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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XE926

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to the U.S. Air Force Conducting Maritime Weapon Systems Evaluation Program Operational Testing within the Eglin Gulf Test and Training Range

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

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the Marine Mammal Protection Act (MMPA) implementing regulations we (NMFS) hereby give notice that we have issued an Incidental Harassment Authorization (IHA) to the U.S. Air Force, Eglin Air Force Base (Eglin AFB), to take two species of marine mammals, the Atlantic bottlenose dolphin (*Tursiops truncatus*) and Atlantic spotted dolphin (*Stenella frontalis*), by harassment, incidental to a Maritime Weapon Systems Evaluation Program (Maritime WSEP) within the Eglin Gulf Test and Training Range (EGTTR) in the Gulf of Mexico from February 4, 2017 through February 3, 2018. Eglin AFB's activities are military readiness activities per the MMPA, as amended by the National Defense Authorization Act (NDAA) for Fiscal Year 2004.

DATES: Effective February 4, 2017 through February 3, 2018.

ADDRESSES: An electronic copy of the final Authorization, Eglin AFB's application and their final Environmental Assessment (EA) titled, "Maritime Weapons System Evaluation Program" are available by writing to Ms. Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910; by telephoning the contacts listed here at 301-427-8401, or by visiting the internet at:

<http://www.nmfs.noaa.gov/pr/permits/incidental/military.htm>.

FOR FURTHER INFORMATION CONTACT: Mr. Dale Youngkin, Office of Protected Resources, NMFS, (301) 427-8401.

SUPPLEMENTARY INFORMATION:

Background

Sections 101(a)(5)(A) and (D) of the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals of a species or population stock, by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if, after NMFS provides a notice of a proposed authorization to the public for review and comment and that NMFS makes certain findings.

An Authorization for incidental takings for marine mammals shall 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 (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring, and reporting of such taking are set

forth. NMFS has defined “negligible impact” in 50 CFR 216.103 as “an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.”

Where there is the potential for serious injury or death, the allowance of incidental taking requires promulgation of regulations under section 101(a)(5)(A). Subsequently, a Letter (or Letters) of Authorization may be issued as governed by the prescriptions established in such regulations, provided that the level of taking will be consistent with the findings made for the total taking allowable under the specific regulations. Under section 101(a)(5)(D), NMFS may authorize incidental taking by harassment only (*i.e.*, no serious injury or mortality) for periods of not more than one year, pursuant to requirements and conditions contained within an Incidental Harassment Authorization (IHA). The promulgation of regulations or issuance of IHAs (with their associated prescribed mitigation, monitoring, and reporting) requires notice and opportunity for public comment.

The NDAA (Public Law 108–136) removed the “small numbers” and “specified geographical region” limitations indicated earlier and amended the definition of harassment as it applies to a “military readiness activity” to read as follows (section 3(18)(B) of the MMPA): (i) any act that injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild (Level A Harassment); or (ii) any act that disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to,

migration, surfacing, nursing, breeding, feeding, or sheltering, to a point where such behavioral patterns are abandoned or significantly altered (Level B Harassment).

Summary of Request

On February 4, 2016, we issued an Authorization to Eglin AFB to take marine mammals, by harassment, incidental to a Maritime WSEP within the EGTTR in the Gulf of Mexico from February 4, 2016 through February 3, 2017 (see 81 FR 7307; February 11, 2016). These missions were very similar to previous Maritime WSEP mission activities for which incidental harassment authorizations were issued the previous year (80 FR 17394; April 1, 2015). On September 19, 2016, we received a renewal request for an Authorization from Eglin AFB to continue the missions authorized in 2016. We considered the revised renewal request as adequate and complete on September 27, 2016.

Due to the ongoing nature of these activities, as well as the fact that other mission activities are conducted within the EGTTR, we have discussed developing a rulemaking to encompass all mission activities in the EGTTR, and anticipate that the Maritime WSEP activities will be part of that future rulemaking. However, this Authorization is being granted due to timing constraints to ensure that these activities are in compliance with the MMPA while the future rulemaking is in process.

Eglin AFB will conduct Maritime WSEP missions within the EGTTR airspace over the Gulf of Mexico within Warning Area 151 (W-151), specifically within sub-area W-151A (see Figure 2-1 of Eglin AFB's application and Figure 1 below). The Maritime WSEP training activities are planned to occur during daylight hours in February and March 2017, however, the activities could occur between February 4, 2017, and February 3, 2018.

Eglin AFB will use multiple types of live munitions (*e.g.*, gunnery rounds, rockets, missiles, and bombs) against small boat targets in the EGTTTR. These activities qualify as military readiness activities.

The following aspects of the Maritime WSEP training activities have the potential to take marine mammals: exposure to impulsive noise and pressure waves generated by live ordnance detonation at or near the surface of the water. Take, by Level B harassment, of individuals of common bottlenose dolphin or Atlantic spotted dolphin could potentially result from the specified activity. Additionally, although NMFS does not expect it to occur, Eglin AFB has also requested authorization for Level A harassment of up to four individuals of either common bottlenose dolphins (2) or Atlantic spotted dolphins (1). Therefore, Eglin AFB requested authorization to take individuals of two cetacean species by Level A and Level B harassment.

Eglin AFB's Maritime WSEP training activities may potentially impact marine mammals at or near the water surface in the absence of mitigation. Marine mammals could potentially be harassed, injured, or killed by exploding and non-exploding projectiles, and falling debris. However, based on analyses provided in Eglin AFB's 2016 application, Eglin AFB's previous applications and Authorizations, Eglin AFB's EA, and past monitoring reports for the authorized activities conducted in February and March 2016 and 2015, and for reasons discussed later in this document, we do not anticipate that Eglin AFB's Maritime WSEP activities will result in any serious injury or mortality to marine mammals.

For Eglin AFB, this will be the third such Maritime WSEP Authorization following the Authorization issued effective from February 4, 2016, through February 3,

2017 (see 81 FR 7307; February 11, 2016). This Authorization will be effective from February 4, 2017, through February 3, 2018. The monitoring report associated with the 2016 Authorization is available at www.nmfs.noaa.gov/pr/permits/incidental/military.htm and provides additional environmental information related to issuance of this Authorization.

Description of the Specified Activity

Overview

Eglin AFB will conduct live ordnance testing and training in the EGTTTR within the Gulf of Mexico as part of the Maritime WSEP operational testing missions. The Maritime WSEP test objectives are to evaluate maritime deployment data, evaluate tactics, techniques and procedures, and to determine the impact of techniques and procedures on combat Air Force training. The need to conduct this type of testing has developed in response to increasing threats at sea posed by operations conducted from small boats, which can carry a variety of weapons, can form in large or small numbers, and may be difficult to locate, track, and engage in the marine environment. Because of limited Air Force aircraft and munitions testing on engaging and defeating small boat threats, Eglin AFB will employ live munitions against boat targets in the EGTTTR in order to continue development of techniques and procedures to train Air Force strike aircraft to counter small maneuvering surface vessels.

Dates and Duration

Eglin AFB will schedule up to eight Maritime WSEP training missions occurring during a one-week period in February 2017 and a one-week period in March 2017. The missions will occur for up to four hours each day during the morning hours, with multiple

live munitions being released per day. However, the Authorization is effective to cover those activities anytime during the period from February 4, 2017 through February 3, 2018.

Specified Geographic Region

The specific planned mission location is approximately 17 miles (mi) (27.3 kilometers (km)) offshore from Santa Rosa Island, Florida, in nearshore waters of the continental shelf in the Gulf of Mexico. All activities will place within the EGTTR, defined as the airspace over the Gulf of Mexico controlled by Eglin AFB, beginning at a point 3 nautical miles (nmi) (3.5 mi; 5.5 km) from shore. The EGTTR consists of subdivided blocks including Warning Area 151 (W-151) where the activities will occur, specifically in sub-area W-151A (shown in Figure 1).

