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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XD593

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 incidental harassment authorization.

SUMMARY: In accordance with the Marine Mammal Protection Act regulations, NMFS hereby gives notice that NMFS has issued an Incidental Harassment Authorization (Authorization) to the U.S. Air Force, Eglin Air Force Base (Eglin AFB), to take marine mammals, by harassment, incidental to a Maritime Weapon Systems Evaluation Program (Maritime WSEP) within the Eglin Gulf Test and Training Range in the Gulf of Mexico from February 5 through April 1, 2015. Eglin AFB's activities are military readiness activities per the Marine Mammal Protection Act (MMPA), as amended by the National Defense Authorization Act (NDAA) for Fiscal Year 2004.

DATES: Effective February 5, 2015, through April 1, 2015.

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 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, or by visiting the internet at: *http://www.nmfs.noaa.gov/pr/permits/incidental/military.htm*.

FOR FURTHER INFORMATION CONTACT: Jeannine Cody, Office of Protected Resources, NMFS, (301) 427-8401.

SUPPLEMENTARY INFORMATION:

Background

Section 101(a)(5)(D) of the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1361 *et seq*.) directs 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: (1) NMFS makes certain findings; and (2) the taking is limited to harassment.

Through the authority delegated by the Secretary, NMFS shall grant an Authorization for the incidental taking of small numbers of marine mammals if NMFS finds that the taking will have a negligible impact on the species or stock(s), and will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant).

The Authorization must also prescribe, where applicable, the permissible methods of taking by harassment pursuant to the activity; other means of effecting the least practicable adverse impact on the species or stock and its habitat, and on the availability of such species

or stock for taking for subsistence uses (where applicable); and requirements pertaining to the monitoring and reporting of such taking. 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."

The National Defense Authorization Act of 2004 (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: (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

NMFS received an application on August 5, 2014, from Eglin AFB for the taking, by harassment, of marine mammals, incidental to Maritime WESP operational testing in the spring of 2015 within the Eglin Gulf Test and Training Range (EGTTR). Eglin AFB submitted a revised application to NMFS on October 20, 2014, which provided updated take estimates for marine mammals based on updated acoustic thresholds for explosive sources. Eglin AFB submitted a second revised application to NMFS on December 1, 2014, which provided updated mitigation zones. NMFS determined the application adequate and complete on December 2, 2014 and published a notice of proposed Authorization on December 8, 2014

(79 FR 72631). The notice afforded the public a 30-day comment period on the proposed MMPA Authorization.

Eglin AFB proposes to conduct Maritime WESP missions within the EGTTR airspace over the Gulf of Mexico, specifically within Warning Area 151 (W-151), which is located approximately 17 miles offshore from Santa Rosa Island, specifically sub-area W-151A. The proposed testing activities would occur during the daytime over a three-week period between February and April, 2015. Eglin AFB proposes to use multiple types of live munitions (e.g., gunnery rounds, rockets, missiles, and bombs) against small boat targets in the EGTTR. These activities qualify as a military readiness activities under the MMPA and NDAA.

Eglin AFB's Maritime WSEP operations may potentially impact marine mammals at or near the water surface. Thus, the following specific aspect of the proposed WSEP activities have the potential to take marine mammals: increased underwater sound and pressure generated during the WSEP testing missions. 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 final; Environmental Assessment (EA); their Authorization application, including proposed mitigation and monitoring measures; and for reasons discussed later in this document, NMFS does not anticipate that Eglin's WSEP activities will result in any serious injury or mortality to marine mammals.

Eglin AFB has requested authorization to take two cetacean species by Level A and Level B harassment. The requested species include: Atlantic bottlenose dolphin (*Tursiops truncatus*) and Atlantic spotted dolphin (*Stenella frontalis*).

Description of the Specified Activity

Overview

Eglin AFB proposes to conduct live ordnance testing and training in the Gulf of Mexico as part of the Maritime WSEP operational testing. 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 arisen 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, the Air Force proposes to employ live munitions against boat targets in the EGTTR in order to continue development of techniques and procedures to train Air Force strike aircraft to counter small maneuvering surface vessels. Thus, the Department of Defense considers the Maritime WSEP activities as high priority for national security.

The proposed Maritime WSEP missions are similar to Eglin AFB's Maritime Strike Operations where NMFS issued an Incidental Harassment Authorization to Eglin AFB related to training exercises around small boat threats (78 FR 52135, August 22, 2013).

Dates and Duration

Eglin AFB proposes to schedule the Maritime WSEP missions over an approximate two- to three-week period that would begin February 6, 2015, and end by April 1, 2015. The proposed missions would occur on weekdays, during daytime hours only, with one or two missions occurring per day. Some minor deviation from Eglin AFB's requested dates is possible and the Authorization, would be effective from February 5, 2015 through April 1, 2015.

Specified Activity Area

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 would take place within the EGTTR, defined as the airspace over the Gulf of Mexico controlled by Eglin AFB, beginning at a point three nautical miles (nmi) (3.5 miles [mi]; 5.5 kilometers [km]) from shore. The EGTTR consists of subdivided blocks including Warning Area 151 (W-151) where the proposed activities would occur, specifically in sub-area W-151A.

NMFS provided detailed descriptions of the activity area in a previous notice for the proposed Authorization (79 FR 72631, December 8, 2014). The information has not changed between the proposed Authorization notice and this final notice announcing the issuance of the Authorization.

