



MARINE MAMMAL COMMISSION

3 June 2013

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 7 May 2013 notice (78 Fed. Reg. 26586) 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 previously proposed regulations and incidental harassment authorizations for similar activities and, most recently, the Service's advanced notice of public rulemaking (see the enclosed 11 July 2012 letter). The Commission reiterates its concerns and recommendations herein and would welcome a meeting with the Service and Air Force to discuss some of those recommendations.

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. Since 2006 the Air Force has conducted its A-S gunnery missions under incidental harassment authorizations, the most recent of which expired 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 publication of the final rule until the Air Force has provided a clear, step-by-step description of how it has estimated the zones of exposure and associated numbers 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 and consult with the Commission regarding these concerns;
- 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 numbers 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;

- 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 allowing those activities to occur in sea states up to Beaufort 4; and
- require that the Air Force use live video and passive acoustic monitoring during its PSW and A-S gunnery missions to supplement visual monitoring, when practicable.

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 missile of about 136 kg. PSW 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 missions would involve a live bomb with two of those four missions detonating two bombs nearly simultaneously. The remaining eight missions would involve inert bombs (i.e., with minimal explosive material) and, during four of those eight missions, two inert bombs would be detonated nearly simultaneously. The Air Force also would conduct six missile missions per year using two live and four inert missiles. The Air Force 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.

A-S gunnery missions would involve 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. A-S 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; only one mission would be conducted beyond the 200-m isobath.

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.

As indicated in previous Commission letters, 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 22-kg bombs detonating within a 5-second timeframe; thus, all thresholds were based on detonation of a single 44-kg 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, and seemingly contrary, methods (i.e., total net explosive

weight of two bombs versus net explosive weight of a single round) for estimating zones of exposure for peak pressure thresholds. Conversely, for estimating the zones of exposure for sound exposure level thresholds the Air Force appears to have used the total number of rounds expended. To estimate zones based on impulse thresholds, the Air Force did not state whether it used the total net explosive weight of all rounds or the weight of a single round. In addition, the Air Force did not indicate how it estimated the zones of exposure and associated number of takes for those missions that use multiple types of rounds (i.e., 40 and 25 mm), including cases when those rounds are used simultaneously.

Finally, the Air Force did not estimate 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 22-kg bombs) was considered one detonation and therefore, it assumed that the behavioral Level B behavioral threshold did not apply. The Commission does not understand why the Air Force concluded that Level B harassment could not occur in this case. In contrast, the Air Force did determine the zone for the Level B harassment threshold for A-S gunnery missions, which also involve detonation of multiple explosives within seconds. 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. That approach also is consistent with methods used by the Navy and Marine Corps for modeling multiple detonations and estimating the numbers of animals that could be taken.

Until the methods used to estimate zones of exposure for the various thresholds are clarified, the Commission continues to believe that it cannot judge the soundness of those estimation methods. In its previous letter, the Commission recommended that the Service withhold publishing the proposed rule until the Air Force provides a clear explanation of its method. However, the Service proceeded with publication of the proposed rule based on the Air Force's 2011 application. Because it remains concerned about the Air Force's estimates of harassment zones, the Marine Mammal Commission recommends that the National Marine Fisheries Service withhold publication of the final rule until the Air Force has provided a clear, step-by-step description of how it has estimated the zones of exposure and associated numbers 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. The Commission also requests that the Service consult with the Commission regarding these concerns prior to issuing a final rule. Other agencies have modeled multiple sound sources accurately using those metrics and the Air Force should be required to do so as well. In addition, 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 numbers 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 regulations that have governed incidental taking for the past five years. To the Commission's

knowledge, the efficacy of those measures still 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 that time, the observers would be required to leave the mission area for safety reasons. Here, too, the Commission questions whether the Air Force can monitor such areas in 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 estimated accurately.

The Commission believes the Air Force should assume responsibility for evaluating the effectiveness of its mitigation and monitoring measures. Other Department of Defense applicants are doing so. For example, 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 applications for conducting 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 Commission is unaware of any such data and, until the Air Force provides it, 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 allowing those activities to occur in sea states up to Beaufort 4.

The Air Force indicated that it may use live video feed to supplement visual monitoring during PSW missions only. However, it did not propose to use passive acoustic monitoring to supplement any of its mitigation and monitoring measures for either PSW or A-S gunnery missions. In the past the Commission has supported the use of those supplemental measures, especially when the effectiveness of its visual mitigation and monitoring measures have yet to be characterized and in most instances the clearance procedures occur either at least an hour before the mission begins or

Mr. P. Michael Payne
3 June 2013
Page 5

from altitudes of nearly 2 km and greater. The Commission also understands that some missions, primarily A-S gunnery missions, may occur at unpredictable locations. But, if the Air Force conducts those missions at a fixed target site (i.e., hopper barge) or places the target prior to the mission, those methods could improve the proposed mitigation and monitoring measures. Accordingly, the Marine Mammal Commission recommends that the National Marine Fisheries Service require that the Air Force use live video and passive acoustic monitoring during its PSW and A-S gunnery missions to supplement visual monitoring, when practicable.

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

Sincerely,

A handwritten signature in blue ink that reads "Rebecca J. Lent". The signature is written in a cursive style and is positioned above the printed name.

Rebecca J. Lent, Ph.D.
Executive Director

Enclosure