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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 031704B]

Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to Conducting Air-to-Surface Gunnery Missions in the Gulf of Mexico

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

ACTION: Notice of receipt of application for an incidental take authorization; request for comments and information.

SUMMARY: NMFS has received a request from Eglin Air Force Base (Eglin AFB), for authorization to harass marine mammals, incidental to conducting air-to-surface (A-S) gunnery missions in the Gulf of Mexico (GOM). As a result of this request, NMFS is proposing to issue a 1-year authorization to take marine mammals by Level B harassment incidental to this activity and will propose regulations at a later time that would govern these incidental takes under a Letter of Authorization (LOA) issued to Eglin for a period of up to 5 years after the 1-year IHA expires. Under the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an authorization to Eglin AFB to incidentally take, by harassment, several species of cetaceans for a period of 1 year.

DATES: Comments and information must be postmarked no later than February 22, 2006.

ADDRESSES: Comments should be addressed to Steve Leathery, Chief, Permits, Conservation and Education Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910-3226. The mailbox address for providing email comments on this action is PR2.031704B@noaa.gov. Comments sent via email, including all attachments, must not exceed a 10-megabyte file size. A copy of the application and a list of references used in this document may be obtained by writing to this address, by telephoning

the contact listed here (see **FOR FURTHER INFORMATION CONTACT**) and is also available at: http://www.nmfs.noaa.gov/prot_res/PR2/Small_Take/smalltake_info.htm#applications. A copy of the Final Programmatic Environmental Assessment (Final PEA) is available by writing to the Department of the Air Force, AAC/EMSN, Natural Resources Branch, 501 DeLeon St., Suite 101, Eglin AFB, FL 32542-5133.

FOR FURTHER INFORMATION CONTACT: Kenneth R. Hollingshead, NMFS, 301-713-2289, ext 128.

SUPPLEMENTARY INFORMATION:

Background

Sections 101(a)(5)(A) and 101(a)(5)(D) of the Marine Mammal Protection Act (16 U.S.C. 1361 *et seq.*) (MMPA) direct the Secretary of Commerce (Secretary) to allow, upon request, the incidental, but not intentional taking of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and regulations are issued or, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

Permission may be granted 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, and if the permissible methods of taking and requirements pertaining to the monitoring and reporting of such takings 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."

Subsection 101(a)(5)(D) of the MMPA established an expedited process by which citizens of the United States can apply for an authorization to incidentally take small numbers of marine mammals by harassment. The National Defense Authorization Act of 2004 (NDAA) (Pub. L. 108-136) amended the definition of "harassment" in section 18(A) of the MMPA 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

On February 13, 2003, Eglin AFB petitioned NMFS, as a precautionary measure, for an authorization under section 101(a)(5) of the MMPA for the taking, by harassment, marine mammals incidental to programmatic mission activities within the Eglin Gulf Test and Training Range (EGTTR) for the next five years. The EGTTR is described as the airspace over the Gulf of Mexico that is controlled by Eglin AFB; this area is also sometimes referred to as the "Eglin Water Range."

The A-S gunnery test and training activities currently comprise the majority of Eglin's missions that deploy ordnance into the GOM and have been determined through a review under the National Environmental Policy Act (NEPA) to be the only activity to impact marine mammals (Eglin AFB, 2002). The effects of other components of the mission activities, including supersonic and subsonic noise from aircraft, occasional fuel releases, debris, the release of chemicals into the water from chaff, flares, drones, and missiles, and direct physical impacts (discussed later in this document) were determined not to impact marine mammals (Eglin AFB, 2002).

Description of Activities

A-S gunnery missions involve surface impacts of projectiles and small underwater detonations with the potential to affect cetaceans that may potentially occur within the EGTTR. These missions typically involve the use of 25-mm (0.98 in), 40-mm (1.57 in), and 105-mm (4.13 in) gunnery rounds containing, 0.0662 lb (1.1 oz 30 g), 0.865 (13.8 oz, 392 g), and 4.7 lbs (2.1 kg) of explosive, respectively. Live rounds must be used to produce a visible surface splash that must be used to "score" the round; the impact of inert rounds on the sea surface would not be detected. The Air Force has developed a 105-mm training round (TR) that contains less than 10 percent of the amount of explosive material (0.35 lb; 0.16 kg) as compared to the "Full-Up" (FU) 105-mm (4.13 in) round. The TR was developed as one method to mitigate effects on marine life during night-time A/S gunnery exercises when visibility at the water surface would be poor. However, the TR cannot be used in daytime since the amount of explosive material is insufficient to be detected from the aircraft.

Water ranges with the EGTR that are typically used for the gunnery operations are located in the Gulf of Mexico offshore from the Florida Panhandle (areas W-151A, W-151B, W-151C, and W-151D as shown in Figure 1 in Eglin's application). Data indicates that W-151A was the most frequently used water range due to its proximity to Hurlburt Field, but activities may occur anywhere within the EGTR.

The AC-130 gunship aircraft normally transit from Hurlburt Field, FL to the water range at a minimum of 4,000 ft (1.2 km) above surface level. The AC-130 conducts at least two complete orbits at a minimum safe airspeed around a prospective target area at a maximum altitude of 1,500 ft (457 m), with a recommended altitude of 1,000 ft (305 m), spiraling in an upward formation to an operational altitude of approximately 4,500 to 10,000 ft (1372-3048 m). Ascent occurs over a 10-15 minute period. Eglin notes that the search area for these orbits ensures that no vessels or protected species are within an area of 5-nm (9.3 km) of the target. The AC-130 continues orbiting the selected target point as it climbs to the mission-testing altitude. During the low altitude orbits and the climb to testing altitude, aircraft crew visually scan the sea surface within the aircraft's orbit circle for the presence of marine vessels and protected species. Primary responsibility for the surface scan is on the flight crew in the cockpit and personnel stationed in the tail observer bubble and starboard viewing window. The AC-130's optical and electronic sensors will also be employed for target clearance. If any marine mammals are detected within the AC-130's orbit circle, either during initial clearance or after commencement of live firing, the aircraft will relocate to another target area and repeat the clearance procedures. A typical distance from the coast for this activity is at least 15 mi (24 km).

