

## Preliminary Conclusions

### Summary

Based on the information provided in Conoco's application and the MMS PEA, NMFS has preliminarily determined that the impact of Conoco conducting seismic surveys in the northeastern Chukchi Sea in 2006 will have a negligible impact on marine mammals and that there will not be any unmitigable adverse impacts to subsistence communities, provided the mitigation measures required under the authorization are implemented and a CAA is implemented.

### Potential Impacts on Marine Mammals

NMFS has preliminarily determined that the relatively short-term impact of conducting seismic surveys in the U.S. Chukchi Sea may result, at worst, in a temporary modification in behavior by certain species of marine mammals and/or low-level physiological effects (Level B Harassment). While behavioral and avoidance reactions may be made by these species in response to the resultant noise, this behavioral change is expected to have a negligible impact on the affected species and stocks of marine mammals.

While the number of potential incidental harassment takes will depend on the distribution and abundance of marine mammals (which vary annually due to variable ice conditions and other factors) in the area of seismic operations, the number of potential harassment takings is estimated to be relatively small in light of the population size (see Table 1).

In addition, no take by death and/or serious injury is anticipated, and the potential for temporary or permanent hearing impairment will be avoided through the incorporation of the proposed mitigation measures described in this document. This preliminary determination is supported by (1) the likelihood that, given sufficient notice through slow ship speed and ramp-up of the seismic array, marine mammals are expected to move away from a noise source that it is annoying prior to its becoming potentially injurious; (2) recent research that indicates that TTS is unlikely (at least in delphinids) until levels closer to 200–205 dB re 1 microPa are reached rather than 180 dB re 1 microPa; (3) the fact that the 200–205 dB isopleth (see number 2 above) would be very close to the vessel; and (4) the likelihood that marine mammal detection ability by trained observers is close to 100 percent during daytime and remains high at night out to the distance from the seismic vessel that corresponds to the 205 dB isopleth.

Finally, no known rookeries, mating grounds, areas of concentrated feeding, or other areas of special significance for marine mammals are known to occur within or near the planned areas of operations during the season of operations.

### Potential Impacts on Subsistence Uses of Marine Mammals

Preliminarily, NMFS believes that the proposed seismic activity by Conoco in the northern Chukchi Sea in 2006, in combination with other seismic and oil and gas programs in these areas, will not have an unmitigable adverse impact on the subsistence uses of bowhead whales and other marine mammals. This preliminary determination is supported by the following: (1) Seismic activities in the Chukchi Sea will not begin until after July 10 by which time the spring bowhead hunt is expected to have ended; (2) the fall bowhead whale hunt in the Beaufort Sea will be governed by a CAA between Conoco and the AEWC and village whaling captains, which includes conditions that will significantly reduce impacts on subsistence hunters; (4) while it is possible, but unlikely, that accessibility to belugas during the spring subsistence beluga hunt could be impaired by the survey, very little of the proposed survey is within 25 km (15.5 mi) of the Chukchi coast, meaning the vessel will usually be well offshore away from areas where seismic surveys would influence beluga hunting by communities; and (5) because seals (ringed, spotted, bearded) are hunted in nearshore waters and the seismic survey will remain offshore of the coastal and nearshore areas of these seals, it should not conflict with harvest activities.

### Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to Conoco for conducting a seismic survey in the northern Chukchi Sea in 2006, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: May 8, 2006.

#### Donna Wieting,

Deputy Director, Office of Protected Resources, National Marine Fisheries Service.  
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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 issuance of an incidental harassment authorization.

**SUMMARY:** In accordance with provisions of the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that an Incidental Harassment Authorization (IHA) to take marine mammals, by harassment, incidental to conducting air-to-surface (A-S) gunnery missions in the Gulf of Mexico (GOM) has been issued to Eglin Air Force Base (Eglin AFB) for a period of 1 year.