Detailed Description of Activities

The Maritime WSEP operational testing missions, classified as military readiness activities, 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 laser-guided Mk-84 bomb	F-16C fighter aircraft
GBU-24 laser-guided Mk-84 bomb	F-16C+ fighter aircraft
GBU-12 laser-guided Mk-82 bomb	F-15E fighter aircraft
GBU-54 Laser Joint Direct Attack Munition (LJDAM), laser-guided Mk-82 bomb	A-10 fighter aircraft
CBU-105 (WCMD)	B-1B bomber aircraft
AGM-65 Maverick air-to-surface missile	B-52H bomber aircraft
GBU-38 Small Diameter Bomb II (Laser SDB)	MQ-1/9 unmanned aerial vehicle

Munitions	Aircraft (not associated with specific munitions)
AGM-114 Hellfire air-to-surface missile	AC-130 gunship
AGM-175 Griffin air-to-surface missile	
2.75 Rockets	
PGU-13/B high explosive incendiary 30 mm rounds	
7.62 mm/.50 Cal	

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

Eglin AFB would deploy the munitions against static, towed, and remotely-controlled boat targets within W-151A. Eglin AFB would operate the remote-controlled boats from an instrumentation barge (Gulf Range Armament Test Vessel; GRATV) anchored on site within the test area. The GRATV would provide a platform for cameras and weapons-tracking equipment and Eglin AFB would position the target boats approximately 182.8 m (600 ft) from the GRATV, depending on the munition type.

Table 2 provides the number, height, or depth of detonation, explosive material, and net explosive weight (NEW) in pounds (lbs) of each munition proposed for use during the Maritime WSEP activities.

Table 2 - Maritime WSEP munitions proposed for use in the W-151A test area.

Type of Munition	Total # of Live Munitions	Detonation Type	Warhead – explosive material	Net Explosive Weight per Munition
GBU-10 or GBU-24	2	Surface	MK-84 - Tritonal	945 lbs
GBU-12 or GBU- 54 (LJDAM)	6	Surface	MK-82 - Tritonal	192 lbs
AGM-65 (Maverick)	6	Surface	WDU-24/B penetrating blast-fragmentation warhead	86 lbs

Type of Munition	Total # of Live Munitions	Detonation Type	Warhead – explosive material	Net Explosive Weight per Munition
CBU-105 (WCMD)	4	Airburst	10 BLU-108 sub-munitions each containing 4 projectiles parachute, rocket motor and altimeter	83 lbs
GBU-38 (Laser Small Diameter Bomb)	4	Surface	AFX-757 (Insensitive munition)	37 lbs
AGM-114 (Hellfire)	15	Subsurface (10 msec delay)	High Explosive Anti-Tank (HEAT) tandem anti-armor metal augmented charge	20 lbs
AGM-176 (Griffin)	10	Surface	Blast fragmentation	13 lbs
2.75 Rockets	100	Surface	Comp B-4 HEI	Up to 12 lbs
PGU-12 HEI 30 mm	1,000	Surface	30 x 173 mm caliber with aluminized RDX explosive. Designed for GAU-8/A Gun System	0.1 lbs
7.62 mm/.50 cal	5,000	Surface	N/A	N/A

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.

To ensure safety, prior to conducting WSEP activities, Eglin AFB would conduct a pre-test target area clearance procedure for people and protected species. Eglin AFB would deploy support vessels around a defined safety zone to ensure that commercial and recreational boats do not accidentally enter the area. Before delivering the ordnance, mission aircraft would make a dry run over the target area to ensure that it is clear of commercial and recreational boats (at least two aircraft would participate in each test). Due to the limited duration of the flyover and potentially high speed and altitude, pilots will not be able to survey for marine species. NMFS provided detailed descriptions of the WSEP training operations in the previous notice for the proposed Authorization (79 FR 72631, December 8, 2014). This information has not changed between the proposed Authorization notice and this final notice announcing the issuance of the Authorization.

Based on the results from an acoustic impacts analysis for live ordnance detonations, Eglin AFB would establish a separate disturbance zone around the target for the protection of

marine species. Eglin AFB will base the size of the zone on the distance to which energy- and pressure-related impacts will extend for the various type of ordnance listed in Table 2. Based on the acoustic modeling result, the largest possible distance from the target would be approximately 5 km (3.1 miles) from the target area, which corresponds to the Level A harassment threshold range. Support vessels would monitor for marine mammals around the target area. WSEP activities will not proceed until Eglin AFB personnel determine that the target area is clear of unauthorized personnel and protected species.

In addition to vessel-based monitoring, Eglin AFB will position three video cameras on an instrumentation barge anchored on-site. The cameras, typically used for situational awareness of the target area and surrounding area, would contribute to monitoring the test site for the presence of marine species. A marine species observer would be present in the Eglin control tower, along with mission personnel, to monitor the video feed before and during test activities.

After each test, Eglin AFB would inspect floating targets to identify and render safe any unexploded ordnance (UXO), including fuzes or intact munitions. The Eglin AFB Explosive Disposal Team will be on hand for each test. If Eglin AFB personnel cannot remove the UXO, personnel will detonate the UXO in place, which could result in the sinking of the target vessel. Once Eglin AFB deems the area clear for re-entry, test personnel will retrieve target debris. Marine species observers would survey the area for any evidence of adverse impacts to protected species.

Comments and Responses

A notice of receipt of Eglin AFB's application and NMFS' proposal to issue an Authorization to the USAF, Eglin AFB, published in the **Federal Register** on December 8,

2014 (79 FR 72631). During the 30-day public comment period, NMFS received comments from the Marine Mammal Commission (Commission) only. Following are the comments from the Commission and NMFS' responses.

Comment 1: The Commission notes that the Air Force has applied for MMPA authorizations to take marine mammals on an activity-by-activity basis (e.g., naval explosive ordnance disposal school, precision strike weapon, air-to-surface gunnery and maritime strike operation) rather than a programmatic basis. The Commission believes that the agencies should evaluate 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.

Response: Both Eglin AFB and NMFS concur with the Commission's recommendation to streamline the rulemaking process for future activities conducted within the EGGTR. Currently, Eglin AFB personnel are planning to develop a Programmatic Environmental Assessment as well as a Request for a Letter of Authorization for all testing and training activities that will occur in the Eglin Gulf Test and Training Range over the next five years. These efforts would facilitate a more comprehensive review of actions occurring within the EGGTR that have the potential to take marine mammals incidental to military readiness activities for future MMPA rulemaking requests by Eglin AFB.

