



MARINE MAMMAL COMMISSION

9 November 2010

Mr. P. Michael Payne, Chief
Permits, Conservation, and Education Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway, Room 13635
Silver Spring, MD 20910

Dear Mr. Payne:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the application from the U.S. Air Force seeking authorization under section 101(a)(5)(A) of the Marine Mammal Protection Act to take small numbers of Atlantic bottlenose dolphins by Level B harassment from December 2010 to November 2015. The taking would be incidental to training operations that the Naval Explosive Ordnance Disposal School off the coast of Santa Rosa Island at the Eglin Gulf Test and Training Range in the Gulf of Mexico. The Commission also has reviewed the National Marine Fisheries Service's 1 October 2010 *Federal Register* notice (75 Fed. Reg. 60694) requesting comments on the application and proposing to issue the rule, subject to certain conditions.

RECOMMENDATIONS

The Marine Mammal Commission recommends that the National Marine Fisheries Service—

- require the Air Force to describe in detail the environmental parameters and procedures used to determine the safety zones and subsequent takes and incorporate these in the final rule;
- before issuing the final rule, require the Air Force to re-estimate the safety zones and associated takes based on the Level A harassment (injury) threshold of 13 psi-msec and the Level B harassment (non-TTS) threshold of 177 dB re 1 μPa^2 -sec;
- before issuing the final rule, provide additional justification for its preliminary determination that the mitigation and monitoring measures would be sufficient to detect, with a high level of confidence, all marine mammals within or entering the identified safety zones; this would include describing detection probability as a function of distance from the vessel and describing changes in detection probability under various sea state and weather conditions;
- condition the final rule and any letter of authorization issued under that rule to require suspension of the proposed activities if a marine mammal is seriously injured or killed and the injury or death could be associated with the proposed activities and, if supplementary measures are unlikely to reduce the risk of serious injury or death to a very low level, require the Air Force to suspend its activities until an authorization for such taking has been obtained; and
- ensure that numerous discrepancies in the application and proposed rule are corrected in the final rule.

RATIONALE

The Service has issued one-year incidental harassment authorizations to the applicant for similar activities in 2005, 2006, 2007, and 2008. However, because of apparent transport safety issues, none of the proposed activities has been conducted to date. Rather than seek another one-year incidental harassment authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act, the applicant is requesting that the Service issue regulations to authorize incidental taking for a five-year period. The proposed activities would include underwater detonations of 20 10-lb and 20 5-lb net explosive weight C-4 charges during eight mine countermeasure training events per year. The detonations would occur 1.9 to 5.6 km (1 to 3 nmi) from shore in waters approximately 18 m (30 ft) in depth. The applicant has requested authorization to take by Level B harassment 10 bottlenose dolphins per year during the five-year period covered by the proposed regulations.

The Service preliminarily has determined that the proposed activities would result, at most, in a temporary modification in the behavior of small numbers of bottlenose dolphins and that any such effects would be negligible. The Service does not anticipate any take of marine mammals by death or serious injury and expects that the potential for temporary or permanent hearing impairment will be at the lowest level practicable through the incorporation of the proposed mitigation measures. The Air Force only would conduct its training events from one hour after sunrise to one hour before sunset in Beaufort sea state conditions three or less. The safety zone of 0.23 km (0.12 nmi) for 5-lb charges and 0.39 km (0.21 nmi) for 10-lb charges would be visually monitored in every direction from the target, with an additional buffer of 0.5 km (0.25 nmi) for marine mammals. One trained observer would be stationed on the largest surface support vessel and would monitor one hour prior to, during, and 30 minutes after each training event. The safety zones would be monitored for marine mammals, *Sargassum* rafts, large concentrations of jellyfish, and large schools of fish. If any of these organisms enter the safety zone, the training would be postponed until the organisms are confirmed to be outside of the safety zone.

Estimation of Safety Zones and Takes

The Air Force has estimated the numbers of bottlenose dolphins that would be taken incidental to the proposed training events based on associated distances to Level A and Level B harassment thresholds and estimated densities of dolphins in the vicinity of the action area. However, this is a developing scientific field, particularly as it relates to estimating propagation loss for explosions in shallow water. In that regard, the application and the Service's *Federal Register* notice do not describe in detail the environmental parameters and methods used to determine the safety zones. Propagation of sound is dependent upon various location-specific environmental parameters including sound speed profiles, surface ducts, wind speed, bathymetry and water depth and detonation-specific parameters including depth, type, and mass. Without such information, interested parties are not able to evaluate the suitability of the safety zones for protecting marine life, including the accuracy of the estimated number of takes. To address this shortcoming, the Marine Mammal Commission recommends that the National Marine Fisheries Service require the Air Force to describe in detail the environmental parameters and procedures used to determine the safety zones and subsequent takes and incorporate these in the final rule.