W-151: The inshore and offshore boundaries of W-151 are roughly parallel to the shoreline contour. The shoreward boundary is 3 nmi (3.5 mi; 5.5 km) from shore, while the seaward boundary extends approximately 85 to 100 nmi (97.8 mi; 157.4 km to 115 mi; 185.2 km) offshore, depending on the specific location. W-151 covers a surface area of approximately 10,247 square nmi (nmi²) (13,570 square mi (mi²); 35,145 square km (km²)), and includes water depths ranging from about 20 to 700 meters (m) (65.6 to 2296.6 feet (ft)). This range of depth includes continental shelf and slope waters. Approximately half of W-151 lies over the shelf.

W-151A: W-151A extends approximately 60 nmi (69.0 mi; 111.1 km) offshore and has a surface area of 2,565 nmi² (3,396.8 mi²; 8,797 km²). Water depths range from about 30 to 350 m (98.4 to 1148.2 ft) and include continental shelf and slope zones. However, most of W-151A occurs over the continental shelf, in water depths less than

250 m (820.2 ft). Maritime WSEP training missions will occur in the shallower, northern inshore portion of the sub-area, in a water depth of about 35 m (114.8 ft).

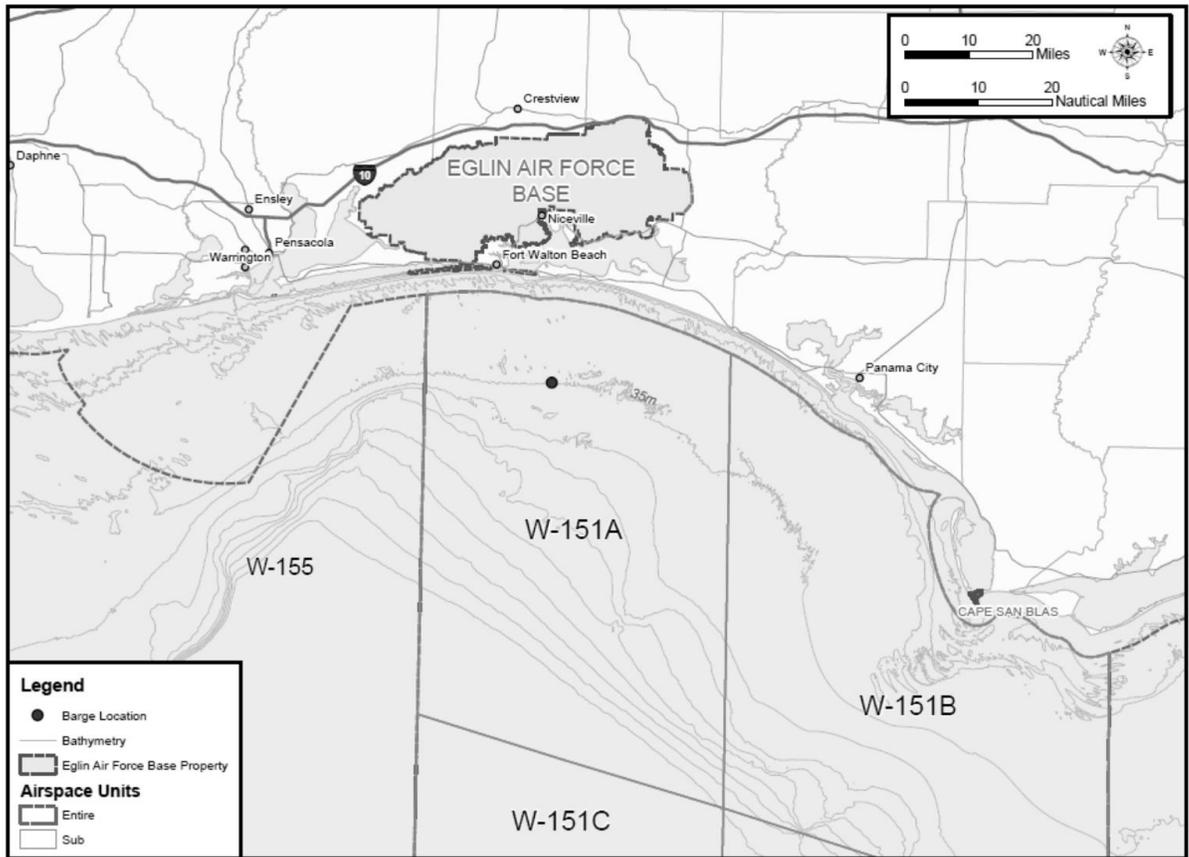


Figure 1 –Maritime WSEP operational testing location in block W-151A in the EGTR.

Detailed Description of Activities

The Maritime WSEP training missions include the release of multiple types of inert and live munitions from fighter and bomber aircraft, unmanned aerial vehicles, and gunships against small, static, towed, and remotely-controlled boat targets. Munition types include bombs, missiles, rockets, and gunnery rounds (Table 1).

Table 1 Live Munitions and Aircraft.

| Munitions | Aircraft (not associated with specific munitions) |
|---|---|
| GBU-10/-24/-31 | F-16C fighter aircraft |
| GBU-49 | F-16C+ fighter aircraft |
| JASSM | F-15E fighter aircraft |
| GBU-12 (PWII)/-54 (LJDAM)/-38/-32 (JDAM) | A-10 fighter aircraft |
| AGM-65 (Maverick) | B-1B bomber aircraft |
| CBU-105 (WCMD) | B-52H bomber aircraft |
| GBU-39 (Small Diameter Bomb) | MQ-1/9 unmanned aerial vehicle |
| AGM-114 (Hellfire) | AC-130 gunship |
| AGM-176 (Griffin) | |
| 2.75 Rockets/ AGR-20A/B | |
| AIM-9X | |
| PGU-12/B high explosive incendiary 30 mm rounds | |

Key: AGM = air-to-ground missile; CBU = Cluster Bomb Unit; GBU = Guided Bomb Unit; LJDAM = Laser Joint Direct Attack Munition; Laser SDB = Laser Small Diameter Bomb; mm = millimeters; PGU = Projectile Gun Unit; WCMD = wind corrected munition dispenser.

The Maritime WSEP training activities involve detonations above the water, near the water surface, and under water within the EGTTR. However, because the tests will focus on weapons/target interaction, Eglin AFB will not specify a particular aircraft for a given test as long as it meets the delivery parameters.

Eglin AFB will deploy the munitions against static, towed, and remotely-controlled boat targets within the W-151A. Eglin AFB will operate the remote-controlled boats from an instrumentation barge (*i.e.*, the Gulf Range Armament Test Vessel

(GRATV)) anchored on site within the test area. The GRATV provides a platform for video cameras and weapons-tracking equipment.

Table 2 lists the number, height, or depth of detonation, explosive material, and net explosive weight (NEW) in pounds (lbs) of each munition that will be used during the Maritime WSEP activities.

Table 2 Maritime WSEP munitions to be used in the W-151A test area.

| Type of Munition | Total # of Live Munitions | Detonation Type | Net Explosive Weight per Munition |
|---|---------------------------|--------------------------|-----------------------------------|
| GBU-10/-24/-31 | 2 | Subsurface (10-ft depth) | 945 lbs |
| GBU-49 | 4 | Surface | 500 lbs |
| JASSM | 4 | Surface | 255 lbs |
| GBU-12 (PWII)/-54 (LJDAM)/-38/-32 (JDAM) | 6 | Subsurface (10-ft depth) | 192 lbs |
| AGM-65 (Maverick) | 8 | Surface | 86 lbs |
| CBU-105 (WCMD) | 4 | Airburst | 83 lbs |
| GBU-39 (Small Diameter Bomb) | 4 | Surface | 37 lbs |
| AGM-114 (Hellfire) | 20 | Subsurface (10-ft depth) | 20 lbs |
| AGM-176 (Griffin) | 10 | Surface | 13 lbs |
| 2.75 Rockets/ AGR-20A/B | 100 | Surface | 12 lbs |
| AIM-9X | 1 | Surface | 7.9 lbs |
| PGU-12/B high explosive incendiary 30 mm rounds | 1,000 | Surface | 0.1 lbs |

Key: AGL = above ground level; AGM = air-to-ground missile; CBU = Cluster Bomb Unit; GBU = Guided Bomb Unit; JDAM = Joint Direct Attack Munition; LJDAM = Laser Joint Direct Attack Munition; mm = millimeters; msec = millisecond; lbs = pounds; PGU = Projectile Gun Unit; HEI = high explosive incendiary.

