



# MARINE MAMMAL COMMISSION

24 December 2014

Ms. Jolie Harrison, Chief  
Permits and Conservation Division  
Office of Protected Resources  
National Marine Fisheries Service  
1315 East-West Highway  
Silver Spring, MD 20910-3225

Dear Ms. Harrison:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the U.S. Air Force's (the Air Force) application seeking authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act (the MMPA) to take marine mammals by harassment incidental to conducting maritime weapon systems evaluation program (WSEP) activities at Eglin Air Force Base (Eglin) off Florida. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 8 December 2014 notice (79 Fed. Reg. 72631) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions. The Commission previously has commented on various incidental take authorization applications for activities at Eglin (see the recent 27 June 2013 letter). Many of the recommendations contained herein reflect outstanding concerns the Commission has voiced since 2010.

As a general matter, the Commission notes that the Air Force has been applying for authorizations to take marine mammals on an activity-by-activity basis rather than a programmatic basis. During the past few years, NMFS has authorized the taking of marine mammals incidental to the Air Force's naval explosive ordnance disposal school, precision strike weapon, and air-to-surface gunnery activities at Eglin through two separate rulemakings<sup>1</sup>. NMFS also authorized the incidental harassment of marine mammals during maritime strike operation activities and plans to authorize WSEP activities through individual incidental harassment authorizations. The taking of marine mammals, generally dolphins, is incidental to the use of gunnery rounds, rockets, missiles, and bombs for all activities that have recently occurred at Eglin. The Commission appreciates that NMFS has authorized the taking of marine mammals incidental to some activities under section 101(a)(5)(D) of the MMPA but believes that the Air Force and NMFS should be evaluating the impacts of all training and testing activities under a single letter of authorization application and National Environmental Policy Act (NEPA) document rather than segmenting the analyses based on specific types of missions under various authorizations. The Navy conducts such programmatic analyses in its letter of authorization applications and final environmental impact statement/overseas environmental impact statements for training and testing activities occurring in the same general area (e.g., Atlantic Fleet Training and Testing study area) during a five-year period. In addition, the Air Force conducts similar analyses for all military readiness activities that could impact marine mammals at Vandenberg Air Force Base in California in its letter of authorization applications and

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<sup>1</sup> One of which expires in 2017 and the other in 2019.

NEPA documents. Therefore, to allow for a comprehensive assessment of multiple activities occurring in the same location within the same timeframe, the Commission recommends that NMFS and the Air Force work to include all activities that have the potential to take marine mammals incidental to military readiness activities at Eglin in a single rulemaking<sup>2</sup> and NEPA document in the near future.

## **Background**

The Air Force plans to conduct its WSEP activities during a three-week timeframe<sup>3</sup> in February and March 2015. The purpose of those activities is to evaluate maritime deployment data, tactics, techniques, and procedures and determine the impact of those techniques and procedures on combat training. Those activities involve the use of gunnery rounds, rockets, missiles, and bombs (ranging from a 45 g gunnery round to a 429 kg bomb). The Air Force would use stationary, towed, and remotely-controlled boat targets and would conduct up to two missions per day<sup>4</sup>. The Air Force would conduct all WSEP activities during daylight hours in waters approximately 35 m in depth and at a distance of approximately 27 km from the coast.

NMFS preliminarily has determined that the proposed activities could cause both Level A and B harassment of bottlenose, Atlantic spotted, and unidentified bottlenose/Atlantic spotted dolphins but anticipates that any impact on the affected species and stocks would be negligible. NMFS does not anticipate any take of marine mammals by serious injury or death and believes the proposed mitigation measures provide the means of effecting the least practicable impact on marine mammal species or stocks and their habitat. The proposed mitigation, monitoring, and reporting measures include—

- restricting WSEP activities from occurring when Beaufort sea states are greater than 4;
- using trained marine species observers to conduct vessel-based monitoring from five vessels for up to 2 hours before, during<sup>5</sup>, and for 30 minutes after the proposed activities;
- using delay and shut-down procedures;
- using live-video feed from three high-definition cameras to supplement its vessel-based monitoring to detect marine mammals and implement mitigation measures;
- reporting injured and dead marine mammals immediately to NMFS's local stranding network, regional office, and Office of Protected Resources; and
- submitting a final report.

