

this proceeding. Members of the public should note that from the time a Notice of Proposed Rule Making is issued until the matter is no longer subject to Commission consideration or court review, all *ex parte* contacts are prohibited in Commission proceedings, such as this one, which involve channel allotments. See 47 CFR 1.1204(b) for rules governing permissible *ex parte* contacts.

For information regarding proper filing procedures for comments, see 47 CFR 1.415 and 1.420.

#### List of Subjects in 47 CFR Part 73

Radio, Radio broadcasting.

For the reasons discussed in the preamble, the Federal Communications Commission proposes to amend 47 CFR part 73 as follows:

#### PART 73—RADIO BROADCAST SERVICES

1. The authority citation for part 73 continues to read as follows:

**Authority:** 47 U.S.C. 154, 303, 334, 336.

#### § 73.202 [Amended]

2. Section 73.202(b), the Table of FM Allotments under Texas, is amended by removing Channel 231A and by adding Channel 279A at Mount Enterprise.

Federal Communications Commission.

**John A. Karousos,**

*Assistant Chief, Audio Division, Media Bureau.*

[FR Doc. E8–29499 Filed 12–11–08; 8:45 am]

**BILLING CODE 6712–01–P**

#### FEDERAL COMMUNICATIONS COMMISSION

#### 47 CFR Part 73

[DA 08–2590; MB Docket No. 08–228; RM–11481]

#### Radio Broadcasting Services; Port Angeles, WA

**AGENCY:** Federal Communications Commission.

**ACTION:** Proposed rule.

**SUMMARY:** The Audio Division requests comment on a petition filed by Jodesha Broadcasting, Inc., licensee of Station KANY(FM), Ocean Shores, Washington, and permittee of Station KSWW(FM), Montesano, Washington, proposing the substitution of FM Channel 271A for vacant Channel 229A at Port Angeles, Washington. The reference coordinates for Channel 271A at Port Angeles, Washington, are 48–06–54 NL and 123–26–36 WL. See **SUPPLEMENTARY INFORMATION**, *infra*.

**DATES:** Comments must be filed on or before January 21, 2009, and reply comments on or before February 5, 2009.

**ADDRESSES:** Federal Communications Commission, 445 Twelfth Street, SW., Washington, DC 20554. In addition to filing comments with the FCC, interested parties should serve the petitioner, his counsel, or consultant, as follows: David Tillotson, Esq., 4606 Charleston Terrace, NW., Washington, DC 20007 (Counsel for Jodesha Broadcasting, Inc.).

**FOR FURTHER INFORMATION CONTACT:** Andrew J. Rhodes, Media Bureau, (202) 418–2180.

**SUPPLEMENTARY INFORMATION:** This is a synopsis of the Commission's Notice of Proposed Rulemaking, MB Docket No. 08–228, adopted November 26, 2008, and released November 28, 2008. The full text of this Commission decision is available for inspection and copying during regular business hours at the FCC's Reference Information Center, Portals II, 445 Twelfth Street, SW., Room CY–A257, Washington, DC 20554. The complete text of this decision may also be purchased from the Commission's duplicating contractor, Best Copy and Printing, Inc., 445 12th Street, SW., Room CY–B402, Washington, DC 20554, telephone 1–800–378–3160 or <http://www.BCPIWEB.com>. This document does not contain proposed information collection requirements subject to the Paperwork Reduction Act of 1995, Public Law 104–13. In addition, therefore, it does not contain any proposed information collection burden “for small business concerns with fewer than 25 employees,” pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107–198, see 44 U.S.C. 3506(c)(4).

The proposed channel substitution at Port Angeles is part of a hybrid application and rulemaking proceeding. In the first application, Jodesha Broadcasting proposes the upgrade of Channel 229C3 to Channel 229C0 at Ocean Shores, the reallocation of Channel 229C0 to Montesano, Washington, and the associated modification of the Station KANY(FM) license. To retain a first local service at Ocean Shores, the second application proposes the downgrade of Channel 271C2 to Channel 271C3 at Montesano, Washington, the reallocation of Channel 271C3 to Ocean Shores, and the modification of the Station KSWW(FM) construction permit. See 73 FR 50015 (August 25, 2008).