At least two ordnance delivery aircraft will participate in each live weapons release training mission, which lasts approximately four hours. Before delivering the ordnance, mission aircraft will make a dry run over the target area to ensure that it is clear of commercial and recreational boats. Jets will fly at a minimum air speed of 300 knots (approximately 345 miles per hour, depending on atmospheric conditions) and at a minimum altitude of 305 m (1,000 ft). Due to the limited flyover duration and potentially

high speed and altitude, the pilots will not participate in visual surveys for protected species.

Eglin AFB's 2016 and 2015 Authorization renewal request, 2014 application for the same activities, and 2015 EA and Finding of No Significant Impact (FONSI) contain additional detailed information on the Maritime WSEP training activities and are all available online (www.nmfs.noaa.gov/pr/permits/incidental/military.htm). NMFS provided detailed descriptions of the Maritime WSEP training operations in a previous notice for the proposed Authorization (81 FR 83209; November 21, 2016). This information has not changed between the proposed Authorization and this final notice announcing the issuance of the Authorization.

Comments and Responses

A notice of receipt of Eglin AFB's application and NMFS' proposal to issue an Authorization to the U.S. Air Force, Eglin AFB, published in the **Federal Register** on November 21, 2016 (81 FR 83209). During the 30-day public comment period, NMFS received comments from the Marine Mammal Commission (MMC) and one concerned citizen. Following, are the comments received from the MMC and the concerned citizen, as well as NMFS' responses.

MMC Comment 1: MMC recommended that NMFS (1) follow NMFS policy of a 24-hour reset for enumerating the number of each species that could be taken during the proposed activities; (2) apply standard rounding rule before summing the numbers of estimated takes across days; and (3) for species that have the potential to be taken but model-estimated or calculated takes round to zero, use group size to inform the take

estimates – The MMC recommended that NMFS use these methods consistently for all future incidental take authorizations.

Response: Calculating predicted take is not an exact science, and there are arguments for taking different mathematical approaches in different situations and for making qualitative adjustments in other situations. NMFS is currently engaged in developing a protocol to guide more consistent take calculations given certain circumstances. However, we believe that the method used here supports the most appropriate take estimate for this action and does not run counter to any “24-hour reset policy.”

MMC Comment 2: The MMC states that Eglin AFB has used, and proposes to continue the use of live-feed video cameras to supplement its effectiveness in detecting marine mammals when implementing mitigation measures. However, the MMC is not convinced that those measures are sufficient to effectively monitor for marine mammals entering the training areas during the 30-minute timeframe prior to detonation. In addition, the MMC states that it does not believe that Eglin AFB can deem the Level A harassment zone clear of marine mammals when using only three video cameras for monitoring. Thus, the MMC recommends that NMFS require Eglin AFB to (1) supplement its mitigation measures with passive acoustic monitoring and (2) 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.

Response: NMFS has worked closely with Eglin AFB over the past several Authorization cycles to develop proper mitigation, monitoring, and reporting

requirements designed to minimize and detect impacts from the specified activities and ensure that NMFS can make the findings necessary for issuance of an Authorization. Further, the take estimation and negligible impact determinations in this Authorization do not rely on a presumption of mitigation effectiveness. Take estimates were based on modeling efforts and were not reduced due to mitigation measures.

Monitoring also includes vessel-based observers for marine species up to 30 minutes prior to deploying live munitions in the area. Eglin AFB has submitted annual reports to NMFS every year that describes all activities that occur in the EGTTTR. In addition, Eglin AFB submitted annual reports to NMFS at the conclusion of the Maritime Strike Operations. These missions are similar in nature to the maritime WSEP operations and the Eglin AFB provided information on sighting information and results from post-mission survey observations. Based on those results, NMFS determined that the mitigation measures ensured the least practicable adverse impact to marine mammals. There were no observations of injured marine mammals and no reports of marine mammal mortality during the Maritime Strike Operation activities. The measures for the Maritime WSEP are similar, except they will include larger survey areas based on updated acoustic analysis and previous discussions with the MMC and NMFS.

Eglin AFB will continue to research the feasibility of supplementing existing monitoring efforts with passive acoustic monitoring devices for future missions, and has recently requested funding to do so. However, even if this funding request is approved, the funds will not be available to implement the additional measures for this Authorization. If funding is approved, passive acoustic monitoring will be included in

future missions that may be part of the proposed rule to cover multiple activities in the EGTTTR.

Concerned Citizen Comment 1: The private citizen commented that the U.S. Air Force should “bomb dead areas like the Gulf of Mexico where no life can live anyway”, and expressed opposition to the U.S. Air Force proposed Maritime WSEP activities out of concern that endangered animals would be harmed.

Response: As noted in the **Federal Register** on November 21, 2016 (81 FR 83209), the Maritime WSEP activities will take place in the Gulf of Mexico. In addition, due to the location of the activities, no threatened or endangered species are anticipated to be taken and NMFS has not authorized any take of threatened or endangered species. Finally, the information presented in the notice for the proposed Authorization (81 FR 83209; November 21, 2016) indicates that modeling results show zero takes for mortality, and three takes by Level A harassment. We make a correction: Table 9 of the proposed Authorization indicated these three Level A takes were for permanent threshold shift (PTS) only. However, the correct estimate includes three PTS takes and one slight lung injury take. However, NMFS does not believe that serious injury will result from this activity and that therefore it is not necessary to issue regulations through section 101(a)(5)(A) of the MMPA, rather, an IHA is appropriate.

Description of Marine Mammals in the Area of the Specified Activity

Table 3 lists marine mammal species with potential or confirmed occurrence in the activity area during the project timeframe and summarizes key information regarding stock status and abundance. Please see NMFS’ 2015 and 2014 Stock Assessment Reports

(SAR), available at www.nmfs.noaa.gov/pr/sars and Garrison *et al.*, 2008; Navy, 2007; Davis *et al.*, 2000 for more detailed accounts of these stocks' status and abundance.

Table 3 – Marine mammals that may occur in the activity area.

| Species | Stock Name | Regulatory Status ^{1, 2} | Estimated Abundance | Relative Occurrence in W-151 |
|---------------------------|---|-----------------------------------|----------------------------------|------------------------------|
| Common bottlenose dolphin | Choctawatchee Bay | MMPA - S ESA - NL | 179 CV = 0.04 ³ | Uncommon |
| | Pensacola/East Bay | MMPA - S ESA - NL | 33 CV = 0.80 ⁴ | Uncommon |
| | St. Andrew Bay | MMPA - S ESA - NL | 124 CV = 0.57 ⁴ | Uncommon |
| | Gulf of Mexico Northern Coastal | MMPA - S ESA - NL | 7,185 CV = 0.21 ³ | Common |
| | Northern Gulf of Mexico Continental Shelf | MMPA - NC ESA - NL | 51,192 CV = 0.10 ³ | Uncommon |
| | Northern Gulf of Mexico Oceanic | MMPA - NC ESA - NL | 5,806 CV = 0.39 ⁴ | Uncommon |
| Atlantic spotted dolphin | Northern Gulf of Mexico | MMPA - NC ESA - NL | 37,611 ⁴ CV = 0.28 | Common |

¹ MMPA: D = Depleted, S = Strategic, NC = Not Classified.

² ESA: EN = Endangered, T = Threatened, DL = Delisted, NL = Not listed.

³ NMFS Draft 2015 SAR (Waring *et al.*, 2015)

⁴ NMFS 2014 SAR (Waring *et al.*, 2014)

An additional 19 cetacean species could occur within the northeastern Gulf of Mexico, mainly occurring at or beyond the shelf break (*i.e.*, water depth of approximately 200 m (656.2 ft)) located beyond the W-151A test area. NMFS and Eglin AFB consider these 19 species to be rare or extralimital within the W-151A test location area. These species are the Bryde's whale (*Balaenoptera edeni*), sperm whale (*Physeter macrocephalus*), dwarf sperm whale (*Kogia sima*), pygmy sperm whale (*K. breviceps*), pantropical spotted dolphin (*Stenella attenuata*), Clymene dolphin (*S. clymene*), spinner dolphin (*S. longirostris*), striped dolphin (*S. coeruleoalba*), Blainville's beaked whale (*Mesoplodon densirostris*), Gervais' beaked whale (*M. europaeus*), Cuvier's beaked whale (*Ziphius cavirostris*), killer whale (*Orcinus orca*), false killer whale (*Pseudorca*

crassidens), pygmy killer whale (*Feresa attenuata*), Risso's dolphin (*Grampus griseus*), Fraser's dolphin (*Lagenodelphis hosei*), melon-headed whale (*Peponocephala electra*), rough-toothed dolphin (*Steno bredanensis*), and short-finned pilot whale (*Globicephala macrorhynchus*).