## **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 from Finneran and Jenkins (2012). Impulse and peak pressure thresholds are instantaneous and do not incorporate a specific time element. In contrast,

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<sup>2</sup> Irrespective of when current rulemakings expire.

<sup>3</sup> The Commission understands that the activities would occur on eight days.

<sup>4</sup> The Commission understands that 15 to 20 munitions could be dropped from 10 to 15 aircraft each day.

<sup>5</sup> The observers would be required to leave the mission area at least 30 minutes prior to the activities and move to the periphery of the safety zone (approximately 15 km away), which is based on human safety.

thresholds for sound exposure levels (SELs) 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 and the numbers of marine mammal takes are not consistent. In this instance, the Air Force estimated the zones of exposure for both a single detonation of each munition type and a representative scenario based on the maximum number of munitions that could be expended on a single day<sup>6</sup> (Tables 6 and 7 of the *Federal Register* notice, respectively). The latter is the more appropriate method for determining the distances to the SEL thresholds<sup>7</sup> and also serves as the zone of exposure for implementing mitigation. However, the Air Force then estimated the numbers of marine mammal takes by multiplying the number of animals estimated to be taken by a single detonation of each munition type<sup>8</sup> by the number of munitions that would be detonated, irrespective of when those detonations would occur. That method does not consider the accumulation of energy in a 24-hour period<sup>9</sup> that should be used for cumulative SEL thresholds, which would more accurately correspond to zones of exposure for the representative scenario and serve as more realistic estimates of numbers of animals that could be taken during WSEP activities compared to the Air Force's current take estimation method.

The Air Force recognized that its take estimation method likely overestimates the numbers of marine mammals that could be taken, because it assumed a purely additive<sup>10</sup> process rather than accounting for sound propagation loss for sequential detonations. The Commission understands that to mean that the Air Force overestimated the numbers of takes, because it did not determine the cumulative SELs based on the addition of incremental SELs received by the animal for each subsequent detonation. In addition, the Commission understands that the Air Force did not reduce each zone (or area) by the zone (or area) closer to the detonation. Effectively, the estimated zone of exposure, and thus the associated takes, for Level A harassment (PTS) also includes mortality and Level A harassment (slight lung injury and GI tract injury). Similarly, Level B harassment (behavioral) takes include those takes for mortality, Level A harassment, and Level B harassment (TTS). The Commission agrees that the numbers of takes are overestimated but is unsure to what degree. Furthermore, the Air Force and NMFS did not round the estimated takes<sup>11</sup> until totaling for all species. The Commission has commented numerous times about the appropriate treatment of "fractions" of animals for previous authorizations (including non-military authorizations). Since NMFS still uses a 24-hour reset time, species-specific takes should be based on the number of animals taken in a given day and the number of days those activities would occur—in this instance, the numbers of animals taken during representative scenarios for worst-case and typical scenarios for the total number of activity days.

The Commission still remains concerned regarding the Air Force's method to estimate the numbers of marine mammal takes. Therefore, the Commission recommends that, prior to issuing the proposed authorization and prior to accepting as complete any future incidental take applications

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<sup>6</sup> Similar to a worst-case scenario.

<sup>7</sup> Which served as the basis for the criteria with the greatest radii for the dual criteria (i.e., SEL or peak pressure).

<sup>8</sup> Based on an area associated with the relevant threshold and density estimates adjusted by depth distributions (i.e., a slightly modified area x density method).

<sup>9</sup> Which the Commission understands is NMFS's current guidance.

<sup>10</sup> Or essentially a multiplicative process as detailed previously.

<sup>11</sup> Generally, round down if less than 0.50 and round up if greater than or equal to 0.50.

from the Air Force, NMFS require the Air Force to re-estimate the numbers of marine mammals that could be taken based on the numbers estimated to be taken during representative scenarios, which may include the worst-case scenario and a more typical scenario, for the total number of days of WSEP activities. This is especially important if NMFS plans to reduce the number of Level A harassment takes it ultimately authorizes, as will be discussed in later sections herein.