Comment 2: The Commission states that Eglin AFB estimated the zones of exposure (i.e., zones of influence (ZOI) in two ways: (1) calculating zones based on a single detonation event of each munition type within a three-week period; and (2) calculating zones based on a representative ordnance expenditure scenario of the maximum number of munitions that

Eglin AFB could expend within a single day. The Commission further noted that the latter method was an appropriate method for determining distances to the sound exposure level (SEL) thresholds which are the zones of exposure for implementing mitigation.

However, the Commission states that Eglin AFB overestimated marine mammal take because they based estimates on the former method (i.e., calculating zones based on a single detonation event of each munition type within a three-week period) which multiplied the number of animals estimated to be taken by a single detonation of each munition type by the total number of munitions that would be detonated, irrespective of when those detonations would occur. The Commission states that this method does not consider the accumulation of energy in a 24-hour period which would more accurately correspond to zones of exposure for the representative scenario and serve as more a realistic estimate of the numbers of animals that Eglin AFB could potentially take during the WSEP activities.

Response: With respect to the first point, Eglin AFB developed an example test day scenario (assumed to be worst case) to calculate impact ranges for all energy metrics in response to the Commission and NMFS' concerns. This is the basis for the mitigation monitoring plan which NMFS presented in Table 7 of the notice for the proposed Authorization (79 FR 72631, December 8, 2014). Based on the ranges presented in Table 7 and factoring in operational limitations associated with survey-based vessel support for the missions, Eglin AFB estimates that during pre-mission surveys, the proposed monitoring area would be approximately 5 km (3.1 miles) from the target area, which corresponds to the Level A harassment threshold range. Eglin AFB proposes to survey the same-sized area for each mission day, regardless of the planned munition expenditures. 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.

With respect to the second point, Eglin AFB's modeling approach for take estimates treated each munition detonation as a separate event impacting a new set of animals which results in a worst case scenario of potential take and is a precautionary overestimate of potential harassment. Briefly, Eglin AFB's model treats each ordnance detonation as a single event and sums the estimated potential impacts from each detonation event to provide a total estimate of take for the entire WSEP testing activities event conducted over a period of 3 weeks. This approach assumes for a continuous population refresh of animals (i.e., a new population of animals is impacted) and sums all exposures for each species for all munitions expended during the three-week period. NMFS and Eglin AFB acknowledge that this approach contributes to the overestimation of take estimates. This approach has multiple conservative assumptions built into the calculations that contribute the overestimation of take estimates. One assumption included a continuous population refresh approach that treated each munition detonation as a separate event impacting a new set of animals. In actuality, multiple detonations will occur in each mission day, and while Eglin AFB plans to release certain munitions on specific days, past experience has shown that Eglin AFB may not be able to execute the missions according to a set plan. Eglin AFB requires flexibility to make last minute changes to the schedule in order to complete all test requirements in the allotted 3-week timeframe. That may include Eglin AFB releasing additional munitions on one day to make up for days when they could not release planned munitions.

Comment 3: In estimating take, the Commission commented Eglin AFB's model approach was an additive process for estimating each zone of exposure, and thus the

associated takes. Effectively, The Commission states that Eglin AFB overestimated the number of take but is unsure to what degree. Further, the Commission recommends that Eglin AFB and NMFS should treat fractions of estimated take appropriately, that is generally, round down if less than 0.50 and round up if greater than or equal to 0.50 before summing the estimates for each species.

Response: The Commission is correct in its understanding of how Eglin AFB estimated take based on an additive process. Briefly, Eglin AFB estimated the associated takes by adding the zones of exposure together which leads to a double counting of take. For example, potential take associated with the Level B harassment (behavior) includes estimates for takes by mortality, Level A harassment, and Level B harassment (TTS). The potential take for Level B harassment (TTS) includes takes for Level A harassment and mortality and the potential take for Level A harassment (PTS) includes take for Level A harassment (slight lung injury and GI tract injury) and mortality.

NMFS agrees with the Commission's recommendations and has recalculated the takes by eliminating the double counting of the estimated take for each species and appropriately rounding take estimates before summing the total take. Table 8 in this notice provides the revised number of marine mammals, by species, that Eglin AFB could potentially take incidental to the conduct of Maritime WSEP operations. The re-calculation results in zero take by mortality, zero take by slight lung injury, and zero take by gastrointestinal tract injury. Compared to the take levels that NMFS previously proposed (79 FR 72631, December 8, 2014), the re-estimation has reduced take estimates for Level A harassment (PTS) by approximately five percent to a total of 38 marine mammals; reduced the take estimates for Level B harassment (TTS) by approximately eight percent to a total of 445

marine mammals; and reduced take estimates for Level B harassment (behavioral) by approximately 51 percent to a total of 497 marine mammals. Based on the remodeling of the number of marine mammals potentially affected by maritime strike missions, NMFS would authorize take for Level A and Level B harassment presented in Table 8 of this notice.

Comment 4: The Commission states that Eglin AFB proposes to use live-feed video cameras to supplement its effectiveness in detecting marine mammals when implementing mitigation measures. However, the Commission 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 Commission states that it does not believe that Eglin AFB cannot deem the Level A harassment zone clear of marine mammals when using only three video cameras for monitoring. Thus, the Commission recommends that NMFS require Eglin AFB 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.

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.

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 EGTTR. In addition, Eglin AFB submitted annual reports to NMFS at the conclusion of the Maritime Strike Operations

testing activities conducted in 2013 and 2014. These missions are similar in nature to the proposed 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 proposed for Maritime WSEP are similar, except they will include larger survey areas based on updated acoustic analysis and previous discussions with the Commission and NMFS.

Eglin AFB will continue to research the feasibility of supplementing existing monitoring efforts with passive acoustic monitoring devices for future missions. Eglin AFB would be willing to discuss alternatives with the Commission and NMFS during the development of the upcoming environmental planning efforts discussed earlier in Comment 1.