Of these species, only the sperm whale is listed as endangered under the Endangered Species Act (ESA) and as depleted throughout its range under the MMPA. Sperm whale occurrence within W-151A is unlikely because almost all reported sightings have occurred in water depths greater than 200 m (656.2 ft).

Because these species are unlikely to occur within the W-151A area, Eglin AFB has not requested and we are not proposing to authorize take for them. Thus, we do not consider these species further in this notice.

We have reviewed Eglin AFB's species descriptions, including life history information, distribution, regional distribution, diving behavior, and acoustics and hearing, for accuracy and completeness. That information is contained in sections 3 and 4 of Eglin AFB's 2016 Authorization application and in Chapter 3 of Eglin AFB's Environmental Assessment (EA) and we incorporate those sections by reference rather than reprinting the information here.

Other Marine Mammals in the Action Area

The endangered West Indian manatee (*Trichechus manatus*) rarely occurs in the area (USAF 2014). The U.S. Fish and Wildlife Service has jurisdiction over the manatee; therefore, we did not include an Authorization to harass manatees and do not discuss this species further in this notice.

Potential Effects of the Specified Activity on Marine Mammals and Their Habitat

This section of the notice of the proposed Authorization (81 FR 83209, November 21, 2016) included a summary and discussion of the ways that components (*e.g.*, exposure to impulsive noise and pressure waves generated by live ordnance detonation at or near the surface of the water) of the specified activity, including mitigation, may impact marine mammals and their habitat. The “Estimated Take by Incidental Harassment” section later in this document will include a quantitative analysis of the number of individuals that we expect Eglin AFB to take during this activity. The “Negligible Impact Analysis” section will include the analysis of how this specific activity will impact marine mammals. We will consider the content of the following sections: “Estimated Take by Incidental Harassment” and “Mitigation” to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals—and from that consideration—the likely impacts of this activity on the affected marine mammal populations or stocks.

In summary, the Maritime WSEP training exercises under this Authorization have the potential to take marine mammals by exposing them to impulsive noise and pressure waves generated by live ordnance detonation at or near the surface of the water. Exposure to energy or pressure resulting from these detonations could result in Level A harassment (PTS and slight lung injury) and by Level B harassment (temporary threshold shift (TTS) and behavioral harassment). In addition, NMFS also considered the potential for harassment from vessel operations.

The potential effects of impulsive sound sources (underwater detonations) from the training activities may include one or more of the following: tolerance, masking, disturbance, hearing threshold shift, stress response, and mortality. NMFS provided

detailed information on these potential effects in the notice of the proposed Authorization (81 FR 83209; November 21, 2016). The information presented in that notice has not changed.

Anticipated Effects on Habitat

Detonations of live ordnance will result in temporary changes to the water environment. Munitions could hit the targets and not explode in the water. However, because the targets are located over the water, in water explosions could occur. An underwater explosion from these weapons could send a shock wave and blast noise through the water, release gaseous by-products, create an oscillating bubble, and cause a plume of water to shoot up from the water surface. However, these effects will be temporary and not expected to last more than a few seconds.

Similarly, Eglin AFB does not expect any long-term impacts with regard to hazardous constituents to occur. Eglin AFB considered the introduction of fuel, debris, ordnance, and chemical materials into the water column within its EA and determined the potential effects of each to be insignificant. NMFS provided a summary of the analyses in the notice for the proposed Authorization (81 FR 83209; November 21, 2016). The information presented in that notice has not changed.

Mitigation

In order to issue an Authorization under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable adverse impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar

significance, and the availability of such species or stock for taking for certain subsistence uses (where relevant).

The NDAA of 2004 amended the MMPA as it relates to military-readiness activities and the incidental take authorization process such that “least practicable adverse impact” shall include consideration of personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

NMFS and Eglin AFB worked to identify potential practicable and effective mitigation measures, which include a careful balancing of the likely benefit of any particular measure to the marine mammals with the likely effect of that measure on personnel safety, practicality of implementation, and impact on the “military-readiness activity.” We refer the reader to section 11 of Eglin AFB’s application for more detailed information on mitigation measures which include the following:

Vessel-Based Monitoring

Eglin AFB will station a large number of range clearing boats (approximately 30 to 35) around the test site to prevent non-participating vessels from entering the human safety zone. Based on the composite footprint, range clearing boats will be located approximately 15.28 km (9.5 mi) from the detonation point (see Figure 11-1 in Eglin AFB’s application). However, the actual distance will vary based on the size of the munition being deployed.

Trained protected species observers (PSO) will be aboard five of these boats and will conduct protected species surveys before and after each test. The protected species survey vessels will be dedicated solely to observing for marine species during the pre-mission surveys while the remaining safety boats clear the area of non-authorized vessels.

The protected species survey vessels will begin surveying the area at sunrise. The area to be surveyed will encompass the zone of influence (ZOI), which is discussed in more detail below.

Because of human safety issues, PSOs will be required to leave the test area at least 30 minutes in advance of live weapon deployment and move to a position on the safety zone periphery, approximately 15.28 km (9.5 mi) from the detonation point. PSOs will continue to scan for marine mammals from the periphery. Animals that may enter the area after Eglin AFB has completed the pre-mission surveys and prior to detonation will not reach the predicted smaller slight lung injury and/or mortality zones due to their swim speed and the size of the clearance zone.

Determination of the Zone of Influence

Historically, Eglin AFB has conservatively used the number of live weapons deployed to estimate take of marine mammals. This method assumed a fresh population of marine mammals for each detonation to calculate the number taken. However, NMFS requested mission-day scenarios in order to be able to model accumulated energy. Therefore, each mission-day scenario is considered a separate event to model takes as opposed to modeling for each live detonation. Eglin AFB developed three mission-day categories (Category A, which represents levels of activities considered a worst-case scenario consisting of ordnances with large explosive weights as well as surface and subsurface detonations; Category B, which represents a 'typical' mission day based on levels of weapons releases during past Maritime WSEP activities; and Category C, which represents munitions with smaller explosive weights and surface detonations only), and estimated the number of days each category will be executed during the 2017 Maritime

WSEP missions (See Table 1-3 in Eglin AFB’s application for the Mission Day Scenarios). Table 4 below provides the categorization of mission days (Table 1-3 in Eglin AFB’s application), and Table 5 provides the maximum range of effects for all criteria and thresholds for mission-day Categories A, B, and C. These ranges were calculated based on explosive acoustic characteristics, sound propagation, and sound transmission loss in the study area (which incorporates water depth, sediment type, wind speed, bathymetry, and temperature/salinity profiles). Refer to Appendix A of Eglin AFB’s application for a complete description of the acoustic modeling methodology used in the analysis.