### **Mitigation and monitoring measures**

Although the Air Force proposes to use live-feed video cameras to supplement its effectiveness in detecting marine mammals when implementing mitigation measures, the Commission remains concerned that those measures are insufficient. In previous Commission letters regarding the Air Force's activities at Eglin, the Commission has recommended that NMFS require the Air Force to determine the effectiveness of its mitigation measures and to supplement those measures with passive acoustic monitoring devices—those devices could be installed on the Air Force's instrumentation barge<sup>12</sup> along with the cameras and weapon tracking equipment. For the proposed authorization, the mission area would be cleared of marine mammals for up to 30 minutes, and likely longer, before the munitions are detonated. The observers then would move to the periphery of the safety zone, more than 15 km from the target. The Commission is skeptical that the Air Force would be able to monitor effectively for any marine mammal entering the 706.5 km<sup>2</sup> area during the timeframe prior to detonation. Further, the Air Force itself noted the limited effectiveness of the observers scanning the periphery of the safety zone for marine mammals.

In addition, the Commission does not believe that the zone of exposure based on Level A harassment (estimated to be greater than a 5-km radius) can be deemed clear of marine mammals when only three video cameras are used for monitoring. That level of surveillance likely would be effective only for observing dolphins at distances of less than 1 km and only in the field of view of the cameras<sup>13</sup>. The *Federal Register* notice indicated that animals may enter the Level A harassment zone of exposure after the pre-mission surveys would be completed and prior to detonation of the munitions, but that those animals would not reach the smaller zones associated with slight lung injury or mortality. The notice also stated that, after implementing a delay, animals originally seen in the Level A harassment zone of exposure would be presumed to be outside that zone based on a clearance time of 30 minutes and the assumption that the animals would swim out of range (i.e., based on an assumed average swim speed of 5.6 km/hr as stated in the Air Force's application). The Commission believes those assertions are unjustified—a simple calculation shows that animals swimming at 5.6 km/hr could not clear a 5.1-km zone of exposure in 30 minutes.

As stated in many Commission letters in response to similar assumptions and assertions made by NMFS and the Navy regarding the appropriateness of zones of exposure for underwater detonations based on dolphin swim speeds, the assumed average swim speed is not supported by the scientific literature. The Commission reiterates that many marine mammals are capable of swimming, and regularly do swim, much faster than 5.6 km/hr, especially for short periods. The average swim speed for bottlenose dolphins ranges from 4.8 to 14.8 km/hr (Lockyer and Morris 1987, Mate et al. 1995, Ridoux et al. 1997) and for pelagic dolphins from 12.8 to 24 km/hr (Au and Perryman 1982, Rohr et al. 1998, Rohr and Fish 2004). Therefore, the assertion that dolphins would

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<sup>12</sup> The Gulf Range Armament Test Vessel (GRATV).

<sup>13</sup> Some areas would be out of the view of the cameras, which was noted in the *Federal Register* notice.

not be in danger of slight lung injury or mortality when entering the zone of exposure after pre-mission surveys conclude and before the munitions detonate is not based on scientific information<sup>14</sup>. For all these reasons, the Commission again recommends that NMFS require the Air Force to supplement its mitigation measures with passive acoustic monitoring and determine the effectiveness of its suite of mitigation measures for activities at Eglin prior to incorporating presumed mitigation effectiveness into its take estimation analyses or negligible impact determinations.

### **Authorization of incidental taking by Level A harassment**

The Air Force derived its take estimates for Level A harassment without considering the effectiveness of its proposed mitigation measures. The Commission supports that approach since data to demonstrate such effectiveness are currently lacking. Nonetheless, in the absence of that information, NMFS indicated in the *Federal Register* notice that it had preliminarily determined that the number of takes would be significantly lower than the estimates due to the expected effectiveness of the mitigation measures<sup>15</sup>. The Commission believes that determination has no basis and is concerned that NMFS may reduce the estimated 41 Level A harassment takes based on presumed mitigation effectiveness rather than re-estimation of overestimated takes.