When offshore, the crews can scan a 5-mi (9.3-km) radius around the potential impact area to ensure it is clear of surface craft, marine mammals, and sea turtles. Scanning is accomplished using radar, all-light television (TV), infrared sensors (IR), and visual means. An alternative area would be selected if any cetaceans or vessels were detected within a 5-mi (9.3 km) search area. Once the scan is completed, Mk-25 flares are dropped and the firing sequence is initiated.

A typical gunship mission lasts approximately 5 hours without refueling and 6 hours when air-to-air refueling is accomplished. A typical mission includes: (1) 30 minutes for take off and to perform airborne sensor alignment, align electro-optical sensors (IR and TV) to heads-up display; (2) 1.5 to 2 hours of dry fire (no ordnance expended), and includes transition time; (3) 1.5 to 2 hours of live fire, and includes clearing the area and transiting to and from the range (actual firing activities typically do not exceed 30 minutes); (4) 1 hour air-to-air refueling, if and when performed; and (5) 30 minutes of transition work (take-offs, approaches, and landings-pattern work).

The guns are fired during the live-fire phase of the mission. The actual firing can last from 30 minutes to 1.5 hours but is typically completed in 30 minutes. The number and type of A-S gunnery munitions deployed during a mission varies with each type of mission flown. In addition to the 25-, 40-, and 105-mm rounds, marking flares are also deployed as targets. All guns are fired at a specific target in the water, usually an Mk-25 flare, starting with the lowest caliber ordnance or action with the least impact and proceeding to greater caliber sizes. To establish the test target area, two Mk-25 flares are deployed into the center of the 5-nm (9.3-km) radius cleared area (visually clear of aircraft, ships, and surface marine species) on the water's surface. The flare's burn time normally lasts 10 to 20 minutes but could be much less if actually hit with one of the ordnance projectiles; however, some flares have burned as long as 40 minutes. Live fires are a continuous event with pauses during the firing usually well under a minute and rarely from 2 to 5 minutes. Firing pauses would only exceed 10 minutes if surface boat traffic or marine protected species caused the mission to relocate; if aircraft, gun, or targeting system problems existed; or if more flares needed to be deployed. The Eglin Safety Office has described the gunnery missions as having 95-percent containment with a 99-percent confidence level within a 5-m (16.4-ft) area around the established flare target test area.

Live-Fire Event: Phase I: 10 Minutes

The 25-mm (0.98-in) round is fired first. The 25-mm firing event in a typical mission includes approximately 500 to 1000 rounds. These rounds are first in

short bursts. These bursts last approximately 2-3 seconds with approximately 100 rounds per burst. Based on the very tight target area and extremely small miss distance, these bursts of rounds all enter the water within a 5-m (16.4-ft) area. Therefore, when calculations of the marine mammal Zone of Impact (ZOI) and take estimates are made later in this document for the 25-mm rounds, calculations will be based on the total number of rounds fired per year divided by 100.

Live-Fire Event: Phase II: 10 Minutes

The 40-mm (1.57 in) round is fired second. The 40-mm firing event of a typical mission includes approximately 10 seconds with approximately 20 rounds per burst. Based on the very tight target area and extremely small miss distance, these bursts of rounds all enter the water within a 5-m (16.4 ft) area. Therefore, when calculations of the marine mammal ZOI and take estimates are made later in this document for the 40-mm rounds, calculations will be based on the total number of rounds fired per year divided by 20.

Live-Fire Event: Phase III: 10 Minutes

The 105-mm round is fired last. The 105-mm firing event of a typical mission includes approximately 20 rounds. These rounds are not fired in bursts, but as single shots. The 105-mm firing event lasts approximately 5 minutes with approximately two rounds per minute. Due to the single firing event of the 105-mm round, the peak pressure of each single 105-mm round is measured at a given distance (90 m (295 ft)) for the 105mm TR and 216 m (709 ft) for the 105mm FU).

As described in Eglin's application, gunnery testing in this request includes historical baseline yearly amounts in addition to proposed nighttime gunnery missions. Daytime gunnery testing uses the 105-mm FU round and nighttime gunnery training is proposed using the 105-mm TR. The number of 105-mm rounds including nighttime operations would amount to 1,742. As shown in detail in Tables 1 and 2, Eglin proposes to conduct a total of 28 daytime missions and 263 nighttime missions annually, expending 3,832 rounds in daytime and 30,802 rounds nighttime (242 105-mm FU and 1,500 rounds would be the 105-mm TR).