Currently, the Service uses the following thresholds for determining safety zones and takes of marine mammals associated with multiple underwater detonations: 205 dB re $1 \mu\text{Pa}^2\text{-sec}$ and 13 psi-msec for Level A harassment (injury); 182 dB re $1 \mu\text{Pa}^2\text{-sec}$ and 23 psi for Level B harassment (temporary threshold shift; TTS); and 177 dB re $1 \mu\text{Pa}^2\text{-sec}$ for Level B harassment (non-TTS). The Air Force did not use the Level A harassment (injury) threshold of 13 psi-msec or the Level B harassment (non-TTS) threshold of 177 dB re $1 \mu\text{Pa}^2\text{-sec}$ to determine the appropriate safety zones or associated number of takes. As such, the Marine Mammal Commission recommends that before issuing the final rule, the National Marine Fisheries Service require the Air Force to re-estimate the safety zones and associated takes based on the Level A harassment (injury) threshold of 13 psi-msec and the Level B harassment (non-TTS) threshold of 177 dB re $1 \mu\text{Pa}^2\text{-sec}$.

Visual Mitigation and Monitoring Measures

The Service's preliminary determination of negligible impact is based, in part, on the presumed efficacy of the proposed visual mitigation and monitoring measures. The Commission has noted in previous correspondence that the effectiveness of visual monitoring alone has yet to be determined. Moreover, visual monitoring typically is not effective during periods of bad weather and, even with good visibility; observers are unable to detect marine mammals when they are below the surface or beyond visual range. Determining the efficacy of mitigation and monitoring measures may require not only collecting opportunistic data but also designing and conducting studies to test specific hypotheses regarding the utility of visual observations and to evaluate responses of the various species encountered. Therefore, the Marine Mammal Commission recommends that before issuing the final rule, the National Marine Fisheries Service provide additional justification for its preliminary determination that the mitigation and monitoring measures would be sufficient to detect, with a high level of confidence, all marine mammals within or entering the identified safety zones. At a minimum, such justification should describe detection probability as a function of distance from the vessel and describe changes in detection probability under various sea state and weather conditions. If such information is not available, the Service and the Air Force should undertake the studies needed to verify that the proposed mitigation and monitoring measures are likely to detect all or nearly all marine mammals in or near safety zones and, if necessary, to develop alternative means of detecting marine mammals in or near those zones. As it has noted in past correspondence, the Commission would be pleased to discuss with the Service and the Air Force the collection and analysis of such data and the design of such experiments to promote a better understanding of the utility and shortcomings of visual monitoring as an effective mitigation measure.

Level A Harassment and Mortality

The Air Force is not seeking authorization to take bottlenose dolphins by serious injury or mortality. Accordingly, the Marine Mammal Commission recommends that the National Marine Fisheries Service condition the final rule and any letter of authorization issued under that rule to require suspension of the proposed activities if a marine mammal is seriously injured or killed and the injury or death could be associated with those activities. The injury or death should be investigated to determine the cause, assess the full impact of the activities (e.g., the total number of animals involved), and determine whether and how the training activities can be modified to avoid

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additional injuries or deaths. Full investigation of such incidents is essential to provide information regarding potential effects of underwater detonations on marine mammals. If supplementary measures are unlikely to reduce the risk of additional serious injuries or deaths of marine mammals to a very low level, the Service should require the applicant to suspend its activities until an authorization for such taking has been obtained.

Discrepancies within the *Federal Register* Notice and Application

Discrepancies within both the application and the Service's *Federal Register* notice were noted in emails exchanged between the Commission and the Service. In response, the Air Force made several clarifications and agreed to work with the Service to correct the other discrepancies, including determining safety zones and estimated takes associated with Level B harassment (non-TTS) for multiple detonations. As such, the Marine Mammal Commission recommends that the National Marine Fisheries Service ensure that those discrepancies are in fact corrected and addressed in the final rule.

Criteria and Thresholds

In previous letters, the Marine Mammal Commission has provided recommendations regarding the Service's interpretation of what constitutes a temporary threshold shift (TTS), as it can constitute a temporary loss of function with consequences that may vary from negligible to biologically significant (e.g., compromised ability to forage, respond to reproductive cues, detect predators). These consequences depend on a variety of circumstances at the time the loss occurs, including the nature of the structural and functional hearing loss, the animal's behavioral response to the stimulus, its history, and environmental conditions. As such, the Commission believes that TTS may constitute Level A harassment under certain circumstances. In addition, the Commission has provided recommendations regarding behavioral responses and stressed the importance of determining when those responses become significant to the individual animals and associated stocks. The National Marine Fisheries Service currently is developing a comprehensive acoustic guidance document in which thresholds regarding injury and behavioral disruption will be updated. The Marine Mammal Commission supports the development of updated criteria and thresholds and looks forward to reviewing the guidance document in the near future.

Please contact me if you have questions regarding the Commission's recommendations and comments.

Sincerely,



Timothy J. Ragen, Ph.D.
Executive Director