Comment 5: The MMC expressed their belief that all permanent hearing loss should be considered a serious injury and recommends that NMFS propose to issue regulations under section 101(a)(5)(A) of the MMPA and a letter of authorization, rather than an incidental harassment authorization, for any proposed activities expected to cause a permanent threshold shift (PTS).

Response: NMFS considers PTS to fall under the injury category (Level A Harassment). However, 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 EGTTR.

NMFS based PTS thresholds on the onset of PTS, meaning an exposure that causes a 40 dB threshold shift (Ward *et al*., 1958, 1959; Ward, 1960; Kryter *et al*., 1996; Miller, 1974; Ahroon *et al*., 1996; Henderson *et al*., 2008). An animal would exceed the PTS threshold by either being exposed to the sound at a lower level for a long amount of time (not likely with explosives) or receive a shorter exposure at a much higher level (meaning being closer to the source) in order to incur a significantly more serious degree of PTS, beyond onset, would require exposures of even longer durations or higher levels. Taking into consideration marine mammals would likely avoid an area with high levels of training activities; the intermittent and short duration of the proposed activity (4 hours per day within the span of three weeks); combined with the density of marine mammals, it is unlikely that a marine mammal would randomly enter the area where more severe impacts would be a risk. Additionally, some degree of presbycusis (*i.e*., age-related high-frequency hearing loss) is fairly common in the wild especially with older animals (*i.e.*, animals are adapted to continue to perform normal life functions with some level of PTS). NMFS is unaware of data suggesting whether, or at what a reduction in hearing ability might potentially lead to direct or indirect mortality.

NMFS has recalculated the takes proposed in the notice for the proposed Authorization (79 FR 72631, December 8, 2014) and the results of the recalculation show zero takes for mortality, zero takes by slight lung injury, and zero takes by gastrointestinal tract injury. Further, the re-estimation has reduced the number of take by Level A harassment (from PTS) and by Level B harassment (TTS and behavioral). Based on this re-estimation, 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), rather, an Incidental Harassment Authorization may be issued.

Description of Marine Mammals in the Area of the Specified Activity

Table 3 provides the following: marine mammal species with possible or confirmed occurrence in the proposed activity area (Garrison *et al*., 2008; Navy, 2007; Davis *et al*., 2000); information on those species' status under the MMPA and the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq*.); and abundance and likelihood of occurrence within the proposed activity area.

Table 3 – Marine mammals most likely to be harassed incidental to Eglin AFB's activities in W-151A.

Species	Stock Name	Regulatory Status[1, 2]	Estimated Abundance	Relative Occurrence in W-151
Common bottlenose dolphin	Choctawatchee Bay	MMPA - S ESA – NL	232 CV = 0.06[3]	Uncommon
	Pensacola/East Bay	MMPA - S ESA – NL	33 CV = 0.88[4]	Uncommon
	St. Andrew Bay	MMPA - S ESA – NL	124 CV = 0.18[4]	Uncommon
	Gulf of Mexico Northern Coastal	MMPA - S ESA – NL	2,473 CV = 0.25[5]	Common
	Northern Gulf of Mexico Continental Shelf	MMPA - NC ESA – NL	17,777 CV = 0.32[6]	Uncommon
	Northern Gulf of Mexico Oceanic	MMPA - NC ESA – NL	5,806 CV = 0.39[7]	Uncommon
Atlantic spotted dolphin	Northern Gulf of Mexico	MMPA - NC ESA – NL	37,611[8] 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] Conn *et al*. 201; 2012 NMFS Stock Assessment Report (Waring *et al*., 2013)
[4] Blaylock and Hoggard, 1994; 2012 NMFS Stock Assessment Report (Waring *et al*., 2013)
[5] 2007 Aerial surveys reported in the 2013 NMFS Stock Assessment Report (Waring *et al*., 2014)
[6] 2000-2001 Aerial surveys reported in the 2013 NMFS Stock Assessment Report (Waring *et al*., 2014)
[7] 2009 Line transect surveys reported in the 2013 NMFS Stock Assessment Report (Waring *et al*., 2014)
[8] 2000-2001 Aerial surveys reported in the 2013 NMFS Stock Assessment Report (Waring *et al*., 2014)

An additional 19 cetacean species have confirmed occurrence 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 the 19 species to be rare or extralimital in 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 atenuarta*), Blainville's beaked whale (*Mesoplodon densirostris*), Cuvier's beaked whale (*Ziphius cavirostris*), Gervais' beaked whale (*M. europaeus*), Clymene dolphin (*S. clymene*), spinner dolphin (*S. longirostris*), striped dolphin (*S. coeruleoalba*), 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 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 NMFS has not proposed the issuance of take authorizations for them. Thus, NMFS does not consider these species further in this notice.

NMFS has reviewed Eglin AFB's detailed species descriptions, including life history information, distribution, regional distribution, diving behavior, and acoustics and hearing, for accuracy and completeness. NMFS refers the reader to Sections 3 and 4 of the Authorization application and to Chapter 3 in Eglin AFB's EA rather than reprinting the information here.

Other Marine Mammals in the Proposed 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, NMFS would not include an authorization to harass manatees and does not discuss this species further in this notice.

Potential Effects of the Specified Activity on Marine Mammals

This section of the notice for the proposed Authorization (79 FR 72631, December 8, 2014) included a summary and discussion of the ways that the types of stressors associated with the specified activity (e.g., ordnance detonation and vessel movement) have been observed to impact marine mammals. The "Estimated Take by Incidental Harassment" section later in this document will include a quantitative analysis of the number of individuals that NMFS expects Eglin AFB to incidentally take during their activities. The "Negligible Impact Analysis" section will include the analysis of how this specific activity will impact marine mammals and will consider the content of this section, the "Estimated Take by Incidental Harassment" section, the "Mitigation" section, and the "Anticipated Effects on Marine Mammal Habitat" section to draw conclusions regarding the likely impacts of this activity on the reproductive success or survivorship of individuals and from that on the affected marine mammal populations or stocks.