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Table 1. Summary of Daytime Gunnery Testing Operations in the EGTR

Test Area	Category	Expendable	Condition	Baseline Quantity of Expendables	Number of Missions	Number of Events
W-151A	GUN	105 mm HE	LIVE	128	6	18
		25 mm HEI	LIVE	1,275	1	1
		40 mm HEI	LIVE	536	6	18
W-151B	GUN	105 mm HE	LIVE	46	2	6
		25 mm HEI	LIVE	294	1	1
		40 mm HEI	LIVE	146	1	3
W-151C	GUN	105 mm HE	LIVE	10	1	3
		25 mm HEI	LIVE	142	1	1
		40 mm HEI	LIVE	50	1	3
W-151D	GUN	105 mm HE	LIVE	39	2	6
		25 mm HEI	LIVE	567	1	1
		40 mm HEI	LIVE	198	2	6
W-151S	GUN	105 mm HE	LIVE	19	1	3
		25 mm HEI	LIVE	283	1	1
		40 mm HEI	LIVE	99	1	3
				3,832	28	74

Table 2. Summary of Nighttime Gunnery Training Operations in the EGTR

Test Area	Category	Expendable	Condition	Alt. 3 Quantity	Number of Missions	Number of Events
W-151A	GUN	105 mm TR	LIVE	902	45	135
		25 mm HEI	LIVE	7,864	8	8
		40 mm HEI	LIVE	9,811	102	306
W-151B	GUN	105 mm TR	LIVE	255	13	39
		25 mm HEI	LIVE	1,452	2	2
		40 mm HEI	LIVE	3,023	31	93
W-151C	GUN	105 mm TR	LIVE	197	9	36
		25 mm HEI	LIVE	2,301	2	2
		40 mm HEI	LIVE	2,302	24	72
W-151D	GUN	105 mm TR	LIVE	133	7	21
		25 mm HEI	LIVE	830	1	1
		40 mm HEI	LIVE	1,583	16	48
W-151S	GUN	105 mm TR	LIVE	13	1	3
		25 mm HEI	LIVE	54	1	1
		40 mm HEI	LIVE	82	1	3
		TOTAL		30,802	263	770

Description of Marine Mammals Affected by the Activity

There are 29 species of marine mammals documented as occurring in Federal waters of the GOM. General information on these species can be found in Wursig *et al.* (2000) and in the NMFS Stock Assessment Reports (Waring *et al.*, 2004). This latter document is available at: <http://www.nefsc.noaa.gov/nefsc/publications/tm/tm182/>

Of these 29 species of marine mammals, approximately 21 may be found within the EGTTR. These species are the Bryde's whale, sperm whale, dwarf sperm whale, pygmy sperm whale, Atlantic bottlenose dolphin, Atlantic spotted dolphin, pan-tropical spotted dolphin, Blainville's beaked whale, Cuvier's beaked whale, Gervais' beaked whale, Clymene dolphin, spinner dolphin, striped dolphin, killer whale, false killer whale, pygmy killer whale, Risso's dolphin, Fraser's dolphin, melon-headed whale, rough-toothed dolphin, and pilot whale. Supplementary information on those species that may be impacted by the A-S gunnery exercises are discussed in the Eglin application (Eglin AFB, 2003) and the Eglin's Final PEA.

Potential Impacts to Marine Mammals

A/S gunnery operations may potentially impact marine mammals at the water surface. Marine mammals could potentially be harassed, injured or killed by exploding and non-exploding

projectiles, and falling debris (Eglin, 2002 (Final PEA)). However, based on an analysis provided in the Eglin Final PEA) Eglin believes that gunnery exercises are not likely to result in any injury or mortality to marine mammals (Eglin, 2003 (Supplemental Information Request)).

Explosive criteria and thresholds for assessing impacts of explosions on marine mammals were discussed by NMFS in detail in its issuance of an IHA for Eglin's Precision Strike Weapon testing activity (70 FR 48675, August 19, 2005) and are not repeated here. Please refer to that document for this background information.

Estimation of Take and Impact

Direct Physical Impacts (DPI)

Potential impacts resulting from air-to-surface test operations include DPI resulting from ordnance. DPI could result from inert bombs, gunnery ammunition, and shrapnel from live missiles falling into the water. Marine mammals and sea turtles swimming at the surface could potentially be injured or killed by projectiles and falling debris if not sighted and firing discontinued. Small arms gunnery operations may offer a worst case scenario for evaluating DPI of EGGTR operations, mainly due to the comparatively large number of rounds expended. Some contain small amounts of explosives, but the majority do not. The assumptions made by Eglin for DPI calculations can be found in Eglin's Final PEA under Alternative 1

for this action. Approximately 606 small-arms gunnery firing events comprise the estimated level of potential DPI events, as shown in Table 3.

DPI impacts are anticipated to affect only marine species at or very near the ocean surface. As a result, in order to calculate impacts, Eglin used corrected species densities (Table 4–23 in Eglin's Final PEA) to reflect the surface interval population, which is approximately 10 percent of densities calculated for distribution in the total water column. As shown here in Table 4 (correcting PEA Table 4–23), the impacts to marine mammals and sea turtles swimming at the surface that could potentially be injured or killed by projectiles and falling debris was determined to be an average of 0.2059 marine mammals and 0.0414 sea turtles per year. However, mitigation measures that Eglin proposes under this action would reduce even these low levels significantly.

In addition to small arms, Eglin calculated the potential for other non-explosive items (bombs, missiles, and drones) to impact marine mammals and sea turtles. The number of annual events expected are 551 bombs, 1183 missiles, and 99 drones (Table 5). As shown in Eglin's Final PEA and Table 6 in this document, the potential for any DPI to marine mammals and sea turtles is extremely remote and can, therefore, be discounted.

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Table 3. Air-to-Surface Gunnery/Small Arms Operations as Events

Activity Description of EGTRR Events	Percentage	Number
Small Arms .50 Cal Ball Events	16.3%	99
Small Arms 5.56 Linked Events	0.8%	5
Small Arms 7.62 mm Ball Events	82.8%	502
Total Baseline EGTRR Air-to-Surface Gunnery/Small Caliber Events	100.0%	606

Table 4. Potential Small Arms DPI Impacts (Annual) to Marine Mammal Species.