**DATES:** Effective from May 3, 2006, through May 2, 2007.

**ADDRESSES:** The authorization and application containing a list of the references used in this document may be obtained by writing 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 or by telephoning the contact listed here (see **FOR FURTHER INFORMATION CONTACT**). The application and the Final Programmatic Environmental Assessment (Final PEA) is also available at: <http://www.nmfs.noaa.gov/pr/permits/incidental.htm>. A paper copy of the 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 MMPA definition of "harassment" for "military readiness activities" is:

(i) any act that injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) any act that disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering, to a point where such behavioral patterns are abandoned or significantly altered [Level B harassment].

#### Summary of Request

On February 13, 2003, Eglin AFB petitioned NMFS for an authorization under section 101(a)(5) of the MMPA for the taking, by harassment, of marine mammals incidental to programmatic mission activities within the Eglin Gulf Test and Training Range (EGTTR). 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." A decision was made by NMFS to process an IHA under section 101(a)(5)(D) for the first year because an IHA can be issued more quickly, allowing MMPA coverage for Eglin AFB to be followed by rulemaking under section 101(a)(5)(A) of the MMPA for a 5-year period.

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, a "military readiness activity," 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 within the EGTTR that are typically used for the gunnery operations are located in the GOM 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 EGTTR.

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 an NMFS 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-nm (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-nm (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-m (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              |

## Comments and Responses

A notice of receipt of Eglin's application for an incidental take authorized under section 101(a)(5)(A) of the MMPA and request for 30-day public comment on both that application and the proposed IHA was published on January 23, 2006 (71 FR 3474). During the 30-day public comment period, NMFS received comments from the Marine Mammal Commission (the Commission) and three members of the public.

*Comment 1:* Comments expressed concern that marine life in the Gulf is already stressed due to pollution and other anthropogenic sources. These commenters recommended the IHA be denied.

*Response:* Section 101(a)(5) of the MMPA requires the Secretary to issue incidental harassment authorizations provided, among other things, a determination has been made that the taking by the activity will not have more than a negligible impact on the affected species or stock of marine mammals. As these determinations have been made here (see later in this document), issuance of the IHA is warranted.

Also, it should be recognized that A-S gunnery exercises will impact an area less than 500 m (1640 ft) in diameter when using the 105-mm (FU) round, the largest charge. Impacts at this distance will be limited to Level B (behavioral) harassment. This is an extremely small area of the northern Gulf of Mexico and is, therefore, unlikely to result in long-term cumulative impacts as noted in Eglin's PEA.

*Comment 2:* The Commission believes that the statutory change to the definition of harassment in the MMPA resulting from implementation of Public Law 108-136, the National Defense Authorization Act for Fiscal Year 2004 cannot be ignored. The Commission recommends that NMFS analyze the request for incidental harassment authorization and the incidental take regulations being contemplated in light of the more recent applicable definition of harassment.

*Response:* The preamble to the notice of proposed authorization and this document cite the definition of harassment for military readiness activities. An authorization under

section 101(a)(5) of the MMPA is warranted because some animals may be harassed either by incurring a temporary elevation in hearing sensitivity or through a behavioral change if the mitigation and monitoring overlooks an animal. This is especially true for night-time exercises, where visual detection ability will be poor.

*Comment 3:* The Commission remains concerned that the proposed monitoring and mitigation measures, particularly during night-time activities, will not be sufficient to ensure that marine mammals are not being taken in unanticipated ways or numbers. NMFS should provide its assessment of the likelihood of detecting marine mammals at or below the surface within zones of potential impacts, particularly when operations are occurring at night or under foggy conditions.

