exists that the survey schedule could be delayed and overlap with the southbound gray whale migration, some or all of the survey could also potentially result in harassing gray whales. To cover that possibility, a proposed authorization for harassment takes of gray whales has been included. Applying Forney et al.'s (1995) gray whale density from the winter/spring surveys (0.014) to the ZPD (773 km²) indicates that 11 gray whales could

potentially be subject to acoustic harassment.

Also, while the assumption can be made that a population of 70–81 cetaceans may be harassed during the SYU survey, because the 160 dB ZPH at any one instant of time is only a portion of the entire 773 km² ZPD, and because the seismic array is turned off while repositioning on the succeeding transect, these cetaceans, at least theoretically, may be harassed more than once during the course of the survey, unless they leave the area as a

result of either normal transiting (migration) or seismic noise.

NMFS estimates that each east-west and south-north transect would have a ZPH approximately 344 km² and 147.3 km², respectively and each of the 64 east-west or 6 south-north transects comprise approximately 45 percent or 19 percent respectively, of the total ZPD. As a result, theoretically there is the potential for the SYU seismic survey to result in 2,360 harassment takings proportionally divided as follows:

Whale species	Density (No./km ²)	Total ZPD (km ²)	Total number of harassment takes
Blue whale	0.033	22,900	756
Fin whale	0.013	22,900	298
Humpback whale	0.009	22,900	206
Minke whale	0.008	22,900	183
Sperm whale	0.011	22,900	252
Pygmy sperm whale	0.013	22,900	298
Sei whale	0.001	22,900	23
Bryde's whale	0.001	22,900	23
Gray whale	0.014	22,900	⁵ 321

⁵As gray whales generally migrate from feeding grounds to breeding lagoons offshore Baja California from November–December, if the seismic survey is delayed from its anticipated commencement date, some harassment of this species may occur.

Mitigation

To avoid potential injury to marine mammals, NMFS proposes to: (1) Require airguns to be ramped-up to operating levels over a 5-minute period at the commencement of operations, when beginning a new trackline or anytime that the array is powered down; (2) recommend not turning the array off at times when restarting the array would occur during nighttime hours; and (3) if marine mammals are observed within the 195 dB isopleth (91.5 m (300 ft) of the source), starting operations must be delayed until all marine mammals are outside the 195 dB zone. It is proposed that NMFS-approved observers be required to make these observations.

Monitoring

NMFS proposes that the holder of the Incidental Harassment Authorization will monitor the impact of seismic activities on the marine mammal populations within the SYU. Monitoring will be conducted during daylight hours by NMFS-approved observers. In addition, monitoring will begin 30 minutes prior to any time the seismic array is turned on and will continue until turned off. Monitoring will consist of noting the numbers and species of all marine mammals seen within the ZPH, and any behavioral responses or modifications due either to the seismic array or by the vessel. A report on this monitoring program will be required to be submitted to NMFS within 90 days

of completion of the survey. Specific monitoring and reporting requirements will be specified in the Incidental Harassment Authorizaion, if issued.

Consultation

Under section 7 of the Endangered Species Act, NMFS has begun consultation on the proposed issuance of this authorization. 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 determined preliminarily that the short-term impact from conducting a 3–D seismic survey within the SYU may result in a temporary modification in behavior by certain species of cetaceans. While behavioral modifications may be made by these species of cetaceans to avoid seismic noise, this behavioral change is expected to have only a negligible impact on the animals.

There is no known recent subsistence use of marine mammals in southern California.

Proposed Authorization

NMFS proposes to issue an incidental harassment authorization for 1 year for a 3–D seismic survey within the SYU provided the above mentioned monitoring and reporting requirements

are incorporated. NMFS has preliminarily determined that the proposed seismic activity would result in the harassment of only small numbers of mysticete cetaceans, sperm whales, and possibly pygmy sperm whales; will have a negligible impact on these cetacean stocks; and will not have an unmitigable adverse impact on the availability of this stock for subsistence uses.

Information Solicited

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

Dated: June 2, 1995.

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Shark Operations Team; Public Meeting

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

ACTION: Notice of public meeting.

SUMMARY: The Shark Operations Team (OT) will hold a meeting on June 8, 1995, at NMFS in Silver Spring, MD.