Table 4 Live Munitions Categorized as Representative Mission Days.

| Mission Category | Munition | NEW (lbs) | Detonation Type | Munitions/Day | Mission Days/Year | Total Munitions/Year |
|------------------|--|-----------|------------------------|---------------|-------------------|----------------------|
| A | GBU-10/-24/-31 | 945 | Subsurface (10’ depth) | 1 | 2 | 2 |
| | GBU-49 | 500 | Surface | 2 | | 4 |
| | JASSM | 255 | Surface | 2 | | 4 |
| | GBU-12 (PWII)/-54 (LJDAM)/-38/-32 (JDAM) | 192 | Subsurface (10’ depth) | 3 | | 6 |
| B | AGM-65 (Maverick) | 86 | Surface | 2 | 4 | 8 |
| | CBU-105 (WCMD) | 83 | Airburst | 1 | | 4 |
| | GBU-39 (Small Diameter Bomb) | 37 | Surface | 1 | | 4 |
| | AGM-114 (Hellfire) | 20 | Subsurface (10’ depth) | 5 | | 20 |
| C | AGM-176 (Griffin) | 13 | Surface | 5 | 2 | 10 |
| | 2.75 rockets or AGR-20A/B | 12 | Surface | 50 | | 100 |

| | | | | | | |
|--|------------------------|-----|---------|-----|--|-------|
| | AIM-9X | 7.9 | Surface | 1 | | 2 |
| | PGU-12 HEI 30 mm | 0.1 | Surface | 500 | | 1,000 |

Table 5 Criteria and Threshold Radii (in meters) for Maritime WSEP Mission-Day Categories.

| Mission-Day Category | Level A Harassment | Level B Harassment | |
|----------------------|--------------------|--------------------|------------|
| | PTS | TTS | Behavioral |
| | 185 dB SEL | 170 dB SEP | 165 dB SEL |
| A | 945 m | 4,666 m | 7,479 m |
| B | 248 m | 2,225 m | 3,959 m |
| C | 286 m | 1,128 m | 1,863 m |

Mortality and slight lung injury threshold ranges would extend from 47 to 216 m and 84 to 595 m, respectively, depending on the mission-day category. These ranges would fall within the Level A harassment ranges. Based on the planned activities on a given mission day, and the ranges presented in Table 5, Eglin AFB will ensure that the area equating to the Level A harassment threshold range is free of protected species. By clearing the Level A harassment threshold range of protected species, animals that may enter the area after the completed pre-mission surveys but prior to detonation would not reach the smaller slight lung injury or mortality zones as explained above. Because of human safety issues, Eglin AFB will require PSOs to leave the test area at least 30 minutes in advance of live weapon deployment and move to a position on the safety zone periphery, approximately 15 km (9.5 mi) from the detonation point. PSOs will continue to scan for marine mammals from the periphery, but effectiveness will be limited as the boat will remain at a designated station.

Video Monitoring: In addition to vessel-based monitoring, Eglin AFB will position three high-definition video cameras on the GRATV anchored on-site, as described earlier, to allow for real-time monitoring for the duration of the mission. The

camera configuration and actual number of cameras used will depend on specific mission requirements. In addition to monitoring the area for mission objective issues, the camera(s) will also monitor for the presence of protected species. A trained marine species observer from Eglin Natural Resources will be located in Eglin AFB's Central Control Facility, along with mission personnel, to view the video feed before and during test activities. The distance to which objects can be detected at the water surface by use of the cameras is considered generally comparable to that of the human eye.

The GRATV will be located about 183 m (600 ft) from the target. The mortality threshold ranges correspond to the modified Goertner model adjusted for the weight of an Atlantic spotted dolphin calf, and extend from 0 to 216 m (0 to 709 ft) from the target, depending on the ordnance, and the Level A ranges for both common bottlenose and Atlantic spotted dolphins extend up to 945 m (3,100 ft) from the target, depending on the ordnance and harassment criterion. Given these distances, observers can reasonably be expected to view a substantial portion of the mortality zone in front of the camera, although a small portion would be behind or to the side of the camera view. Based on previous monitoring reports for this activity, the pre-training surveys for delphinids and other protected species within the mission area are effective. PSOs can view some portion of the Level A harassment zone, although the view window will be less than that of the mortality zone (a large percentage will be behind or to the side of the camera view).

In addition to the two types of visual monitoring discussed earlier in this section, Eglin AFB personnel will be present within the mission area (on boats and on the GRATV) on each day of testing well in advance of weapon deployment, typically near sunrise. They will perform a variety of tasks including target preparation, equipment

checks, etc., and will opportunistically observe for marine mammals and indicators as feasible throughout test preparation. However, we consider these observations as supplemental to the mitigation and monitoring and will only occur as time and schedule permits. Eglin AFB personnel will relay information on these types of sightings to the Lead Biologist, as described in the following mitigation sections.

Pre-mission Monitoring

The purposes of pre-mission monitoring are to: (1) Evaluate the mission site for environmental suitability, and (2) verify that the ZOI is free of visually detectable marine mammals, as well as potential indicators of these species. On the morning of the mission, the Test Director and Safety Officer will confirm that there are no issues that will preclude mission execution and that weather is adequate to support mitigation measures.

Sunrise or Two Hours Prior to Mission

Eglin AFB range clearing vessels and protected species survey vessels will be on site at least two hours prior to the mission. The Lead Biologist on board one survey vessel will assess the overall suitability of the mission site based on environmental conditions (sea state) and presence/absence of marine mammal indicators. Eglin AFB personnel will communicate this information to Tower Control and personnel will relay the information to the Safety Officer in Central Control Facility.

One and One-Half Hours Prior to Mission

Vessel-based surveys will begin approximately one and one-half hours prior to live weapons deployment. Surface vessel PSOs will survey the ZOI and relay all marine species and indicator sightings, including the time of sighting, GPS location, and direction of travel, if known, to the Lead Biologist. The Lead Biologist will document all

sighting information on report forms that he/she will submit to Eglin Natural Resources after each mission. Surveys will continue for approximately one hour. During this time, Eglin AFB personnel in the mission area will also observe for marine species as feasible. If marine mammals or indicators are observed within the ZOI for that day's mission activities, the range will be declared "fouled," a term that signifies to mission personnel that conditions are such that a live ordnance drop cannot occur (*e.g.*, protected species or civilian vessels are in the mission area). If there are no observations of marine mammals or indicators of marine mammals, Eglin AFB will declare the range clear of protected species.

One-Half Hour Prior to Mission

At approximately 30 minutes prior to live weapon deployment, marine species PSOs will be instructed to leave the mission site and remain outside the safety zone, which on average will be 15.28 km (9.5 mi) from the detonation point. The actual size is determined by weapon net explosive weight and method of delivery. The survey team will continue to monitor for protected species while leaving the area. As the survey vessels leave the area, marine species monitoring of the immediate target areas will continue at the Central Control Facility through the live video feed received from the high definition cameras on the GRATV. Once the survey vessels have arrived at the perimeter of the safety zone (approximately 30 minutes after leaving the area per instructions from Eglin AFB, depending on actual travel time), Eglin AFB will declare the range as "green" and the mission will proceed, assuming all non-participating vessels have left the safety zone as well.

Execution of Mission

Immediately prior to live weapons drop, the Test Director and Safety Officer will communicate to confirm the results of marine mammal surveys and the appropriateness of proceeding with the mission. The Safety Officer will have final authority to proceed with, postpone, or cancel the mission. Eglin AFB will postpone the mission if:

- Any of the high-definition video cameras are not operational for any reason;
- Any marine mammal is visually detected within the ZOI. Postponement will continue until the animal(s) that caused the postponement is: (1) confirmed to be outside of the ZOI and heading away from the targets; or (2) not seen again for 30 minutes and presumed to be outside the ZOI due to the animal swimming out of the range;
- Any large schools of fish or large flocks of birds feeding at the surface are within the ZOI. Postponement will continue until Eglin AFB personnel confirm that these potential indicators are outside the ZOI:
 - Any technical or mechanical issues related to the aircraft or target boats;or
- Any non-participating vessel enters the human safety zone prior to weapon release.

In the event of a postponement, protected species monitoring will continue from the Central Control Facility through the live video feed. Observers will also continue to monitor from the vessels at the safety perimeter, with limited effectiveness due to the distance from the detonation site.

Post-Mission Monitoring

Post-mission monitoring determines the effectiveness of pre-mission mitigation by reporting sightings of any marine mammals. Post-detonation monitoring surveys will commence once the mission has ended or, if required, as soon as personnel declare the mission area safe. Vessels will move into the survey area from outside the safety zone and monitor for at least 30 minutes, concentrating on the area down-current of the test site. This area is easily identifiable because of the floating debris in the water from impacted targets. Up to 10 Eglin AFB support vessels will be cleaning debris and collecting damaged targets from this area thus spending several hours in the area once Eglin AFB completes the mission. PSOs will document and report any marine mammal species, number, location, and behavior of any animals observed to Eglin Natural Resources.

Mission Delays Due to Weather

Eglin AFB will delay or reschedule Maritime WSEP missions if the Beaufort sea state is greater than number 4 at the time of the testing activities. The Lead Biologist aboard one of the survey vessels will make the final determination of whether conditions are conducive for sighting protected species or not.