*Response:* As a preliminary matter, NMFS does not believe marine mammals below the water surface are likely to incur more than Level B harassment because marine mammals should be detectable by means other than visual; rounds contain either no or relatively small amounts of explosive (therefore, very small Level A harassment impact zones (see Table 11 later in this document); and, detonations at the water surface vent most of their energy into the air, not into the water column. However, we recognize this activity could potentially injure or kill marine mammals and sea turtles at the surface by falling debris, projectiles, small arms and live-fire gunnery operations (if not sighted and firing discontinued). Therefore, mitigation and monitoring needs to be effective for detecting animals at the water surface. Table 3 lists the general likelihood of detection of the marine mammal species under consideration. The categories of high, moderate, and low are relative in terms of the varying attributes among the species, and it is acknowledged that observation of any species is more difficult at night or in unfavorable weather conditions. However, because the zone for Level A impacts is small (see Table 11 later in this document), marine mammals not at the water surface are unlikely to incur more than Level B harassment.

During night-time operations, when visual detection will be poor, all-light

TV and IR sensors will be used to survey for marine mammals during the AC-130's ascending orbits and during live-fire events. It is possible, though not well documented, that surfaced cetaceans can be detected by IR sensors due to the heat radiating from the animals' bodies (particularly dorsal fins), especially those species that are large or which tend to occur in large groups. Moreover, the zone for marine mammal Level A harassment impacts is small. Therefore, while the Air Force cannot visually detect marine mammals at night, the use of other instrumentation (particularly IR sensors for detecting cetaceans), combined with the small Level A Harassment zones, low species abundance, and use of the 105-mm TR, is expected to prevent marine mammal and sea turtle mortality.

*Comment 4:* In regard to monitoring, the Commission believes NMFS and Eglin have not provided, but should provide, information concerning the time it takes the AC-130 flying at "minimum safe speed" to accomplish two orbits and how that time compares with the dive times of various marine mammal species. Additional information on which species can be detected at which altitudes particularly when operations are occurring at night or in fog is needed because most of the exercises will be at night.

*Response:* Aircrews will initiate the pre-mission clearance procedures at an altitude no higher than 1,500 ft (457 m)(via two orbits), and spiral up to the operational altitude of approximately 4,500 to 10,000 ft (1372 to 3048 m). Based on consultation with air crew personnel, the two-orbit ascent will occur over a 10- to 15-minute time frame, depending upon the terminal altitude.

General maximum dive times, as well as likelihood of detection and likelihood of occurrence in training areas, for all 16 marine mammal species authorized under the IHA are listed in Table 3. The AC-130 ascent time reasonably spans the dive time of 10 of these species. Of the remaining species, none are considered to have a high likelihood of occurring in potential mission areas.

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| Species                     | Typical Maximum Dive Time Range* | General Likelihood of Detection   | Likelihood of Occurrence in W-151 |
|-----------------------------|----------------------------------|---|-----------------------------------|
| Bryde's whale               | 20 minutes                       | High: large size (up to 50 feet), feed at or near surface.                                | Moderate                          |
| Sperm whale                 | 40 – 60 minutes                  | Moderate: large size (up to 60 feet) and social at surface, but long dives.               | Low                               |
| Dwarf/pygmy sperm whale     | 25 minutes                       | Low: deep habitat, small groups, inactive at surface, inconspicuous blow, does not fluke. | Moderate                          |
| Cuvier's beaked whale       | 45 minutes                       | Low: low, diffuse, forward-directed blow, may avoid vessels.                              | Low                               |
| <i>Mesoplodon</i> spp.      | 45 minutes                       | Low: deep sea habitat, infrequently sighted, small groups.                                | Moderate                          |
| Pygmy killer whale          | uncertain, estimated 15 minutes  | Moderate: lively swimmer and active at surface, but at other times behaves cryptically.   | Low                               |
| False killer whale          | uncertain, estimated 15 minutes  | High: large size (up to 20 feet), large groups, active at surface.                        | Low                               |
| Short-finned pilot whale    | 10 minutes                       | High: large size (up to 20 feet), large groups, active at surface.                        | Low                               |
| Rough-toothed dolphin       | 15 minutes                       | Moderate: large groups, but may be wary of vessels and aircraft.                          | Low                               |
| Bottlenose dolphin          | 9 minutes                        | High: relatively large groups, active at surface, relatively shallow water.               | High                              |
| Risso's dolphin             | 20 minutes                       | High: relatively large groups, active at surface.   | Moderate                          |
| Atlantic spotted dolphin    | 6 minutes                        | High: relatively large groups, active at surface, relatively shallow water.               | High                              |
| Pantropical spotted dolphin | 3 minutes                        | High: large groups, highly active at surface.   | Moderate                          |
| Striped dolphin             | uncertain, estimated 10 minutes  | High: large groups, highly active at surface.   | Moderate                          |
| Spinner dolphin             | uncertain, estimated 10 minutes  | High: large groups, highly active at surface.   | Moderate                          |
| Clymene dolphin             | uncertain, estimated 10 minutes  | High: large groups, highly active at surface.   | Low                               |