Species	Density (#/km ²)	Adjusted Density (#/km ²)	Impact Zone Area ¹ (km ²)	Animals in Impact Zone (#)	Years To Impact 1 Animal ² (#)
Cetaceans	4.381	0.4381	0.047874	2.10E-02	48
T&E Cetaceans	0.011	0.0011	0.047874	5.27E-05	18,989
Sea Turtles	0.869	0.0869	0.047874	4.16E-03	240

Table 5. Non-Small Arms Operations as Events

Activity Description of EGTRR Events	Percentage	Number
Bombs	30.1%	551
Missiles	64.5%	1183
Drones	5.4%	99
Total Baseline EGTRR Non-Small Arms Events	100.0%	1833

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TABLE 6.—POTENTIAL NON-SMALL ARMS/NON-GUNNERY DPI IMPACTS (ANNUAL) TO MARINE SPECIES

Species	Density (#/km ²)	Adjusted density (#/km ²)	Impact zone area ¹ (km ²)	Animals in impact zone (#)	Years to impact 1 animals ² (#)
Cetaceans	4.381	0.4381	0.00688	0.003014128	332
T&E Cetaceans	0.011	0.0011	0.00688	0.000007568	132,135
Sea Turtles	0.869	0.0869	0.00688	0.000597872	1,673

Similar to non-gunnery/non-small arms DPI impacts, DPI impacts from gunnery activities may also affect marine mammals and sea turtles in the

surface zone. Again, DPI impacts are anticipated to affect only marine species at or near the ocean surface. Accordingly, the density estimates have

been adjusted to indicate surface animals only being potentially affected. Using the firing methodology explained earlier in this document, Tables 7 and

8 demonstrate that the potential for any extremely remote and can be
DPI from gunnery activities are discounted.

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Table 7. Potential Daytime Gunnery DPI Impacts (annual) to Marine Cetaceans.

Species/ shell size	Density (#/km)	Adjusted Density (#/km ²)	Impact Zone Area (km ²)	Number of Events (#)	Animals in Impact Zone (#)	Years To Impact 1 Animal (#)
Cetacea (25 mm)	4.381	0.4381	.00007854	26	.000881198	1,135
Cetacea (40 mm)	4.381	0.4381	.00007854	51	.001770311	565
Cetacea (105mm)	4.381	0.4381	.00007854	242	.008326827	120

Table 8. Potential Nighttime Gunnery DPI Impacts (annual) to Marine Cetaceans.

Species/ shell size	Density (#/km)	Adjusted Density (#/km ²)	Impact Zone Area (km ²)	Number of Events (#)	Animals in Impact Zone (#)	Years To Impact 1 Animal (#)
Cetacea (25 mm)	4.381	0.4381	.00007854	125	.004287972	233
Cetacea (40 mm)	4.381	0.4381	.00007854	723	.024873814	40
Cetacea (105mm)	4.381	0.4381	.00007854	1061	.036507285	27

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*Marine Mammal Take Estimates From
Gunnery Activities*

Estimating the impacts to marine mammals from underwater detonations is difficult due to complexities of the physics of explosive sound under water and the lack of understanding with respect to hearing in marine mammals.

Therefore, the assessments made in this document use, and improve upon, the criteria and thresholds for marine mammal impacts that were developed for the shock trials of the *USS SEAWOLF* submarine and the destroyer *USS Winston S. Churchill* (DDG-81) (Navy, 1998; 2001). The criteria and thresholds used in these documents have been adopted by NMFS for use in

calculating incidental takes from explosives. Criteria for assessing impacts include: (1) Mortality, as determined by exposure to a certain level of positive impulse pressure (expressed as pounds per square inch per millisecond or psi-msec); (2) injury, both hearing related and non-hearing related; and (3) harassment, as determined by temporary loss of hearing

ability and behavioral reactions. Due to the small amounts of net explosive weight (NEW) for each of the rounds fired in the EGTRR and the mitigation measures proposed here, mortality resulting from sounds generated in the water column was determined to be highly unlikely, and not considered further.

Permanent hearing loss is considered an injury and is defined as a permanent threshold shift (PTS). NMFS categorizes PTS as Level A harassment. "Temporary loss of hearing ability is termed a temporary threshold shift (TTS), meaning a temporary reduction of hearing sensitivity which abates following noise exposure". TTS is categorized as a Level B type of harassment and is considered here as non-injurious. NMFS recognizes dual criteria for TTS, one based on peak pressure and one based on the greatest 1/3 octave sound exposure level (SEL) or energy flux density level (EFDL), with the more conservative (i.e., larger) of the two criteria being selected for impacts analysis (note: SEL and EFDL are used interchangeably, but with increasing scientific preference for SEL). The peak pressure metric used in the shock trials to represent TTS was 12 pounds per square inch (psi) which, for the NEW used, resulted in a zone of possible Level B harassment approximately equal to that obtained by using a 182 decibel (dB) re 1 micro Pa²-s, total EFDL/SEL metric. The 12-psi metric is largely based on anatomical studies and extrapolations from terrestrial mammal data (see Ketten, 1995; Navy, 1999 (Appendix E, *Churchill* FEIS; and 70 FR 48675 (August 19, 2005)) for background information). However, the results of a more recent investigation involving marine mammals suggest that, for charges considerably smaller than those used in the Navy shock trials, the

12 psi metric is not an adequate predictor of the onset of TTS.