Provisions of the Regulatory Flexibility Act of 1980 do not apply to this proceeding.

Members of the public should note that from the time a Notice of Proposed Rule Making is issued until the matter is no longer subject to Commission consideration or court review, all *ex parte* contacts are prohibited in Commission proceedings, such as this one, which involve channel allotments. See 47 CFR 1.1204(b) for rules governing permissible *ex parte* contact.

For information regarding proper filing procedures for comments, see 47 CFR 1.415 and 1.420.

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Radio, Radio broadcasting.

For the reasons discussed in the preamble, the Federal Communications Commission proposes to amend 47 CFR part 73 as follows:

#### PART 73—RADIO BROADCAST SERVICES

1. The authority citation for part 73 continues to read as follows:

**Authority:** 47 U.S.C. 154, 303, 334, 336.

#### § 73.202 [Amended]

2. Section 73.202(b), the Table of FM Allotments under Washington, is amended by removing 229A and adding Channel 271A at Port Angeles.

Federal Communications Commission.

**John A. Karousos,**

*Assistant Chief, Audio Division, Media Bureau.*

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#### DEPARTMENT OF COMMERCE

#### National Oceanic and Atmospheric Administration

#### 50 CFR Part 216

RIN 0648–AW78

#### Taking and Importing Marine Mammals; U.S. Navy Training in the Virginia Capes Range Complex

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

**ACTION:** Proposed rule; request for comments.

**SUMMARY:** NMFS has received a request from the U.S. Navy (Navy) for authorization to take marine mammals incidental to training activities conducted within the Virginia Capes (VACAPES) Range Complex for the

period of April 2009 through April 2014. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is proposing regulations to govern that take and requesting information, suggestions, and comments on these proposed regulations.

**DATES:** Comments and information must be received no later than January 12, 2009.

**ADDRESSES:** You may submit comments, identified by 0648-AW78, by any one of the following methods:

- Electronic Submissions: Submit all electronic public comments via the Federal eRulemaking Portal <http://www.regulations.gov>
- Hand delivery or mailing of paper, disk, or CD-ROM comments should be addressed to Michael Payne, Chief, Permits, Conservation and Education Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910-3225.

Instructions: All comments received are a part of the public record and will generally be posted to <http://www.regulations.gov> without change. All Personal Identifying Information (for example, name, address, etc.) voluntarily submitted by the commenter may be publicly accessible. Do not submit Confidential Business Information or otherwise sensitive or protected information.

NMFS will accept anonymous comments (enter N/A in the required fields if you wish to remain anonymous). Attachments to electronic comments will be accepted in Microsoft Word, Excel, WordPerfect, or Adobe PDF file formats only.

**FOR FURTHER INFORMATION CONTACT:** Shane Guan, Office of Protected Resources, NMFS, (301) 713-2289, ext. 137.

**SUPPLEMENTARY INFORMATION:**

**Availability**

A copy of the Navy's application may be obtained by writing to the address specified above (See ADDRESSES), telephoning the contact listed above (see **FOR FURTHER INFORMATION CONTACT**), or visiting the internet at: <http://www.nmfs.noaa.gov/pr/permits/incidental.htm>. The Navy's Draft Environmental Impact Statement (DEIS) for the VACAPES Range Complex was published on June 27, 2008, and may be viewed at <http://www.VACAPESRangeComplexEIS.com>. NMFS participated in the development of the Navy's DEIS as a cooperating agency under the National Environmental Policy Act (NEPA).

**Background**

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) 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) during periods of not more than five consecutive years each if certain findings are made and regulations are issued or, if the taking is limited to harassment, notice of a proposed authorization is provided to the public for review.

Authorization shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses, and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such taking are set forth.