\*Represents the upper range of typical dive times, not the extreme range recorded or physiologically possible.

Table 3. Potential Occurrence and Detection of Marine Mammals in the EGTRR.

*Comment 5:* The Commission believes that NMFS needs to explain more clearly its determinations with respect to the dual criteria being used to establish the proposed zones. Specifically, NMFS should clarify why the proposed zone of impact for behavioral disruption (22.1 m (72.5 ft)) based on a 176-dB (SEL) threshold) is considerably smaller than the zone of impact for TTS using the 23-psi criteria (216 m (709 ft)). Under these criteria, using 105-mm "full up" ordnance, NMFS has determined that up to 217 marine mammals could experience TTS, whereas only 25 marine mammals could experience behavioral disturbance (without TTS). The Commission notes that, as recognized under the other aspect of the dual criteria for TTS (182 dB), one would generally expect the threshold for behavioral modification to be lower than that causing TTS. Thus, it is not clear why an alternate, more conservative criterion, is not also being proposed for behavioral modification. NMFS should explain this apparent contradiction.

*Response:* NMFS adopted a dual criterion for TTS Level B harassment during rulemakings for the Navy ship-shock trials. NMFS has not adopted a dual criterion for non-TTS behavioral responses by marine mammals. A TTS pressure criterion was added during the shock trial rulemaking (see 87 FR 22450, May 4, 2001) to provide a more conservative zone for calculating potential TTS exposures when the explosive or the animal approaches the sea surface (for which cases the explosive energy is reduced but the peak pressure is not). Originally established at 12 psi for large charges (such as in the 10,000 lb (4536 kg) shock trials), empirical research now supports a pressure metric of 23 psi, as explained previously (see 70 FR 48675, August 19, 2005). The 23-psi metric for onset TTS has been adopted by NMFS for this action. Explanation is provided elsewhere in this document (as in the proposed IHA notice) on NMFS' incorporation of 176 dB (SEL) for calculating behavioral responses below TTS. Therefore, while NMFS agrees with the Commission that one would generally expect the threshold for behavioral modification to be lower than that causing TTS, due to a lack of empirical information and data, a dual criteria for Level B behavioral harassment cannot be developed, and any number chosen by NMFS at this time, would be arbitrary. NMFS plans to investigate this situation during the development of a proposed rule on this action and will provide the Commission

and the public additional information at that time.

*Comment 6:* The Commission notes that NMFS plans to require that, if any marine mammal or sea turtle is observed or otherwise detected prior to testing, or if any marine mammal or sea turtle is injured or killed during live fire, a report must be made to NMFS by the following business day. The Commission recommends that, in addition to requiring that such incidents be reported, NMFS require that operations be suspended immediately if a dead or seriously injured marine mammal is found in the vicinity of the operations and the death or injury could have occurred incidental to the gunnery activities. Any such suspension should remain in place until NMFS has (1) reviewed the situation and determined that further mortalities or serious injuries are unlikely to occur or (2) issued regulations authorizing such takes under section 101(a)(5)(A) of the Act.

*Response:* As noted in previous **Federal Register** notices, activity suspension is a standard condition on all IHAs whenever it appears an unauthorized taking may have occurred.