Finneran *et al.* (2002) measured TTS in a bottlenose dolphin and a beluga whale exposed to single underwater impulses produced by a seismic water gun in San Diego Bay. The water gun was chosen over other seismic sources, such as air guns, because the impulses contain more energy at high frequencies where odontocete hearing thresholds are relatively low (i.e., more sensitive). Hearing thresholds were measured at 0.4, 4, and 30 kilohertz (kHz). A relatively small and short-term level of masked TTS (MTTS) (7 dB at 0.4 kHz and 6 dB at 30 kHz) occurred in the beluga whale at a peak pressure of 160 kilopascals (kPa), which is equivalent to 23 psi, 226 dB re 1 micro Pa peak-peak pressure, and 186 dB re 1 microPa²-s. The maximum experimental peak pressure exposure of 207 kPa (30 psi, 228 dB re 1 microPa peak-peak pressure, 188 dB re 1 microPa²-s) did not cause any measurable masked TTS in the bottlenose dolphin. The results of these field experiments represent the most current science available for the relationship between peak pressure and TTS in marine mammals. It is also considered precautionary for this project since the bottlenose dolphin did not receive an MTTS at the higher level of 30 psi. Therefore, until additional information becomes available, 23 psi is considered an appropriate and conservative metric for predicting the onset of pressure-related TTS from small explosive charges.

Documented behavioral reactions occur at noise levels below those considered to cause TTS in marine mammals (Finneran *et al.*, 2002; Schlundt *et al.*, 2000; Finneran and Schlundt, 2004). In controlled experimental situations, behavioral effects are typically defined as alterations of trained behaviors.

Behavioral effects in wild animals are more difficult to define but may include decreased ability to feed, communicate, migrate, or reproduce. Abandonment of an area due to repeated noise exposure is also considered a behavioral effect. Analyses in subsequent sections of this document refer to such behavioral effects as sub-TTS Level B harassment. Schlundt *et al.* (2000) exposed bottlenose dolphins and beluga whales to various pure-tone sound frequencies and intensities in order to measure underwater hearing thresholds. Masking is considered to have occurred because of ambient noise environment in which the experiments took place. Sound levels were progressively increased until behavioral alterations were noted (at which point the onset of TTS was presumed). It was found that decreasing the sound intensity by 4 to 6 dB greatly decreased the occurrence of anomalous behaviors. The lowest sound pressure levels, over all frequencies, at which altered behaviors were observed, ranged from 178 to 193 dB re 1 micro Pa for the bottlenose dolphins and from 180 to 196 dB re 1 micro Pa for the beluga whales. Thus, it is reasonable to consider that sub-TTS (behavioral) effects occur at approximately 6 dB below the TTS-inducing sound level, or at approximately 176 dB in the greatest 1/3 octave band EFDL/SEL.

Table 9 summarizes the relevant thresholds (summarized from information in 70 FR 48675 (August 19, 2005) and in this document), which are specified levels of noise that may result in injury, TTS or harassment to marine mammals. Mortality and injury thresholds are designed to be conservative by considering the impacts that would occur to the most sensitive life stage (e.g., a dolphin calf). Table 10 provides the estimated ZOI radii for the EGTRR ordnance.

TABLE 9.—EGTRR CRITERIA AND THRESHOLDS FOR IMPACT OF EXPLOSIVE NOISE ON MARINE MAMMALS

Criterion	Criterion definition	Threshold
Level A Harassment-Auditory Injury	50% of Animals Exposed Would Experience Ear-Drum Rupture, Resulting in Approximately 30% PTS.	205 dB Total EFDL/SEL.
Level B Harassment	Temporary Threshold Shift (NMFS Dual Criterion).	23 PSI Peak Pressure.
Level B Harassment	Temporary Threshold Shift (NMFS Dual Criterion).	182 dB 1/3 Octave Band EFDL/SEL.
Level B Harassment	Sub-TTS Behavioral Disruption	176 dB 1/3 Octave Band EFDL/SEL.

TABLE 10.—ESTIMATED RANGE FOR A ZONE OF IMPACT (ZOI) DISTANCE FOR THE EGTRR ORDNANCE

Ordnance	Level A harassment injurious (205 dB) EFD (m)	Level B harassment non-injurious (182 dB) EFD for TTS (m)	Level B harassment non-injurious (23 psi) for TTS (m)	Level B harassment non-injurious (176 dB) EFD for behavior (m)
105-mm FU	0.79	11.1	216	22.1
105-mm TR	0.22	3.0	90	6.0
40-mm HE	0.33	4.7	122	9.4
25-mm HE	0.11	1.3	49	2.6

FU=Full-up; TR=Training Round; HE=High Explosive

As mentioned previously, the EGTRR live fire events are continuous events with pauses during the firing usually well under a minute and rarely from 2 to 5 minutes. Live fire typically occurs within a 30 minute time frame, including all ordnance fired: 25-mm (Phase I), 40-mm (Phase II), and 105-mm (Phase III), and where the 105-mm are fired as separate rounds with up to 30-second intervals, the 25-mm and the 40-mm are often fired in multiple bursts. These bursts include multiple rounds (25 to 100) within a 10-to 20-second time frame. Eglin notes that even if the avoidance concept of animals evading the area once firing commences is not considered, an average swim speed (1.5 m/s) of animals would not allow sufficient time for new animals to re-enter the Level B harassment ZOI (23 psi) within the time frame of a single burst. As such, only the peak pressure of a single round is measured per burst and experienced at a given distance (49 m (Phase I), 122 m (Phase II)).

