



MARINE MAMMAL COMMISSION

11 July 2012

Mr. P. Michael Payne, Chief
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

Dear Mr. Payne:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the National Marine Fisheries Service's 28 June 2012 notice (77 Fed. Reg. 38595) and the application submitted by the U.S. Department of the Air Force seeking issuance of regulations under section 101(a)(5)(A) of the Marine Mammal Protection Act. The regulations would authorize the taking of marine mammals incidental to precision strike weapon (PSW) and air-to-surface (A-S) gunnery missions within the Eglin Air Force Base's Gulf of Mexico Test and Training Range. The Commission has commented on proposed regulations and numerous incidental harassment authorizations regarding the proposed activities. Regulations that governed PSW missions expired in 2011. Accordingly, the Air Force has not conducted such missions at Eglin Air Force Base since then and will not resume those activities until new regulations are issued. Incidental harassment authorizations have covered A-S gunnery missions since 2006 and the most recent authorization will expire on 25 September 2012. The Air Force also will not resume those activities until the Service issues new regulations.

RECOMMENDATIONS

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

- withhold publishing the proposed rule until the Air Force has provided a clear, step-by-step description of how it estimated the zones of exposure and associated number of takes for impulse, peak pressure, and sound exposure level thresholds, accounting for the multiple types and quantities of ordnance to be used for representative missions;
- require the Air Force to (1) model mission scenarios and implement the various thresholds consistently for both PSW and A-S gunnery missions and (2) determine zones of exposure and associated number of takes for the Level B harassment threshold of $177 \text{ dB re } 1 \mu\text{Pa}^2\text{-sec}$ for all PSW and A-S gunnery missions that involve more than one bomb, missile, or round;
- require the Air Force to evaluate its mitigation and monitoring measures to assess their effectiveness in detecting marine mammals and minimizing takes; and
- work with the Air Force to design and conduct the necessary performance verification testing for electronic detection devices under the relevant sea state conditions for A-S gunnery missions before changing any sea state restrictions.

RATIONALE

The Air Force plans to conduct its PSW and A-S gunnery missions year-round offshore of the Florida Panhandle. PSW missions involve the use of surface, above surface, and sub-surface bombs and missiles that range from a small-diameter bomb of about 22 kg to a Joint Air-to-Surface Stand-off Missile of about 136 kg. Those missions involve detonation of up to two bombs or one missile aimed at containers holding 55-gallon drums strapped and welded together or a hopper barge. The Air Force would conduct 12 bombing missions per year. Four of those would involve a live bomb and two would detonate two bombs nearly simultaneously. The remaining eight would involve inert bombs (i.e., with minimal explosive material) and four of those missions would detonate two bombs nearly simultaneously. It also would conduct six missile missions per year (two live and four inert missiles). It would conduct all its PSW missions during daylight hours in waters less than 61 m in depth and at a distance of approximately 28 to 45 km from the coast.

An A-S gunnery mission involves firing 25-mm (30 g), 40-mm (392 g), and 105-mm (2.1 kg) projectiles that either explode on the surface or penetrate the surface and explode underwater. The missions normally occur during a 6-hour period with rounds fired for 30 to 90 minutes at the target (i.e., flares). The Air Force would conduct 70 missions during either day or night at least 22 km from the coast; all but one mission would be conducted beyond the 200-m isobath.

The Commission agrees with the Service that the best way to manage the proposed activities is under 5-year regulations issued under section 101(a)(5)(A) of the Marine Mammal Protection Act. However, the Commission continues to be concerned about certain aspects of this and similar authorizations for activities at Eglin Air Force Base. These concerns have been raised in past Commission letters (e.g., see the enclosed letter from 18 August 2011) regarding A-S gunnery missions.

Zones of exposure and associated marine mammal takes

The Air Force estimated its zones of exposure for explosives based on impulse, peak pressure, and sound exposure level thresholds. Impulse and peak pressure thresholds are instantaneous and do not incorporate a specific time element. In contrast, thresholds for sound exposure levels are intended to account for the total energy expended in a specific area during a specific period of time.

The methods used by the Air Force to estimate zones of exposure for various thresholds are not clear. The PSW modeling method suggests that double-shot bombing missions were treated as a single detonation with two 48-lb bombs detonating within a 5-second timeframe; thus, all thresholds were based on detonation of a single 96-lb bomb. In contrast, for A-S gunnery missions the Air Force appears to have determined peak pressure zones of exposure based on the firing of a single round even though the missions involve firing 20 and 100 rounds of 40 mm and 25 mm shells, respectively, within a 2- to 10-second period. The Air Force did not explain why it used two different methods (i.e., total net explosive weight of two bombs versus net explosive weight of a single round) for determining zones of exposure for peak pressure thresholds. As expected, the Air Force did use the total number of rounds expended to determine the zones for sound exposure level

thresholds, but it did not state whether it used the total number of rounds (i.e., total net explosive weight of all rounds) or a single round for determining those zones for impulse thresholds. In addition, the Air Force did not state whether it plans to use multiple types of rounds (i.e., 40 and 25 mm) simultaneously and, if so, whether it estimated the zones of exposure and associated number of takes for those missions.