*Comment 7:* The Commission notes that of the 29 species of marine mammals documented to occur within the Gulf of Mexico, Eglin AFB is requesting authority to take 21 species incidental to the proposed activities. It is not readily apparent why at least some of the other species that are known to occur in the Gulf might not also be taken. These species include the endangered right, humpback, fin, sei, and blue whales. Although some of these species may be rarely sighted, they are known to occur in or near the Eglin Gulf Test and Training Range. As such, NMFS and/or Eglin AFB should either amend the application to include these other species in the authorization or provide additional explanation as why these species are being excluded.

*Response:* There are several reasons for not including these cetacean species in Eglin AFB's authorized list of species for taking by Level B harassment: (1) Most A-S gunnery exercises take place on shelf waters, which large cetaceans do not inhabit; (2) the northern right whale, which is more coastal, is extremely rare in the northern Gulf; (3) the rarity of ESA-listed species makes them unlikely to be affected even without mitigation and monitoring, as shown in Tables 4, 5, 6 and 7; and (4) the relatively shallow water on the continental shelf and large size make these species readily detectable by visual and electronic detection from the AC-130 aircraft. This finding is

consistent with the finding by NMFS' Southeast Region's October 20, 2004 Biological Opinion.

*Comment 8:* The Commission also reiterates its view that an across-the-board definition of TTS as constituting no more than level B harassment inappropriately dismisses possible injury and biologically significant behavioral effects to the affected animals that may occur if an animal's hearing is compromised, even temporarily.

*Response:* NMFS has provided detailed response to the scientific basis for considering TTS to be Level B harassment and not Level A harassment (injury). Reviewers are encouraged to read these documents for additional information (70 FR 48675, August 19, 2005; 66 FR 22450, May 4, 2001). However, since TTS is considered Level B harassment, and significant behavioral effects that result from TTS are also considered Level B harassment takes, the significant behavioral response is included in the incidental take calculations. In addition, unlike the cited previous actions, which were single detonations, A-S gunnery exercises result in multiple detonations. As a result, behavioral reactions to the noise itself are included in the take estimate calculations (as shown in Table 12 later in this document).

#### **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 EGTTTR. 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 whales, 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 analyses provided in the Eglin Final PEA and in Eglin's Supplemental Information Request (2003), NMFS concurs with Eglin that gunnery exercises are not likely to result in any injury or mortality to marine mammals.

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 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 EGTR 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 4.

DPI impacts are anticipated to affect only marine species at or very near the ocean surface. As a result, 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 in Table 5 of this document (and correcting PEA Table 4–23), the impacts to marine mammals and sea turtles at the surface that could potentially be injured or killed by projectiles and falling debris was determined to be very low, and

mitigation measures that Eglin will employ under this action would reduce even these low levels.

In addition to small arms, Eglin calculated the potential for other non-explosive items (inert 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 6). As shown in Eglin's Final PEA and Table 7 in this document, the potential for any DPI to marine mammals and sea turtles is extremely remote and can, therefore, be discounted.

*Table 4. Air-to-Surface Gunnery/ Small Arms Operations as Events*

| Activity Description of EGTR 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 EGTR Air-to-Surface Gunnery/ Small Caliber Events | 100.0% ..... | 606.   |

*Table 5. Potential Small Arms DPI Impacts (Annual) to Marine Mammal Species.*

| Species       | Density (#/ km <sup>2</sup> ) | Adjusted Density (#/ km <sup>2</sup> ) | Impact Zone Area <sup>1</sup> (km <sup>2</sup> ) | Animals in Impact Zone (#) | Years to Impact 1 Animal (#) |
|---------------|-------------------------------|--|--|----------------------------|------------------------------|
| 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 6. Non-Small Arms Operations as Events*

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

*Table 7. Potential Non-Small Arms/Non-Gunnery DPI Impacts (annual) to Marine Species*

| Species       | Density (#/ km <sup>2</sup> ) | Adjusted Density (#/ km <sup>2</sup> ) | Impact Zone Area <sup>1</sup> (km <sup>2</sup> ) | Animals in Impact Zone (#) | Years to Impact 1 Animal (#) |
|---------------|-------------------------------|--|--|----------------------------|------------------------------|
| 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                | 21,673\                      |

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 8 and

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

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

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

Table 9. Potential Nighttime Gunnery DPI Impacts (annual) to Marine Cetaceans.