In summary, the Maritime WSEP training exercises proposed for taking of marine mammals under an 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 by Level B harassment (TTS and behavioral). In addition, NMFS also considered the potential for harassment from vessel operations.

The potential effects of impulsive sound sources (underwater detonations) from the proposed 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 for the proposed Authorization (79 FR 72631, December 8, 2014). The information presented in that notice has not changed.

Anticipated Effects on Habitat

Detonations of live ordnance would 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 would 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. Eglin AFB analyzed the potential effects of each in their EA and determined them to be insignificant. NMFS provided a summary of the analyses in the notice for the proposed Authorization (79 FR 72631, December 8, 2014). The information presented in that notice has not changed.

Mitigation

In order to issue an incidental take 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 have worked to identify 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." NMFS refers the reader to Section 11 of Eglin AFB's application for more detailed information on the mitigation measures which include the following:

Vessel-Based Monitoring: Eglin AFB would station a large number of range clearing boats (approximately 20 to 25) 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 marine species observers would 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 largest applicable zone of influence (ZOI), which is the Level A harassment range. Animals that may enter the area after the pre-mission surveys have been completed and prior to detonation would not reach the predicted smaller slight lung injury, gastrointestinal tract, and/or mortality zones

Because of human safety issues, observers 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 9.5 miles from the detonation point. Observers will continue to scan for marine mammals from the periphery.

Video Monitoring: In addition to vessel-based monitoring, three high-definition video cameras would be positioned 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 would depend on specific mission requirements. In addition to monitoring the area for mission objective issues, the camera(s) would also monitor for the presence of protected species. A trained marine species observer from Eglin Natural Resources would 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 larger mortality threshold ranges correspond to the modified Goertner model adjusted for the weight of an Atlantic spotted dolphin calf, and extend from 0 to 237 m (0 to 778 ft) from the target, depending on the ordnance, and the Level A ranges for both common bottlenose and Atlantic

spotted dolphins extend from 7 to 965 m (23 to 3,166 ft) from the target, depending on the ordnance and harassment criterion. Given these distances, observers could 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. Some portion of the Level A harassment zone could also be viewed, although it would be less than that of the mortality zone (a large percentage would be behind or to the side of the camera view).

If the high-definition video cameras are not operational for any reason, Eglin AFB will not conduct Maritime WSEP missions.

In addition to the two types of visual monitoring discussed earlier in this section, Eglin AFB personnel are present within the mission area (on boats and 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, such observations are considered incidental and would only occur as time and schedule permits. Any sightings would be relayed 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 would 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. This information will be communicated to Tower Control and relayed 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 weapon deployment. Surface vessel observers 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 to be submitted to Eglin Natural Resources after each mission. Surveys would 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, 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 no marine mammals or indicators are observed, Eglin AFB would declare the range clear of protected species.

One-Half Hour Prior to Mission: At approximately 30 minutes to one hour prior to live weapon deployment, marine species observers will be instructed to leave the mission site and remain outside the safety zone, which on average will be 9.5 miles from the detonation point. The actual size is determined by weapon NEW 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 CCF 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 being instructed to leave, depending on actual travel time) the range will be declared "green" and mission will be allowed to proceed, assuming all non-participating vessels have left the safety zone as well.

Execution of Mission: Immediately prior to live weapon 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. The mission would be postponed if:

- Any of the high-definition video cameras are not operational for any reason.
- Any marine mammal is visually detected within the ZOI. Postponement would continue until the animal(s) that caused the postponement is: (1) confirmed to be outside of the ZOI on a 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
- Large schools of fish or large flocks of birds feeding at the surface are observed within the ZOI. Postponement would continue until these potential indicators are confirmed to be outside the ZOI.
- Any technical or mechanical issues related to the aircraft or target boats.
- Non-participating vessels enter the human safety zone prior to weapon release.

In the event of a postponement, protected species monitoring would continue from the Central Control Facility through the live video feed.

Post-mission Monitoring

Post-mission monitoring is designed to determine the effectiveness of pre-mission mitigation by reporting sightings of any dead or injured 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 many hours in the area once the mission is completed. All vessels will be instructed to report any dead or injured marine mammals to the Lead Biologist. The protected species survey vessels will document any marine mammals that were killed or injured as a result of the mission and, if practicable, recover and examine any dead animals. The species, number, location, and behavior of any animals observed will be documented and reported to Eglin Natural Resources.

Mission Delays Due to Weather

Eglin AFB would delay or reschedule Maritime WSEP missions if the Beaufort sea state is greater than number 4 at the time of the test. 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.

NMFS has carefully evaluated Eglin AFB's proposed 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. NMFS' 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 to marine mammals;
- 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 time or location) exposed to training exercises that we expect to result in the take of marine mammals (this goal may contribute to 1, above, or to reducing harassment takes only).

3. A reduction in the number of times (total number or number at biologically important time or location) individuals would be exposed to training exercises 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 time or location) to training exercises that we expect to result in the take of marine mammals (this goal may contribute to a, 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.

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 the evaluation of Eglin AFB's proposed measures, as well as other measures considered, NMFS has determined that the proposed 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.