Finally, the Air Force did not determine zones of exposure for the Level B behavioral harassment threshold of 177 dB re 1 $\mu\text{Pa}^2\text{-sec}$ (for multiple successive detonations) or associated marine mammal takes for PSW missions. It indicated that the double shot (i.e., two 48-lb bombs) was considered one detonation and therefore, the behavioral Level B behavioral threshold did not apply. However, those bombs detonate within 5 seconds, which is comparable to the 2- to 10-second detonation timeframe for A-S gunnery missions. For the A-S missions the Air Force did determine the Level B behavioral harassment threshold. The Commission believes that both types of missions should be modeled as multiple successive detonations because, in both cases, the detonations occur within a few seconds.

Until the methods used to estimate zones of exposure for the various thresholds are clarified, the Commission cannot make an informed judgment about the soundness of those estimation methods. With that shortcoming in mind, the Marine Mammal Commission recommends that the National Marine Fisheries Service withhold publishing the proposed rule until the Air Force has provided a clear, step-by-step description of how it estimated the zones of exposure and associated number of takes for impulse, peak pressure, and sound exposure level thresholds, accounting for the multiple types and quantities of ordnance to be used for representative missions. Other agencies have modeled multiple sound sources accurately using those metrics and the Air Force should be required to do so as well. The Commission also recommends that the Service require the Air Force to (1) model mission scenarios and implement the various thresholds consistently for both PSW and A-S gunnery missions and (2) determine zones of exposure and associated number of takes for the Level B harassment threshold of 177 dB re 1 $\mu\text{Pa}^2\text{-sec}$ for all PSW and A-S gunnery missions that involve more than one bomb, missile, or round.

Mitigation and monitoring measures

The proposed mitigation and monitoring measures for A-S gunnery missions have not changed since issuance of a similar incidental harassment authorization in 2008. Similarly, the mitigation and monitoring measures for PSW missions appear unchanged since issuance of the last five-year regulation. To the Commission's knowledge, the efficacy of those measures has not been evaluated rigorously. If that is the case, then it is not possible to describe with confidence just what impacts the Air Force's activities are having on marine mammals. For example, the Air Force proposes to monitor a 9.3-km wide target area at an altitude of 1,829 m and as the gunship ascends to 4,572–6,096 m for A-S gunnery missions. Whether the Air Force can monitor the target area for the presence of marine mammals from that altitude is questionable, at best. For PSW missions, it proposes to monitor an area up to 13 km in width (based on an added buffer zone equal to the radius of the largest zone of exposure, 3.25 km) using vessels and aircraft until one hour prior to detonations. At which time, the observers would be required to leave the mission area for safety reasons. Here, too, the Commission must question whether the Air Force can monitor such areas in

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all the various conditions that may occur during a mission. If such monitoring is not effective, then the Air Force and the Service have no basis for assuming that takes will be prevented as expected or for assuming that the actual number of takes will be determined accurately.

The Commission believes the Air Force should assume responsibility for evaluating its mitigation and monitoring measures to characterize their effectiveness. Other Department of Defense applicants are doing so. For example, the Navy is implementing an Integrated Comprehensive Monitoring Plan that includes evaluation of mitigation and monitoring measures. More specifically, the Navy has initiated a research project with the University of St. Andrews to investigate the effectiveness of Navy lookouts. Because it believes that the Air Force bears a similar responsibility, the Marine Mammal Commission recommends that the National Marine Fisheries Service require the Air Force to evaluate its mitigation and monitoring measures to assess their effectiveness in detecting marine mammals and minimizing takes.

The following example, specific to the Air Force, illustrates the importance of evaluating the efficacy of mitigation and monitoring measures. The Air Force has requested again that it be allowed to conduct its A-S gunnery missions in sea states up to Beaufort 4, as opposed to Beaufort 3 as is proposed for PSW missions. It justified this request in past and current applications by suggesting that electronic technology (i.e., radar, all-light television, infrared sensors, and night-vision equipment) allows it to conduct its missions safely in Beaufort 4 conditions. In commenting on previous incidental harassment applications for gunnery activities at Eglin Air Force Base, the Commission has recommended that the Service require the Air Force to provide the additional information needed to support its request to raise sea state restrictions. Such information should include the results of performance testing to verify that the various forms of technology increase detection capability to a degree sufficient to conclude that the Air Force can conduct its A-S gunnery missions safely in Beaufort 4 conditions. The Air Force has yet to provide any such data and, until it does so, authorizing incidental taking under such conditions is premature. Therefore, the Marine Mammal Commission recommends that the National Marine Fisheries Service work with the Air Force to design and conduct the necessary performance verification testing for electronic detection devices under the relevant sea state conditions for A-S gunnery missions before changing any sea state restrictions.

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

Sincerely,

A handwritten signature in blue ink that reads "Peter O Thomas, Sr".

Timothy J. Ragen, Ph.D.
Executive Director

Enclosure