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

### 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 limited understanding with respect to hearing in marine mammals. 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 those documents were 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 a temporary loss of some hearing ability and behavioral reactions. Due to the small amounts of net explosive weight (NEW) for each of the rounds fired in the EGTTR and the mitigation measures, mortality resulting from sounds generated in the water column was determined to be highly unlikely and is not considered further.

Permanent hearing loss is considered an injury and is termed permanent threshold shift (PTS). NMFS, therefore, 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 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 Pa<sup>2</sup>-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 microPa<sup>2</sup>-s. The maximum experimental peak pressure exposure of 207 kPa (30 psi, 228 dB re 1 microPa peak-peak pressure, 188 dB re 1 microPa<sup>2</sup>-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 incur 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 10 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 behavioral 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 11 provides the estimated ZOI radii for the EGTTR ordnance.

At this time, there is no empirical data or information that would allow NMFS to establish a peak pressure criterion for sub-TTS behavioral disruption.

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**Table 10. EGTR 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 11. Estimated Range for a Zone of Impact (ZOI) Distance for the EGTR 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 EGTTR 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 ordnance 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 burst 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 (161 ft; Phase I), 122 m (400 ft; 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 ensonified 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/km<sup>2</sup> (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 (709 ft) 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 ensonified 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 (295-ft) ZOI (105-mm TR ZOI) which may be potentially ensonified 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/km<sup>2</sup> (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 (295-ft) 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 animals 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 ensonified 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 12 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 12. Yearly Estimated Number of Marine Mammals Affected by the Gunnery Mission Noise**

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

km<sup>2</sup> = square kilometers; NA = not applicable

\*dB= dB re 1 μPa<sup>2</sup>-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 states that it is committed to assessing the mission activity for opportunities to provide operational mitigation (i.e., ramping up and using nighttime training rounds), while potentially sacrificing some mission flexibility.

### 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 10,000 ft (3.0 km) unless there is a large pod of marine mammals. Daytime and nighttime visual monitoring will be supplemented with IR and TV monitoring. As nighttime visual monitoring is generally considered to be ineffective at any height, the EGTR missions will 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 round (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 FU 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

Under this IHA, NMFS is requiring additional measures to protect marine life that were originally recommended as part of section 7 consultations under the Endangered Species Act (ESA) with Eglin. These requirements are:

(1) Test firing will be conducted only when sea surface conditions are sea state 3.5 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). Provided protected species are not detected, the AC-130 can 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, the 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 ( $\leq 12$  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

The NMFS Biological Opinion on this action recommended certain monitoring measures to protect marine life. As a result, NMFS has imposed these same requirements under the 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) elevation, and initiating a spiraling descent down to an observation altitude of approximately 1,500 ft. (457 m) elevation. 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 either at the time of a request for renewal of an IHA or 90 days after

expiration of the current IHA if a new IHA is not requested.

(6) If any dead or injured marine mammals or sea turtles are observed or detected 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., 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 EGTTR activities 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. NMFS has determined that issuance of an IHA to Eglin AFB for this activity will not have effects beyond what was analyzed in 2004 in the Biological Opinion.