Monitoring measures prescribed by us should accomplish one or more of the following general goals:

1. An increase in the probability of detecting marine mammals, both within the mitigation zone (thus allowing for more effective implementation of the mitigation) and during other times and locations, in order to generate more data to contribute to the analyses mentioned later;

2. An increase in our understanding of how many marine mammals would be affected by seismic airguns and other active acoustic sources and the likelihood of associating those exposures with specific adverse effects, such as behavioral harassment, temporary or permanent threshold shift;

3. An increase in our understanding of how marine mammals respond to stimuli that we expect to result in take and how those anticipated adverse effects on individuals (in different ways and to varying degrees) may impact the population, species, or stock (specifically through effects on annual rates of recruitment or survival) through any of the following methods:

a. Behavioral observations in the presence of stimuli compared to observations in the absence of stimuli (i.e., we need to be able to accurately predict received level, distance from source, and other pertinent information);

b. Physiological measurements in the presence of stimuli compared to observations in the absence of stimuli (i.e., we need to be able to accurately predict received level, distance from source, and other pertinent information);

c. Distribution and/or abundance comparisons in times or areas with concentrated stimuli versus times or areas without stimuli;

4. An increased knowledge of the affected species; and

5. An increase in our understanding of the effectiveness of certain mitigation and monitoring measures.

The Authorization will require the following measures in the Maritime WSEP Authorization. They are:

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

(2) A summary annual report of marine mammal observations and Maritime WSEP activities will be submitted to the NMFS Southeast Regional Office (SERO) and the Office of Protected Resources either at the time of a request for renewal of an Authorization or 90 days after expiration of the current Authorization if a new Authorization is not requested. This annual 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 numbers by species/stock of any marine mammals noted injured or killed as a result of the missions and number of marine mammals (by species if possible) that may have been harassed due to presence within the activity zone.

(3) If any dead or injured marine mammals are observed or detected prior to testing, or injured or killed during live fire, a report must be made to NMFS by the following business day.

(4) Any unauthorized takes of marine mammals (i.e., injury or mortality) must be immediately reported to NMFS and to the respective stranding network representative.

Estimated Numbers of Marine Mammals Taken by 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 proposed military readiness activities in W-151.

Definition of Harassment

The NDAA amended the definition of harassment as it applies to a "military readiness activity" to read as follows: (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].

At NMFS' recommendation, Eglin AFB updated the thresholds used for onset of temporary threshold shift (TTS; Level B Harassment) and onset of permanent threshold shift (PTS; Level A Harassment) to be consistent with the thresholds outlined in the Navy's report titled, "Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis Technical Report," which the Navy coordinated with NMFS. NMFS believes that the thresholds outlined in the Navy's report represent the best available science. The report is available on the internet at: *http://aftteis.com/Portals/4/aftteis/Supporting%20Technical%20Documents/Criteria_and_Thresholds_for_US_Navy_Acoustic_and_Explosive_Effects_Analysis-Apr_2012.pdf*.

Table 4 in this document outlines the revised acoustic thresholds used by NMFS for this Authorization when addressing noise impacts from explosives.

Table 4 –Impulsive sound explosive thresholds used by Eglin AFB in its current acoustics impacts modeling.

Group	Behavior		Slight Injury			Mortality
	Behavioral	TTS	PTS	Gastro-Intestinal Tract	Lung	
Mid-frequency Cetaceans	167 dB SEL	172 dB SEL or 23 psi	187 dB SEL or 45.86 psi	104 psi	$39.1\ M^{1/3}\ (1+[D_{Rm}/10.081])^{1/2}$ 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

Eglin AFB conservatively modeled that all explosives would detonate at a 1.2 m (3.9 ft) water depth despite the training goal of hitting the target, resulting in an above water or on land explosion. For sources detonated at shallow depths, it is frequently the case that the explosion may breech the surface with some of the acoustic energy escaping the water column. Table 5 provides the estimated maximum range or radius, from the detonation point to the various thresholds described in Table 4. Eglin AFB uses the range information shown in Table 5 (Table 6.3 in Eglin's application) to calculate the total area of the ZOI and combine the calculated ZOIs with density estimates (adjusted for depth distribution) and the number of live munitions to provide an estimate of the number of marine mammals potentially exposed to the various impact thresholds.

Table 5 – Distances (m) to harassment thresholds from Eglin AFB's explosive ordnance.

Munition	NEW (lbs)	Total #	Detonation Scenario	Mortality	Level A Harassment				Level B Harassment		
				Modified Goertner Model 1	Slight Lung Injury	GI Track Injury	PTS		TTS		Behavioral
					Modified Goertner Model 2	237 dB SPL	187 dB SEL	230 dB Peak SPL	172 dB SEL	224 dB Peak SPL	167 dB SEL
Bottlenose Dolphin											
GBU-10 or GBU-24	945	2	Surface	199	350	340	965	698	1,582	1,280	2,549
GBU-12 or GBU-54	192	6	Surface	111	233	198	726	409	2,027	752	2,023
AGM-65 (Maverick)	86	6	Surface	82	177	150	610	312	1,414	575	1,874
GBU-39 (LSDB)	37	4	Surface	59	128	112	479	234	1,212	433	1,543
AGM-114 (Hellfire)	20	15	(10 ft depth)	110	229	95	378	193	2,070	354	3,096
AGM-175 (Griffin)	13	10	Surface	38	83	79	307	165	1,020	305	1,343
2.75 Rockets	12	100	Surface	36	81	77	281	161	1,010	296	1,339
PGU-13 HEI 30 mm	0.1	1,000	Surface	0	7	16	24	33	247	60	492
Atlantic Spotted Dolphin and Unidentified Dolphin[1]											
GBU-10 or GBU-24	945	2	Surface	237	400	340	965	698	1,582	1,280	2,549
GBU-12 or GBU-54	192	6	Surface	138	274	198	726	409	2,027	752	2,023
AGM-65 (Maverick)	86	6	Surface	101	216	150	610	312	1,414	575	1,874
GBU-39 (LSDB)	37	4	Surface	73	158	112	479	234	1,212	433	1,543
AGM-114 (Hellfire)	20	15	(10 ft depth)	135	277	95	378	193	2,070	354	3,096
AGM-175 (Griffin)	13	10	Surface	47	104	79	307	165	1,020	305	1,343
2.75 Rockets	12	100	Surface	45	100	77	281	161	1,010	296	1,339
PGU-13 HEI 30 mm	0.1	1,000	Surface	0	9	16	24	33	247	60	492

AGM = air-to-ground missile; cal = caliber; CBU = Cluster Bomb Unit; ft = feet; GBU = Guided Bomb Unit; HEI = high explosive incendiary; lbs = pounds; mm = millimeters; N/A = not applicable; NEW = net explosive weight; PGU = Projectile Gun Unit; SDB = small diameter bomb; PTS = permanent threshold shift; TTS = temporary threshold shift; WCMD = wind corrected munition dispenser

[1]Unidentified dolphin can be either bottlenose or Atlantic spotted dolphin. Eglin AFB based the mortality and slight lung injury criteria on the mass of a newborn Atlantic spotted dolphin.