For daytime firing it is assumed that the average swim speed per cetacean is approximately 3 knots or 1.5 m/sec. As a conservative scenario, Eglin assumes that there is one animal present within or near the 216-m ZOI (FU 105-mm round ZOI) which may be potentially ensnified within the 23-psi TTS exposure at the time that the 105-mm live firing begins. Density distributions have assumed an even distribution (or approximately 500 m (1640 ft) apart) of approximately 4.38 animals/km² (all species) for the approach of impact analyses for a take estimation. At this density distribution and typical swim speed, the next available cetacean would approach the perimeter of the 216-m ZOI (23-psi TTS ZOI) in approximately 5.5 minutes assuming a straight line path. With live fire events of the 105-mm occurring at a rate of

approximately 2 rounds per minute, nearly one half (or 10 rounds) of the total 105-mm rounds (20 rounds) would potentially be expended within this 5.5 minute time frame. If the concept that marine mammals will evade an area once firing commences is not considered, an average swim speed (1.5 m/s) of animals would allow sufficient time for new animals to re-enter the 23-psi TTS impact area. Allowing for a potential 2 minute break in firing after 10 rounds are expended, it is, therefore, conservative and reasonable to assume that nearly 3 to 4 individual animals may be potentially exposed to the 23-psi TTS sound level during a typical 20 round firing event. Therefore, the ZOI and Level B harassment take estimate calculations are based on the total number of rounds fired per year divided by 5, or approximately 20 percent. This approach assumes that although single animals may be ensnified more than once due to the time required to exit the 23 psi TTS ZOI, animals are not considered to be "taken" more than once for the purposes of estimating take levels.

Similarly, as a conservative approach for nighttime firing, Eglin assumes that there is one animal present within or near the 90-m ZOI (105-mm TR ZOI) which may be potentially ensnified within the 23-psi TTS exposure zone at the time that the 105-mm round live firing phase begins. Density distributions have assumed an even distribution of approximately 4.38 animals/km² (all species) for the approach of impact analyses for estimation of take. At this density distribution and typical swim speed, the next available cetacean would approach the perimeter of the 90-m ZOI (23-psi TTS ZOI) in approximately 5.5 minutes or the same time as with the 216-m ZOI (used for the 105-mm FU). The

difference is the amount of time it takes the animal to exit the ZOI or in other words, how long the animal resides within the ZOI on a straight line path. With live fire events of the 105-mm round occurring at a rate of approximately 2 rounds per minute, nearly one half (or 10 rounds) of the total 105-mm rounds (20 rounds) would potentially be expended within this 5.5-minute time frame. If the concept that marine mammals will evade an area once firing commences is not considered, an average swim speed (1.5 m/s) of animals would allow sufficient time for new animals to re-enter the 23-psi TTS impact area. Allowing for a potential 2-min break in firing after 10 rounds are expended, it is conservative and reasonable to assume that nearly 3 to 4 individual animals may be potentially exposed to the 23-psi TTS sound level during a typical 20 round firing event. Therefore, the ZOI and take estimate calculations are based on the total number of rounds fired per year divided by 5, or approximately 20 percent. This approach assumes that, although single animals may be ensnified more than once due to the time required to exit the 23-psi TTS ZOI, individual animals are not considered to be "taken" more than once for the purposes of estimating take levels.

Based on this discussion, Table 11 provides Eglin's estimates of the annual number of marine mammals, by species, potentially affected by the gunnery mission noise. It should be noted that these estimates are derived without consideration of the effectiveness of Eglin's proposed mitigation measures (except use of the TR), which are discussed next.

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Table 11. Yearly Estimated Number of Marine Mammals Affected by the Gunnery Mission Noise

Species	Adjusted Density (#/km ²)	Level A		Level B		Level B	
		Harassment Injurious 205 dB* EFD For Ear Rupture	Harassment Non-Injurious 182 dB* EFD For TTS	Harassment Non-Injurious 23 psi For TTS	Harassment Non-Injurious 176 dB* EFD For Behavior		
Bryde's whale	0.007	<0.001	0.010	0.4	0.041		
Sperm whale	0.011	<0.001	0.016	0.0	0.064		
Dwarf/pygmy sperm whale	0.024	<0.001	0.035	1.5	0.139		
Cuvier's beaked whale	0.10	<0.001	0.015	0.6	0.058		
Mesoplodon spp.	0.019	<0.001	0.028	1.2	0.110		
Pygmy killer whale	0.030	<0.001	0.044	1.9	0.174		
False killer whale	0.026	<0.001	0.038	1.6	0.151		
Short-finned pilot whale	0.027	<0.001	0.039	1.7	0.157		
Rough-toothed dolphin	0.028	<0.001	0.041	1.7	0.163		
Bottlenose dolphin	0.810	0.006	1.177	50.1	4.706		
Risso's dolphin	0.113	0.001	0.164	7.0	0.657		
Atlantic spotted dolphin	0.677	0.005	0.984	41.9	3.934		
Pantropical spotted dolphin	1.077	0.008	1.565	66.7	6.258		
Striped dolphin	0.237	0.002	0.344	14.7	1.377		
Spinner dolphin	0.915	0.007	1.330	56.6	5.316		
Clymene dolphin	0.253	0.002	0.368	15.7	1.470		
Unidentified dolphin**	0.053	<0.001	0.077	3.3	0.308		
Unidentified whale	0.008	<0.001	0.012	0.5	0.046		
All marine mammals	4.325	0.032	6.29	271.1	25.13		

km² = square kilometers; NA = not applicable*dB= dB re 1 μ Pa²-s

**Bottlenose dolphin/Atlantic spotted dolphin

Mitigation

Eglin AFB will employ a number of mitigation measures in an effort to substantially decrease the number of animals potentially affected. Eglin AFB is committed to assessing the mission activity for opportunities to provide operational mitigations (i.e., ramping up and using nighttime training rounds), while potentially sacrificing some mission flexibility. Even though the forfeit of some mission aspects may improve overall mitigation effectiveness, Eglin AFB believes that the gunnery mission itself does not accommodate typical mitigation, such as independent aerial or vessel surveys. As such, the use of conservative analyses serves in this application as a functional mitigation technique.