#### NEPA

The U.S. Air Force (USAF) made a Finding of No Significant Impact (FONSI) determination on August 18, 2003, based on information contained within its November, 2002 Programmatic EA (PEA), that implementation of the subject action is not a major Federal action having significant effects on the environment within the meaning of NEPA. The USAF determined, therefore, that an environmental impact statement would not be prepared. NMFS noted that Eglin AFB had prepared a PEA for the EGTTR activity and made this PEA available upon request (January 23, 2006, 71 FR 3474). In accordance with NOAA Administrative Order 216-6 (Environmental Review Procedures for Implementing the National Environmental Policy Act, May 20, 1999), NMFS has reviewed the information contained in Eglin AFB's PEA and determined that Eglin AFB's PEA accurately and completely describes the proposed action, the alternatives to the proposed action, and the potential impacts on marine mammals, endangered species, and other marine life that could be impacted by the preferred alternative and the other alternatives. Accordingly, NMFS adopted Eglin AFB's PEA under 40 CFR 1506.3 and made its own FONSI. The

NMFS FONSI also takes into consideration updated data and information contained in this **Federal Register** document, the proposed IHA notice (71 FR 3474, January 23, 2006) and previous notices (70 FR 48675, August 19, 2005). Therefore, it is not necessary for NMFS to issue a new EA, supplemental EA or an environmental impact statement for the issuance of an IHA to Eglin AFB for this activity. A copy of Eglin's PEA and the NMFS FONSI for this activity is available upon request (see **ADDRESSES**).

#### Determinations

NMFS has determined that the A-S gunnery exercises that are conducted by Eglin AFB in the EGTTR in the northern GOM, are 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). Eglin AFB estimates, and NMFS concurs 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. Eglin AFB estimates that up to 25 marine mammals may experience a behavioral response to these exercises during the time-frame of an IHA. NMFS believes that this number may be slightly higher because estimates of Level B harassment by peak pressure cannot be made at this time. While behavioral modifications may be made by these species as a result of these A-S 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. Finally, this activity by Eglin AFB would not have an unmitigable adverse impact on the availability of stocks for subsistence uses because there are no known subsistence uses of marine mammals in the Gulf of Mexico.

#### Authorization

NMFS has issued an IHA to Eglin AFB for conducting A-S gunnery exercises within the EGTTR in the northern GOM for a 1-year period, provided the mitigation, monitoring, and reporting requirements are undertaken.

Dated: May 3, 2006.

**Donna Wieting,**

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

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**BILLING CODE 3510-22-S**

## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

[I.D. 050406C]

#### Endangered and Threatened Species; Take of Anadromous Fish

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

**ACTION:** Applications for five scientific research permits (1564, 1565, 1566, 1567, 1568) and one modification (1335 - modification 4).

**SUMMARY:** Notice is hereby given that NMFS has received six scientific research permit application requests relating to Pacific salmon. The proposed research is intended to increase knowledge of species listed under the Endangered Species Act (ESA) and to help guide management and conservation efforts.

**DATES:** Comments or requests for a public hearing on the applications must be received at the appropriate address or fax number (see **ADDRESSES**) no later than 5 p.m. Pacific standard time on June 12, 2006.

**ADDRESSES:** Written comments on the applications should be sent to the Protected Resources Division, NMFS, 1201 NE Lloyd Blvd., Suite 1100, Portland, OR 97232-1274. Comments may also be sent via fax to 503-230-5441 or by e-mail to [resapps.nwr@noaa.gov](mailto:resapps.nwr@noaa.gov).

**FOR FURTHER INFORMATION CONTACT:** Garth Griffin, Portland, OR (ph.: 503-231-2005, Fax: 503-230-5441, e-mail: [Garth.Griffin@noaa.gov](mailto:Garth.Griffin@noaa.gov)). Permit application instructions are available from the address above.

#### SUPPLEMENTARY INFORMATION:

##### Species Covered in This Notice

The following listed species are covered in this notice:

Chinook salmon (*Oncorhynchus tshawytscha*): threatened lower Columbia River (LCR), threatened upper Willamette River (UWR), threatened Puget Sound (PS), endangered upper Columbia River (UCR).

Chum salmon (*O. keta*): threatened Columbia River (CR), threatened Hood Canal (HC).