Determination of the Mitigation and Monitoring Zones

The ranges presented in Table 5 represent a radius of impact for a given threshold from a single detonation of each munition/detonation scenario. They do not consider accumulated energies from multiple detonation occurring within the same 24-hour time period. For calculating take estimates, the single detonation approach is more conservative because it multiplies the exposures from a single detonation by the number of munitions and assumes a fresh population of marine mammals is being impacted each time. Eglin AFB used this approach because of the uncertainty surrounding which munitions they would release on a given day. Multiple variables, such as weather, aircraft mechanical issues, munition malfunctions, and target availability may prevent planned munitions releases. By treating each detonation as a separate event and summing those impacts accordingly, Eglin AFB would have maximum operational flexibility to conduct the missions without limitations on either the total number of munitions allowed to be dropped in a day, or on the specific combinations of munitions that could be released.

While this methodology overestimates the overall potential takes presented in the next section, the ranges do not accurately represent the actual area acoustically impacted for a given threshold from multiple detonations in a given mission day. The total acoustic impact area for two identical bombs detonating within a given timeframe is less than twice the impact area of a single bomb's detonation. This has to do with the accumulated energy from multiple detonations occurring sequentially. When one weapon is detonated, a certain level of transmission loss is required to be calculated to achieve each threshold level which can then be equated to a range. By releasing a second munition in the same event (same place and close in time), even though the total energy is increased, the incremental impact area from

the second detonation is slightly less than that of the first; however the impact range for the two munitions is larger than the impact range for one. Since each additional detonation adds energy to the sound exposure level (SEL) metric, all the energy from all munitions released in a day is accumulated. By factoring in the transmission loss of the first detonation added with the incremental increases from the second, third, fourth, etc., the range of the cumulative energy that is below each threshold level can be determined. Unlike the energy component, peak pressure is not an additive factor, therefore Eglin AFB did not consider thresholds expressed as either acoustic impulse or peak SPL metrics (i.e., mortality, slight lung injury, gastrointestinal tract injury) in their calculations.

Eglin AFB has created a sample day reflecting the maximum number of munitions that could be released and resulting in the greatest impact in a single mission day. However, this scenario is only a representation and may not accurately reflect how Eglin AFB may conduct actual operations. However, NMFS and Eglin AFB are considering this conservative assumption to calculate the impact range for mitigation monitoring measures. Thus, Eglin AFB has modeled, combined, and compared the sum of all energies from these detonations against thresholds with energy metric criteria to generate the accumulated energy ranges for this scenario. Table 6 displays these ranges which form the basis of the mitigation monitoring thresholds.

Table 6 – Distances (m) to harassment thresholds for an example mission day.

Munition	NEW (lbs)	Total # per Day	Detonation Scenario	Level A Harassment	Level B Harassment	
				PTS	TTS	Behavioral
				187 dB SEL	172 dB SEL	167 dB SEL
GBU-10 or GBU-24	945	1	Surface	5,120	12,384	15,960
GBU-12 or GBU-54	192	1	Surface			
AGM-65 (Maverick)	86	1	Surface			
GBU-39 (LSDB)	37	1	Surface			
AGM-114 (Hellfire)	20	3	(10 ft depth)			
AGM-175 (Griffin)	13	2	Surface			
2.75 Rockets	12	12	Surface			
PGU-13 HEI 30 mm	0.1	125	Surface			

AGM = air-to-ground missile; cal = caliber; CBU = Cluster Bomb Unit; ft = feet; GBU = Guided Bomb Unit; HEI = high explosive incendiary; lbs = pounds; mm = millimeters; N/A = not applicable; NEW = net explosive weight; PGU = Projectile Gun Unit; SDB = small diameter bomb; PTS = permanent threshold shift; TTS = temporary threshold shift; WCMD = wind corrected munition dispenser

Based on the ranges presented in Table 6 and factoring operational limitations associated with survey-based vessel support for the missions, Eglin AFB estimates that during pre-mission surveys, the proposed monitoring area would be approximately 5 km (3.1 miles) from the target area, which corresponds to the Level A harassment threshold range. Eglin AFB proposes to survey the same-sized area for each mission day, regardless of the planned munition expenditures. 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 (presented in Table 5). Because of human safety issues, Eglin AFB would require observers 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 9.5 miles (15 km) from the detonation point. Observers would continue to scan for marine mammals from the periphery, but effectiveness would be limited as the boat would remain at a designated station.

Density Estimation

Density estimates for bottlenose dolphin and spotted dolphin were derived from two sources (Table 7). NMFS provided detailed information on Eglin AFB's derivation of density estimates for the bottlenose and Atlantic spotted dolphins in the notice for the proposed Authorization (79 FR 72631, December 8, 2014). The information presented in that notice has not changed and NMFS refers the reader to Section 3 of Eglin AFB's application for detailed information on all equations used to calculate densities presented in Table 7.

Table 7- Marine mammal density estimates within Eglin AFB's EGTTR,

Species	Density (animals/km^2)
Bottlenose dolphin[1]	1.194
Atlantic spotted dolphin[2]	0.265
Unidentified bottlenose dolphin/Atlantic spotted dolphin[2]	0.009

[1]Source: Garrison, 2008; adjusted for observer and availability bias by the author.
[2]Source: Fulling et al., 2003; adjusted for negative bias based on information provided by Barlow (2003; 2006).

Take Estimation

NMFS recalculated the takes proposed in previous notice for the proposed Authorization (79 FR 72631, December 8, 2014) by eliminating the double counting of the estimated take for each species and appropriately rounding take estimates before summing the total take.