Visual Mitigation

Areas to be used in gunnery missions will be visually monitored for marine mammal presence from the AC-130 aircraft prior to commencement of the mission. If the presence of one or more marine mammals is detected, the target area will be avoided. In addition, monitoring will continue during the mission. If marine mammals are detected at any time, the mission will be either immediately halted and/or relocated as necessary or suspended until the marine mammal has left the area. While visual monitoring at a height of 1000–1500 ft (305–457 m), is expected to be effective, standard visual monitoring is not very effective at 20,000 ft (6.1 km) unless there is a large pod of marine mammals. Daytime and nighttime visual monitoring will be supplemented with IR and TV monitoring and nighttime visual monitoring, which is generally considered to be ineffective at any height, has been altered to incorporate the TR.

Development of the TR

The largest type of ammunition used during typical gunnery missions is the 105-mm (4.13-in) round containing 4.7 lbs (2.1 kg) of HE. This is several times more HE than that found in the next largest round (40 mm/1.57 in). As a mitigation technique, the Air Force developed a 105-mm TR that contains only 0.35 lb (0.16 kg) of HE. The TR was developed to significantly reduce the effects of nighttime operations, when visual surveying for marine mammals is of limited effectiveness. Use of the TR at night dramatically reduces the risk of harassment, and Eglin anticipates a 96 percent reduction in impact by using the 105-mm TR.

Ramp-Up

Eglin proposes to ramp-up activities by beginning with the smallest, or the round having least impact and proceeding to subsequently larger size rounds (in this case the lowest caliber of munition up to the 105-mm round). Theoretically, this allows animals to perceive steadily increasing sounds and to react, if necessary. Alerting animals in advance of injurious sound waves by transmitting low-power “warning” signals a short time before the action provides a safeguard where there is a potential for the risk of injury.

Other Mitigation

NMFS has recommended additional measures to protect marine life as part of its section 7 consultations under the Endangered Species Act (ESA) with Eglin. NMFS proposes to continue the following requirements under an IHA:

(1) Test firing will be conducted only when sea surface conditions are sea state 3 or less on the Beaufort scale.

(2) Prior to each firing event, the aircraft crew will conduct a visual survey of the 5-nm (9.3-km) wide prospective target area to attempt to sight any protected species that may be present (e.g., marine mammals, sea turtles, and Sargassum rafts). The AC-130 gunship will conduct at least two complete orbits at a minimum safe airspeed around a prospective target area at a maximum altitude of 1,500 ft (457 m), with a recommended altitude of 1,000 ft (305 m). The AC-130 will then continue orbiting the selected target point as it climbs to the mission testing altitude. During the low altitude orbits and the climb to testing altitude, aircraft crew will visually scan the sea surface within the aircraft’s orbit circle for the presence of listed and non-listed marine mammals and sea turtles. Primary emphasis for the surface scan will be upon the flight crew in the cockpit and personnel stationed in the tail observer bubble and starboard viewing window. The AC-130’s optical and electronic sensors will also be employed for target clearance. If any marine mammals are detected within the AC-130’s orbit circle, either during initial clearance or after commencement of live firing, the aircraft will relocate to another target and repeat the clearance procedures. If multiple firing events occur within the same flight, these clearance procedures will precede each event.

(3) The aircrews of the air-to-ground gunnery missions will initiate location and surveillance of a suitable firing site immediately after exiting U.S. territorial waters (> 12 nm). This would

potentially restrict most gunnery activities to the shallower continental shelf waters of the GOM where marine mammal densities are typically lower, and thus potentially avoid the slope waters where the more sensitive species (e.g., endangered sperm whales) typically reside.

(4) Observations will be accomplished using all-light TV, IR sensors, and visual means for at least 60 minutes prior to each exercise.

(5) Aircrews will utilize visual, night vision goggles (NVGs), and other onboard sensors to search for marine mammals and sea turtles while performing area clearance procedures during night-time pre-mission activities.

(6) If any marine mammals, sea turtles, or Sargassum rafts are sighted during pre-mission surveys or during the mission, activities will be immediately halted until the area is clear of all protected marine species for 60 minutes or the mission location relocated and resurveyed.

Monitoring and Reporting

NMFS proposes to require Eglin to monitor the target area for impacts to marine mammals and to report on its activities on an annual basis. Accordingly, NMFS’ Biological Opinion on this action has recommended certain monitoring measures to protect marine life. NMFS proposes to require the same requirements under an IHA:

(1) Eglin will develop and implement a marine species observer-training program in coordination with NMFS. This program will primarily provide expertise to Eglin’s testing and training community in the identification of protected marine species during surface and aerial mission activities in the GOM. Additionally, the A-S gunnery mission aircrews will participate in the proposed species observation training. As a result, designated crew members will be selected to receive training as protected species observers. Observers will receive training in protected species survey and identification techniques through a NMFS-approved training program.