We have carefully evaluated Eglin AFB's mitigation measures in the context of ensuring that we prescribe the means of effecting the least practicable impact on the affected marine mammal species and stocks and their habitat. Our evaluation of potential measures included consideration of the following factors in relation to one another:

- The manner in which, and the degree to which, the successful implementation of the measure is expected to minimize adverse impacts;

- The proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and

- The practicability of the measure for applicant implementation.

Any mitigation measure(s) prescribed by NMFS should be able to accomplish, have a reasonable likelihood of accomplishing (based on current science), or contribute to the accomplishment of one or more of the general goals listed here:

1. Avoidance or minimization of injury or death of marine mammals wherever possible (goals 2, 3, and 4 may contribute to this goal);

2. A reduction in the numbers of marine mammals (total number or number at biologically important times or locations) exposed to stimuli expected to result in incidental take (this goal may contribute to 1, above, or to reducing takes by behavioral harassment only);

3. A reduction in the number of times (total number or number at biologically important times or locations) individuals will be exposed to stimuli that we expect to result in the take of marine mammals (this goal may contribute to 1, above, or to reducing harassment takes only);

4. A reduction in the intensity of exposures (either total number or number at biologically important times or locations) to training exercises that we expect to result in the take of marine mammals (this goal may contribute to 1, above, or to reducing the severity of harassment takes only);

5. Avoidance or minimization of adverse effects to marine mammal habitat, paying special attention to the food base, activities that block or limit passage to or from

biologically important areas, permanent destruction of habitat, or temporary destruction/disturbance of habitat during a biologically important time; and

6. For monitoring directly related to mitigation—an increase in the probability of detecting marine mammals, thus allowing for more effective implementation of the mitigation.

Based on our evaluation of Eglin AFB’s mitigation measures, as well as other measures that may be relevant to the specified activity, we have determined that the mitigation measures provide the means of effecting the least practicable impact on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance (while also considering personnel safety, practicality of implementation, and the impact of effectiveness of the military readiness activity).

Monitoring and Reporting

In order to issue an Authorization for an activity, section 101(a)(5)(D) of the MMPA states that we must set forth “requirements pertaining to the monitoring and reporting of such taking.” The MMPA implementing regulations at 50 CFR 216.104(a)(13) indicate that requests for an authorization must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and our expectations of the level of taking or impacts on populations of marine mammals present in the action area.

Eglin AFB submitted a marine mammal monitoring plan in their Authorization application. NMFS has not modified or supplemented the plan based on comments or new information received from the public during the public comment period. Any

monitoring requirement we prescribe should improve our understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in action area (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) Action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) Affected species (*e.g.*, life history, dive patterns); (3) Co-occurrence of marine mammal species with the action; or (4) Biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);
- Individual responses to acute stressors, or impacts of chronic exposures (behavioral or physiological);
- How anticipated responses to stressors impact either: (1) Long-term fitness and survival of an individual; or (2) Population, species, or stock;
- Effects on marine mammal habitat and resultant impacts to marine mammals; and
- Mitigation and monitoring effectiveness.

The Authorization for Maritime WSEP operations will require the following measures:

(1) Eglin AFB will track the use of the EGTTR for test firing missions and protected species observations through the use of mission reporting forms;

(2) Eglin AFB will submit a summary report of marine mammal observations and Maritime WSEP activities to the NMFS Southeast Regional Office (SERO) and the

Office of Protected Resources 90 days after expiration of the current Authorization. This report must include the following information: (i) date and time of each Maritime WSEP exercise; (ii) a complete description of the pre-exercise and post-exercise activities related to mitigating and monitoring the effects of Maritime WSEP exercises on marine mammal populations; and (iii) results of the Maritime WSEP exercise monitoring, including number of marine mammals (by species) that may have been harassed due to presence within the activity zone;

(3) Eglin AFB will monitor for marine mammals in the action area. If Eglin AFB personnel observe or detect any dead or injured marine mammals prior to testing, or detects any injured or dead marine mammals during live fire exercises, Eglin AFB must cease operations and submit a report to NMFS within 24 hours and

(4) Eglin AFB must immediately report any unauthorized takes of marine mammals (*i.e.*, serious injury or mortality) to NMFS and to the respective Southeast Region stranding network representative. Eglin AFB must cease operations and submit a report to NMFS within 24 hours.

Monitoring Results From Previously Authorized Activities

Eglin AFB complied with the mitigation and monitoring required under the previous Authorization for 2016 Maritime WSEP activities. Marine mammal monitoring occurred before, during, and after each Maritime WSEP mission. During the course of these activities, Eglin AFB's monitoring reports showed that they did not exceed the take levels authorized. In accordance with the 2015 Authorization, Eglin AFB submitted a monitoring report (available at: www.nmfs.noaa.gov/pr/permits/incidental/military.htm).

Under the 2016 Authorization, Eglin AFB anticipated conducting Maritime WSEP training missions over approximately two to three weeks, but actually conducted a total of five mission days (February 11 and March 14-17) associated with live ordnance delivery. Due to weather conditions and high sea states, no live missions were conducted February 8-10. Munitions that were actually dropped accounted for only approximately 41 percent of what was authorized in the 2016 Authorization.

During the February 2016 mission, Eglin AFB released one AGM-65 Maverick. The AGM-65 Maverick is a penetrating blast-fragment warhead that detonates at the surface and has 86 lb NEW. Eglin AFB conducted the required monitoring for marine mammals or indicators of marine mammals (*e.g.*, flocks of birds, baitfish schools, or large fish schools) before, during, and after each mission and observed a mixture of six bottlenose and spotted dolphins approximately seven miles outside of the largest ZOI, so no action was required. No protected species were observed within the ZOI during pre-mission surveys, mission activities, or during post-mission surveys. Therefore, the mission resulted in no acoustic impacts to marine mammals.

During the March 2016 live fire missions, Eglin AFB expended two AGM-65 Mavericks and twelve AGM-114 Hellfire missiles. The NEW of the munitions that detonated at the water surface or up to 3 m (10 ft) below the surface are 86 lb for the AGM-65 Maverick missiles and 13 lb for the AGM-114 Hellfire missiles. Eglin AFB conducted the required monitoring for marine mammals or indicators of marine mammals (*e.g.*, flocks of birds, baitfish schools, or large fish schools) before, during, and after each mission and observed two species of marine mammals: the common bottlenose dolphin and Atlantic spotted dolphin; one sea turtle; and two flocks of approximately 10-20 birds

on two separate occasions (upon investigation there was no evidence of protected species associated with either flock of birds). Eglin AFB confirmed that all protected species observed were outside of the ZOI at the conclusion of each pre-mission survey.

After each mission, Eglin AFB re-entered the ZOI to begin post-mission surveys for marine mammals and debris clean-up operations. Eglin AFB personnel did not observe reactions indicative of disturbance during the pre-mission surveys and did not observe any marine mammals during the post-mission surveys. In summary, Eglin AFB reports that no observable instances of take of marine mammals occurred incidental to the Maritime WSEP training activities under the 2016 Authorization.

Estimated Numbers of Marine Mammals Taken by Harassment

This section includes an estimate of the number of incidental “takes” proposed for authorization pursuant to this Authorization, which will inform both NMFS negligible impact determination. Harassment is the means of take expected to result from these activities, and the definition of harassment as it applies to a “military readiness activity” is: (i) any act that injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild (Level A Harassment); or (ii) any act that disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering, to a point where such behavioral patterns are abandoned or significantly altered (Level B Harassment).

NMFS’ analysis identified the physiological responses and behavioral responses that could potentially result from exposure to underwater explosive detonations. In this section, we will relate the potential effects to marine mammals from underwater

detonation of explosives to the MMPA regulatory definitions of Level A and Level B harassment. This section will also quantify the effects that might occur from the military readiness activities in W-151.

At NMFS' recommendation, Eglin AFB updated the thresholds used for onset of TTS (Level B Harassment) and onset of PTS (Level A Harassment) to be consistent with the thresholds outlined in NMFS' August 2016 "Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing" (NMFS 2016). NMFS believes that the thresholds outlined in the new Technical Guidance represent the best available science. The report is available on the internet at:

www.nmfs.noaa.gov/pr/acoustics/Acoustic%20Guidance%20Files/opr-55_acoustic_guidance_tech_memo.pdf.