Table 8 indicates the modeled potential for lethality, injury, and non-injurious harassment (including behavioral harassment) to marine mammals in the absence of mitigation measures. Table 8 includes the revised number of marine mammals, by species, that Eglin AFB could potentially take incidental to the conduct of Maritime WSEP operations. The re-calculation results in zero take by mortality, zero take by slight lung injury, and zero take by gastrointestinal tract injury. Compared to the take levels that NMFS previously proposed (79 FR 72631, December 8, 2014), the re-estimation has reduced take estimates for Level A harassment (PTS) by approximately five percent to a total of 38 marine mammals; reduced the take estimates for Level B harassment (TTS) by approximately eight percent to a total of

445 marine mammals; and reduced take estimates for Level B harassment (behavioral) by approximately 51 percent to a total of 497 marine mammals. Based on the remodeling of the number of marine mammals potentially affected by maritime strike missions, NMFS would authorize take for Level A and Level B harassment presented in Table 8 of this notice.

Eglin AFB and NMFS estimate that approximately 38 marine mammals could be exposed to injurious Level A harassment noise levels (187 dB SEL) and approximately 942 animals could be exposed to Level B harassment (TTS and behavioral) noise levels.

Table 8 – Re-modeled number of marine mammals potentially affected by Maritime WSEP operations. Authorized takes for Level A and Level B harassment are the same as those modeled. NMFS would not authorize takes for mortality or serious injury.

Species	Mortality	Level A Harassment (PTS only)	Level B Harassment (TTS)	Level B Harassment (Behavioral)
Bottlenose dolphin	0	33	373	423
Atlantic spotted dolphin	0	5	68	69
Unidentified bottlenose dolphin/Atlantic spotted dolphin	0	0	4	5
TOTAL	0	38	445	497

Based on the mortality exposure estimates calculated by the acoustic model, 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 slight lung injury or 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 EGTTR.

NMFS has relied on the best available scientific information to support the issuance of Eglin AFB's authorization. In the case of authorizing Level A harassment, NMFS has estimated that no more than 33 bottlenose dolphins and 5 Atlantic spotted dolphins could, although unlikely, experience minor permanent threshold shifts of hearing sensitivity (PTS). The available data and analyses, as described more fully in notice for the proposed Authorization (79 FR 72631, December 8, 2014) include extrapolation results of many studies on marine mammal noise-induced temporary threshold shifts of hearing sensitivities. An extensive review of TTS studies and experiments prompted NMFS to conclude 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 extremely low, but not unlikely.

Negligible Impact Analysis and Determination

As explained previously, the term "negligible impact" is defined 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'' (50 CFR 216.103). The lack of likely adverse effects on annual rates of recruitment or survival (i.e., population level effects) forms the basis of a negligible impact finding. Thus, 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, NMFS must consider other factors, such as the likely nature of any responses (their intensity, duration, etc.), the context of any responses (critical reproductive time or location, migration, etc.), as well as the number and nature of estimated Level A harassment takes, and the number of estimated mortalities, effects on habitat, and the status of the 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; and
- 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, or other non-auditory injury, 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 potential PTS. Activities would only occur over a timeframe of two to three weeks in beginning in February, 2015, with one, four-hour mission occurring each 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. However, multiple exposures are not anticipated to have effects beyond Level A and Level B harassment.

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 (hertz [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. 2005a; Houser and Finneran 2006; Finneran *et al*. 2007a; 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 would be slight/mild because research shows that most cetaceans 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 have shown the absence of marine mammals within the EGTTR during maritime operations. Avoidance varies among individuals and depends on their activities or reasons for being in the area

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. The proposed activity is not expected to impact rates of recruitment or survival of marine mammals since neither mortality (which would remove individuals from the population) nor serious injury are anticipated to occur. In addition, the proposed activity would not occur in areas (and/or times) of significance for the marine mammal populations potentially affected by the exercises (*e.g.*, feeding or resting areas, reproductive areas), and the activities would only occur in a small part of their overall range, so the impact of any potential temporary displacement would be negligible and animals would be expected to return to the area after the cessations of activities. Although the proposed activity could result in Level A (PTS only, not slight lung injury or gastrointestinal tract injury) and Level B (behavioral disturbance and TTS) 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) and site-specific nature of the activity, and the severity of effect would not be detrimental to rates of recruitment and survival.

Moreover, the mitigation and monitoring measures required by the Authorization (described earlier in this document) are expected to further minimize the potential for harassment. The protected species surveys would require Eglin AFB to search the area for marine mammals, and if any are found in the live fire area, then the exercise would be suspended until the animal(s) has left the area or relocated. Moreover, marine species observers located in the Eglin control tower would 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 would 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 would 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 only, and that the taking from the Maritime WSEP exercises 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 preliminarily determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act (ESA)

Eglin AFB initiated consultation with the Southeast Region, NMFS, under section 7 of the ESA regarding the effects of this action on ESA-listed species and critical habitat under the jurisdiction of NMFS. The consultation will be completed and a biological opinion issued prior to any final determinations on the Authorization. Due to the location of the activity, no ESA-listed marine mammal species are likely to be affected; therefore, NMFS has determined that this Authorization would have no effect on ESA-listed marine mammal

species. Therefore, NMFS has determined that a section 7 consultation under the ESA is not required.

National Environmental Policy Act (NEPA)

Eglin AFB provided NMFS with an Environmental Assessment titled, Maritime Weapon Systems Evaluation Program (WSEP) Operational Testing In The Eglin Gulf Testing And Training Range (EGTTR), Florida. The EA analyzes 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 IHA application, and the Federal Register notice, as well as public comments, NMFS has determined that the issuance of an Authorization is not likely to result in significant impacts on the human environment and has prepared a Finding of No Significant Impact (FONSI). An Environmental Impact Statement is not required and will not be prepared for the action.

Authorization

NMFS has issued an Incidental Harassment Authorization to Eglin AFB for conducting Maritime WSEP operations in the EGGTR, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: March 23, 2015.

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