Irrespective of the number to be authorized, NMFS is proposing for the second year to authorize the incidental taking of marine mammals by Level A harassment under section 101(a)(5)(D) of the MMPA (i.e., under an incidental harassment authorization) for activities at Eglin. Level A harassment is defined in statute and regulation as “any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild” (section 3(18) of the MMPA and 50 C.F.R. § 216.3). This will have been the third time NMFS has proposed to authorize taking by Level A harassment under section 101(a)(5)(D) of the MMPA, rather than through regulations issued in accordance with section 101(a)(5)(A). When NMFS proposed to authorize such taking for ION Geophysical’s seismic activities in 2012 and the Air Force’s maritime strike operations in 2013, the Commission advised NMFS that authorizing Level A harassment under 101(a)(5)(D) of the MMPA would be inconsistent with the intent of the MMPA and NMFS’s implementing regulations and therefore would set an inappropriate precedent. Regulations implementing the incidental harassment authorization provisions of the MMPA (50 C.F.R. § 216.107) state that authorizations may be issued only for activities that may result in the incidental harassment of a small number of marine mammals, “except for activities that have the potential to result in serious injury or mortality, which must be authorized under § 216.105.” However, contrary to its own regulations, NMFS did in fact authorize the taking by Level A harassment for both ION Geophysical’s seismic activities and the Air Force’s maritime strike operations under incidental harassment authorizations.

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<sup>14</sup> Which clearly points to the possibility of dolphins, including bottlenose dolphins, moving from outside the 5.1-km zone of exposure to the center of it in less than 30 minutes.

<sup>15</sup> It is unclear if NMFS is referring to all types of takes or only certain types of takes (e.g., only Level A harassment or Level B harassment). In any event, mitigation measures are normally designed first and foremost to minimize the potential for mortality and Level A harassment. Thus, the Commission assumes that NMFS is not referring only to Level B harassment takes in its statement in the notice.

In a previous authorization for the Air Force, NMFS asserted that, because of the short duration of the proposed activity (a few weeks) combined with the density of marine mammals<sup>16</sup>, it is unlikely that a marine mammal would even randomly enter the area where more severe permanent threshold shift (PTS) would be a risk (78 Fed. Reg. 52138). However, when mitigation measures and likely avoidance of an area of high levels of training activities were considered, NMFS believed that it becomes highly unlikely (78 Fed. Reg. 52138). The Commission believes that NMFS has no basis for making a similar determination when the Level A harassment zone radius is more than 5 km and the observers need to leave the mission area at least 30 minutes prior to WSEP activities.

Although NMFS indicated that the proposed activity at Eglin could result in Level A harassment (primarily from PTS), it expects the number of exposed animals to be low due to the short-term and site-specific nature of the activity, and the type of effect would not be detrimental to rates of recruitment and survival. Because NMFS did not discuss what number it actually intends to authorize, the Commission can only base its analysis on the 41 Level A harassment takes proposed to be authorized in the *Federal Register* notice. That number of takes, in the Commission's view, does not constitute a low number. The Commission also continues to believe that any permanent hearing loss is likely to compromise the survival of the affected animal, because marine mammals rely heavily on hearing for communicating, navigating, and foraging<sup>17</sup> (National Research Council 2003). Therefore, all permanent hearing loss should be considered a serious injury. As noted previously, activities with the potential to result in serious injury require authorization by regulation in accordance with 50 C.F.R. § 216.105.

Therefore, the Commission recommends that NMFS (1) authorize incidental taking for the proposed activities, and for any other proposed activities expected to cause Level A harassment (including PTS), through regulation under section 101(a)(5)(A) of the MMPA and a letter of authorization to ensure compliance with the MMPA and NMFS's own regulations rather than an incidental harassment authorization and (2) refrain from reducing the numbers of Level A harassment takes based on presumed mitigation effectiveness.

The Commission trusts you will find its letter helpful. Please contact me if you have questions regarding the Commission's comments and recommendations.

Sincerely,



Rebecca J. Lent, Ph.D.  
Executive Director

Cc: Bruce Hagedorn, U.S. Air Force  
Amanda Robydek, U.S. Air Force

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<sup>16</sup> The Commission does note that the bottlenose dolphin density estimate is quite high in general, especially in relation to other species in the Gulf of Mexico.

<sup>17</sup> Which also presumably include detecting and avoiding predators and conducting other vital life functions.

## References

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