Level B Harassment

Of the potential effects described earlier in this document, the following are the types of effects that fall into the Level B harassment category:

Behavioral Harassment

Behavioral disturbance that rises to the level described in the above definition, when resulting from exposures to non-impulsive or impulsive sound, is Level B harassment. Some of the lower level physiological stress responses discussed earlier will also likely co-occur with the predicted harassments, although these responses are more difficult to detect and fewer data exist relating these responses to specific received levels of sound. When predicting Level B harassment based on estimated behavioral responses, we are aware that those takes may have a stress-related physiological component.

Temporary Threshold Shift

As discussed previously, TTS can affect how an animal behaves in response to the environment, including conspecifics, predators, and prey. NMFS classifies TTS (when resulting from exposure to explosives and other impulsive sources) as Level B harassment, not Level A harassment (injury).

Level A Harassment

Of the potential effects that were described earlier, the following are the types of effects that fall into the Level A Harassment category:

Permanent Threshold Shift

PTS (resulting either from exposure to explosive detonations) is irreversible and NMFS considers this to be an injury.

Acoustic Thresholds

Table 6 outlines the acoustic thresholds for mid-frequency cetaceans used by NMFS for this Authorization when addressing noise impacts from explosives. Both common bottlenose dolphins and Atlantic spotted dolphins are considered mid-frequency cetaceans.

Table 6 Impulsive sound explosive thresholds used by Eglin AFB in its current acoustics impacts modeling.

| Group | Level B Harassment | | Level A Harassment | | | Mortality |
|-------------------------|--------------------|------------|--------------------|-------------------------|---|---|
| | Behavioral | TTS | PTS | Gastro-Intestinal Tract | Lung | |
| Mid-frequency Cetaceans | 165 dB SEL | 170 dB SEL | 185 dB SEL | 237 dB SPL | $39.1 M^{1/3} (1+[D_{Rm}/10.081])^{1/2}$ Pa-sec Where: M = mass of the animals in kg D _{Rm} = depth of the receiver (animal) in meters | $91.4 M^{1/3} (1+D_{Rm}/10.081)^{1/2}$ Pa-sec Where: M = mass of the animals in kg D _{Rm} = depth of the receiver (animal) in meters |

TTS = temporary threshold shift; PTS = permanent threshold shift; dB = decibels; SEL = sound exposure level; SPL = sound pressure level

Table 7 provides the estimated maximum range or radius, from the detonation point to the various thresholds described in Tables 4-6 (Note: for PTS and TTS dual metrics, the more conservative metric was used).

Table 7 Distances (m) to harassment thresholds from Eglin AFB’s explosive ordnance.

| Mission-Day Category | Mortality | Level A Harassment | | | | Level B Harassment | | |
|---------------------------------|---------------------------|---------------------------|-----------------|------------|-----------------|--------------------|------------|------------|
| | Modified Goertner Model 1 | Slight Lung Injury | GI Tract Injury | PTS | | TTS | | Behavioral |
| | | Modified Goertner Model 2 | 237 dB SPL | 185 dB SEL | 230 dB Peak SPL | 170 dB SEL | 224 dB SPL | 165 dB SEL |
| Bottlenose dolphin | | | | | | | | |
| A | 193 | 534 | 180 | 945 | 705 | 4,666 | 1,302 | 7,479 |
| B | 110 | 180 | 156 | 248 | 180 | 2,225 | 180 | 3,959 |
| C | 37 | 73 | 83 | 286 | 169 | 1,128 | 180 | 1,863 |
| Atlantic spotted dolphin | | | | | | | | |
| A | 216 | 595 | 180 | 945 | 705 | 4,666 | 1,302 | 7,479 |
| B | 136 | 180 | 156 | 248 | 180 | 2,225 | 180 | 3,959 |
| C | 47 | 84 | 83 | 286 | 169 | 1,128 | 180 | 1,863 |

dB = decibels; GI = gastrointestinal; SEP = sound exposure level; SPL = sound pressure level; PTS = permanent threshold shift; TTS = temporary threshold shift

The ranges presented above were used to calculate the ZOI for each criterion/threshold. To eliminate double counting of takes, impact areas from higher impact categories (*e.g.*, PTS) were subtracted from areas associated with lower impact categories (*e.g.*, TTS). The estimated number of marine mammals potentially exposed to the various impact thresholds was calculated with a two-dimensional approach using the product of the adjusted impact area, animal density, and annual number of events for each mission-day category. A take is considered to occur for sound exposure level (SEL) metrics if the received level is equal to or above the associated threshold within the appropriate frequency band of the sound received, adjusted for the appropriate weighting

function value of that frequency band. Similarly, a take would occur for impulse and peak SPL metrics if the received level is equal to or above the associated threshold.

Density Estimation

Density estimates for bottlenose dolphin and spotted dolphin were obtained from Duke University Marine Geospatial Ecology Lab Reports (Roberts *et al.*, 2016). Raster data from Duke University were imported into ArcGIS and overlaid onto the Maritime WSEP mission area. Density values were provided in 100 km² boxes. A 30-km by 30-km (900 km²) area centered on the Maritime WSEP mission location was selected, which consisted of nine 100-km² blocks. Density values from those blocks were averaged and converted to number of animals per square kilometer to obtain average annual density estimates for the common bottlenose and Atlantic spotted dolphins used in this analysis (see Table 8 for the resultant densities for these species).

Table 8 Marine mammal density estimates within Eglin AFB's EGTTR.

| Species | Density (animals/km ²) |
|--------------------------|------------------------------------|
| Bottlenose dolphin | 0.433 |
| Atlantic spotted dolphin | 0.148 |

Take Estimation

Table 9 indicates the modeled potential for lethality, injury, and non-injurious harassment (including behavioral harassment) to marine mammals in the absence of mitigation measures. Eglin AFB and NMFS estimate that approximately three marine mammals could be exposed to injurious Level A harassment noise levels (187 dB SEL) and approximately 326 animals could be exposed to Level B harassment (TTS and behavioral harassment) noise levels in the absence of mitigation measures.

Table 9 Modeled number of marine mammals potentially affected by Maritime WSEP operations.

| Species | Mortality | Level A Harassment (PTS and slight lung injury) | Level B Harassment (TTS) | Level B Harassment (Behavioral) |
|--------------------------|-----------|---|--------------------------|---------------------------------|
| Bottlenose dolphin | 0 | 2 | 87 | 157 |
| Atlantic spotted dolphin | 0 | 1 | 29 | 53 |
| TOTAL | 0 | 3 | 116 | 210 |

Based on the mortality exposure estimates calculated by the acoustic model and the anticipated effectiveness of mitigation measures, zero marine mammals are expected to be affected by pressure levels associated with mortality or serious injury. Zero marine mammals are expected to be exposed to pressure levels associated with gastrointestinal tract injury.

NMFS generally considers PTS to fall under the injury category (Level A Harassment). An animal would need to stay very close to the sound source for an extended amount of time to incur a serious degree of PTS, which could increase the probability of mortality. In this case, it would be highly unlikely for this scenario to unfold given the nature of any anticipated acoustic exposures that could potentially result from a mobile marine mammal that NMFS generally expects to exhibit avoidance behavior to loud sounds within the EGTTTR. NMFS concludes that possibility of minor PTS in the form of slight upward shift of hearing threshold at certain frequency bands by a few individuals of marine mammals is low, but not unlikely. The majority of the incidental ‘takes’ resulting from Eglin AFB’s WSEP activities will consist of Level B harassment, such as TTS and behavioral responses.

Negligible Impact Analysis Determinations

NMFS has defined “negligible impact” in 50 CFR 216.103 as “. . . an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival” (*i.e.*, population-level effects). An estimate of the number of Level B harassment takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be taken through behavioral harassment, we consider other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as the number and nature of estimated Level A harassment takes, the number of estimated mortalities, and effects on habitat. Consistent with the 1989 preamble for NMFS’ implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into these analyses via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, populations size, growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, the discussion below applies to each of the species for which we authorize incidental take for Eglin AFB’s activities, given that expected impacts are expected to be the same for both species.