(2) Aircrews will initiate the post-mission clearance procedures beginning at the operational altitude of approximately 15,000 to 20,000 ft (4572 to 6096 m) AGL, and initiating a spiraling descent down to an observation altitude of approximately 1,500 ft. (457 m) AGL. Rates of descent will occur over a 3 to 5 minute time frame.

(3) Eglin will track their use of the EGTR for test firing missions and protected resources (marine mammal/

sea turtle) observations, through the use of mission reporting forms.

(4) A–S gunnery missions will coordinate with next-day flight activities to provide supplemental post-mission observations for marine mammals and sea turtles in the operations area of the previous day.

(5) A summary annual report of marine mammal/sea turtle observations and A–S activities will be submitted to the NMFS Southeast Regional Office (SERO) and the Office of Protected Resources by January 31 of each year.

(6) If any marine mammal or sea turtle is observed or detected to be deceased prior to testing, or injured or killed during live fire, a report must be made to the NMFS by the following business day.

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

ESA

Consultation under section 7 of the ESA on Eglin was completed on December 18, 1998. Consultation was reinitiated by Eglin AFB with NMFS on February 13, 2003 and concluded on October 20, 2004. A NMFS Biological Opinion issued on October 20, 2004, concluded that the A–S gunnery exercises in the EGTTR are unlikely to jeopardize the continued existence of species listed under the ESA that are within the jurisdiction of NMFS or destroy or adversely modify critical habitat. The proposed IHA to Eglin is a federal action; accordingly, prior to issuance of an IHA, NMFS will determine whether additional consultation is necessary.

NEPA

In November, 2002, the U.S. Air Force prepared a Final Programmatic EA for the activities on the EGTTR. NMFS is reviewing this EA and will either adopt it or prepare its own NEPA document before making a determination on the issuance of an IHA and rulemaking. A copy of Eglin's Final PEA for this activity is available upon written request (see **ADDRESSES**).

Preliminary Conclusions

NMFS has preliminarily determined that the A–S gunnery exercises that are conducted by Eglin AFB in the EGTTR in the northern GOM, is unlikely to result in the mortality or serious injury of marine mammals (see Table 11) and, would result in, at worst, a temporary elevation in hearing sensitivity (known as TTS). NMFS estimates that up to 271

marine mammals may incur this form of Level B harassment annually. Also, these gunnery exercises have the potential to result in a temporary modification in behavior by marine mammals. NMFS estimates that up to 25 marine mammals may experience a behavioral response to these exercises during the time-frame of an IHA. While behavioral modifications may be made by these species as a result of these air-to-surface gunnery activities, any behavioral change is expected to result in no more than a negligible impact on the affected species. In addition, the potential for temporary hearing impairment is very low and will be mitigated to the lowest level practicable through the incorporation of the mitigation measures mentioned in this document.

Proposed Authorization

NMFS proposes to issue an IHA to Eglin AFB for conducting A–S gunnery exercises within the EGTTR in the northern GOM provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. NMFS has preliminarily determined that the proposed activity is unlikely to result in serious injury or mortality to marine mammals; would have no more than a negligible impact on the affected marine mammal stocks; and would not have an unmitigable adverse impact on the availability of stocks for subsistence uses.

Information Solicited

NMFS requests interested persons to submit comments and information concerning this proposed IHA and Eglin's IHA/LOA application for incidental take regulations (see **ADDRESSES**). As this document is being published in conformance with NMFS regulations implementing the incidental take program (50 CFR 104(b)(1)(ii)), NMFS requests interested persons to submit comments, information, and suggestions concerning both the request and the structure and content of future regulations to allow this taking. As requested by 50 CFR 216.105, NMFS will consider this information in developing proposed regulations to authorize the taking. If NMFS proposes regulations to allow this take, interested parties will be provided with a 45-day comment period within which to submit comments on the proposed rule.

Dated: January 17, 2006.

James H. Lecky,

*Director, Office of Protected Resources,
National Marine Fisheries Service.*

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 011806F]

North Pacific Fishery Management Council; Notice of Public Meetings

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

ACTION: Meetings of the North Pacific Fishery Management Council and its advisory committees.

SUMMARY: The North Pacific Fishery Management Council (Council) and its advisory committees will hold public meetings February 6–14, 2006 at the Doubletree Hotel, 18740 Pacific Highway South, Seattle, WA 98188.

DATES: The Council's Advisory Panel (AP) will begin at 8 a.m., Monday, February 6 and continue through Saturday February 11, 2006. The Scientific and Statistical Committee (SSC) will begin at 8 a.m. on Monday February 6 and continue through Wednesday, February 8, 2006.

The Council will begin its plenary session at 8 a.m. on Wednesday, February 8, continuing through February 14, 2006. All meetings are open to the public except executive sessions. The Ecosystem Committee will meet Tuesday, February 7, from 8 am to 12 pm. The Enforcement Committee will meet Tuesday, February 7, from 1 pm to 5 pm.

ADDRESSES: Doubletree Hotel, 18740 Pacific Highway South, Seattle, WA 98188.

Council address: North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK 99501–2252.

FOR FURTHER INFORMATION CONTACT: Council staff, Phone: 907–271–2809.

SUPPLEMENTARY INFORMATION: Council Plenary Session: The agenda for the Council's plenary session will include the following issues. The Council may take appropriate action on any of the issues identified.

1. Reports
Executive Director's Report
NMFS Management Report
U.S. Coast Guard Report
Alaska Department of Fish & Game (ADF&G) Report (includes Board of Fisheries (BOF) proposals and creel survey report).
U.S. Fish & Wildlife Service Report
Protected Species Report (update on Consultation process)