In making a negligible impact determination, we consider:

- The number of anticipated injuries, serious injuries, or mortalities;
- The number, nature, and intensity, and duration of Level B harassment;

- The context in which the takes occur (*e.g.*, impacts to areas of significance, impacts to local populations, and cumulative impacts when taking into account successive/contemporaneous actions when added to baseline data);
- The status of stock or species of marine mammals (*i.e.*, depleted, not depleted, decreasing, increasing, stable, impact relative to the size of the population);
- Impacts on habitat affecting rates of recruitment/survival; and
- The effectiveness of monitoring and mitigation measures to reduce the number or severity of incidental take.

For reasons stated previously in this document and based on the following factors, Eglin AFB's specified activities are not likely to cause long-term behavioral disturbance, serious injury, or death.

The takes from Level B harassment will be due to potential behavioral disturbance and TTS. The takes from Level A harassment will be due to some, likely lesser, degree of PTS and slight lung injury. Activities will only occur over a timeframe of two to three weeks in beginning in February 2017, with one or two missions occurring per day. It is possible that some individuals may be taken more than once if those individuals are located in the exercise area on two different days when exercises are occurring.

Noise-induced threshold shifts (TS, which includes PTS) are defined as increases in the threshold of audibility (*i.e.*, the sound has to be louder to be detected) of the ear at a certain frequency or range of frequencies (ANSI 1995; Yost 2000). Several important factors relate to the magnitude of TS, such as level, duration, spectral content (frequency range), and temporal pattern (continuous, intermittent) of exposure (Yost 2000;

Henderson *et al.*, 2008). TS occurs in terms of frequency range (Hz or kHz), hearing threshold level (dB), or both frequency and hearing threshold level (CDC 2004).

In addition, there are different degrees of PTS ranging from slight/mild to moderate and from severe to profound (Clark 1981). Profound PTS or the complete loss of the ability to hear in one or both ears is commonly referred to as deafness (CDC 2004; WHO 2006). High-frequency PTS, presumably as a normal process of aging that occurs in humans and other terrestrial mammals, has also been demonstrated in captive cetaceans (Ridgway and Carder 1997; Yuen *et al.*, 2005; Finneran *et al.*, 2005; Houser and Finneran 2006; Finneran *et al.*, 2007; Schlundt *et al.*, 2011) and in stranded individuals (Mann *et al.*, 2010).

In terms of what is analyzed for the potential PTS (Level A harassment) in marine mammals as a result of Eglin AFB's Maritime WSEP operations, if it occurs, NMFS has determined that the levels will be slight/mild because most cetaceans would be expected to show relatively high levels of avoidance. Further, it is uncommon to sight marine mammals within the target area, especially for prolonged durations. Results from monitoring programs associated other Eglin AFB activities and for Eglin AFB's 2016 Maritime WSEP activities have shown the absence of marine mammals within the EGTTTR during and after maritime operations. Avoidance varies among individuals and depends on their activities or reasons for being in the area.

NMFS' predicted estimates for Level A harassment take are likely overestimates of the likely injury that will occur. NMFS expects that successful implementation of the required vessel-based and video-based mitigation measures will avoid Level A take in some instances. Also, NMFS expects that some individuals will avoid the source at levels

expected to result in injury. Nonetheless, although NMFS expects that Level A harassment is unlikely to occur at the numbers authorized, because it is difficult to quantify the degree to which the mitigation and avoidance will reduce the number of animals that might incur PTS, we are authorizing the modeled number of Level A takes (three), which does not take mitigation or avoidance into consideration. However, we anticipate that any PTS incurred because of mitigation and the likely short duration of exposures, will be in the form of only a small degree of PTS and not total deafness.

While animals may be impacted in the immediate vicinity of the activity, because of the short duration of the actual individual explosions themselves (versus continual sound source operation) combined with the short duration of the Maritime WSEP operations, NMFS has determined that there will not be a substantial impact on marine mammals or on the normal functioning of the nearshore or offshore Gulf of Mexico ecosystems. We do not expect that the activity will impact rates of recruitment or survival of marine mammals since, among other factors listed below, we do not expect mortality (which would remove individuals from the population) or serious injury to occur. In addition, the activity will not occur in areas (and/or times) of significance for the marine mammal populations potentially affected by the exercises (*e.g.*, feeding, resting, or reproductive areas), and the activities will only occur in a small part of their overall range, so the impact of any potential temporary displacement will be negligible and animals are expected to return to the area after the cessation of activities. Although the activity could result in Level A (PTS or slight lung injury, not gastrointestinal tract injury) and Level B (behavioral disturbance and TTS of lesser degree and shorter duration) harassment of marine mammals, the level of harassment is not anticipated to

impact rates of recruitment or survival of marine mammals because the number of exposed animals is expected to be low due to the short-term (*i.e.*, four hours a day or less) and site-specific nature of the activity. We do not anticipate that the effects will be detrimental to rates of recruitment and survival because we do not expect serious extended behavioral responses that would result in energetic effects at the level to impact fitness.

Moreover, the mitigation and monitoring measures for the Authorization (described earlier in this document) are expected to further minimize the potential for harassment. The protected species surveys will require Eglin AFB to search the area for marine mammals, and if any are found in the live fire area, then the exercise will be suspended until the animal(s) has left the area. Moreover, marine species observers located in the Eglin control tower will monitor the high-definition video feed from cameras located on the instrument barge anchored on-site for the presence of protected species. Furthermore, Maritime WSEP missions will be delayed or rescheduled if the sea state is greater than a 4 on the Beaufort Scale at the time of the test. In addition, Maritime WSEP missions will occur no earlier than two hours after sunrise and no later than two hours prior to sunset to ensure adequate daylight for pre- and post-mission monitoring.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the mitigation and monitoring measures, NMFS finds that Eglin AFB's Maritime WSEP operations will result in the incidental take of marine mammals, by Level A and Level B harassment, but that the taking from the Maritime WSEP

exercises will not have an adverse effect on annual rates of recruitment or survival, and therefore will have a negligible impact on the affected species or stocks.

Impact on Availability of Affected Species or Stock for Taking for Subsistence Uses

There are no relevant subsistence uses of marine mammals implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks will not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act (ESA)

Due to the location of the activity and past experience with similar authorizations for these activities, no ESA-listed marine mammal species are likely to be affected. Therefore, NMFS has determined that this Authorization will have no effect on ESA-listed species and has determined that a section 7 consultation under the ESA is not required for the issuance of an MMPA Authorization to Eglin AFB.

National Environmental Policy Act (NEPA)

In 2015, Eglin AFB provided NMFS with an EA titled Maritime Weapon Systems Evaluation Program (WSEP) Operational Testing in the Eglin Gulf Testing and Training Range (EGTTR), Florida. The EA analyzed the direct, indirect, and cumulative environmental impacts of the specified activities on marine mammals. NMFS, after review and evaluation of the Eglin AFB EA for consistency with the regulations published by the Council of Environmental Quality (CEQ) and NOAA Administrative Order 216-6, Environmental Review Procedures for Implementing the National Environmental Policy Act, adopted the EA. After considering the EA, the information in the 2014 Authorization application, and the **Federal Register** notice, as well as public

comments, NMFS' issuance of the 2015 Authorization and determination that the activity was not likely to result in significant impacts on the human environment, NMFS adopted Eglin AFB's EA under 40 CFR 1506.3; and issued a FONSI statement on issuance of an Authorization under section 101(a)(5) of the MMPA.

In accordance with NOAA Administrative Order 216-6 (Environmental Review Procedures for Implementing the National Environmental Policy Act, May 20, 1999), NMFS will again review the information contained in Eglin AFB's EA and determine whether the EA accurately and completely describes the preferred action alternative and the potential impacts on marine mammals. Based on this review and analysis, NMFS has reaffirmed 2015 FONSI statement on issuance of an annual authorization under section 101(a)(5) of the MMPA.

Authorization

As a result of these determinations, NMFS has issued an Incidental Harassment Authorization to Eglin AFB for conducting Maritime WSEP activities, for a period of one year from the date of issuance, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: February 9, 2017.

Donna S. Wieting,
Director, Office of Protected Resources,
National Marine Fisheries Service.