NMFS has defined "negligible impact" in 50 CFR 216.103 as:

an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.

The National Defense Authorization Act of 2004 (NDAA) (Public Law 108-136) removed the "small numbers" and "specified geographical region" limitations and amended the definition of "harassment" as it applies to a "military readiness activity" to read as follows (Section 3(18)(B) of the MMPA):

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

**Summary of Request**

On March 17, 2008, NMFS received an application from the Navy requesting authorization for the take of 13 species of cetacean incidental to the proposed training activities in VACAPES Range Complex over the course of 5 years. These training activities are classified as military readiness activities. The Navy states that these training activities may cause various impacts to marine mammal species in the proposed VACAPES Range Complex area. The Navy requests an authorization to take individuals of these cetacean species by Level B Harassment. Further, the Navy

requests authorization to take 1 individual Atlantic spotted, 20 common, 1 pantropical spotted, and 3 striped dolphins per year by injury, and 1 individual common dolphin per year by mortality, as a result of the proposed training activities at VACAPES Range Complex. Please refer to Table 29 of the LOA application for detailed information of the potential exposures from explosive ordnance (per year) for marine mammals in the VACAPES Range Complex. However, due to the proposed mitigation and monitoring measures, NMFS does not believe the proposed action would result in marine mammal mortalities. Therefore, no mortality would be authorized for the Navy's VACAPES Range Complex training activities.

**Background of Navy Request**

The Navy's mission is to maintain, train, and equip combat-ready naval forces capable of winning wars, deterring aggression, and maintaining freedom of the seas. Title 10, U.S. Code (U.S.C.) section 5062 directs the Chief of Naval Operations to train all naval forces for combat. The Chief of Naval Operations meets that direction, in part, by conducting at-sea training exercises and ensuring naval forces have access to ranges, operating areas (OPAREAs) and airspace where they can develop and maintain skills for wartime missions and conduct research, development, test, and evaluation (RDT&E) of naval weapons systems.

The VACAPES Range Complex represents an essential three-dimensional space that provides a realistic and safe training area for Navy personnel. For nearly a century the area has supported Navy training activities, and is now host to a wide range of training every year to ensure the U.S. military members are ready for combat.

The VACAPES Range Complex is the principal training area for air, surface and submarine units located in Hampton Roads, Virginia. The VACAPES Range Complex is also the primary homeport of the Atlantic Fleet. The Hampton Roads area includes more than 80,000 active duty Navy personnel. In addition to serving as the site for essential Navy training, the VACAPES Range Complex is host to activities for the RDT&E of emerging technologies. The RDT&E activities addressed in the VACAPES EIS/OEIS are those RDT&E activities that are substantially similar to training, involving existing systems or systems with similar operating parameters.

The VACAPES Study Area geographically encompasses offshore, near-shore, and onshore OPAREAs,

ranges, and Special Use Airspace (SUA) (Figure 1 of the application). The lower Chesapeake Bay is also part of the Study Area, although no training involving explosions would be performed in this area. Together, components of the VACAPES Study Area encompass:

- 27,661 square nautical miles (nm<sup>2</sup>) of sea space (not including the portion of the Lower Chesapeake Bay); and
- 28,672 nm<sup>2</sup> of SUA warning areas

The portions of the VACAPES Study Area addressed in the Navy's application consist of the offshore OPAREA (surface and subsurface waters) and the SUA warning areas (and not the SUA associated with land ranges), and waters extending from the shoreline to the OPAREA boundary (Table 1 of the application). Table 6 of the LOA application provides a list of marine mammal species that have been confirmed and/or have the potential to occur in the VACAPES Study Area.

The VACAPES OPAREA is a set of operating and maneuver areas with defined ocean surface and subsurface operating areas described in detail in Table 1 of the application. The OPAREA is located in the coastal and offshore waters of the western North Atlantic Ocean adjacent to Delaware, Maryland, Virginia, and North Carolina (Figure 1 of the application; 27,661 nm<sup>2</sup> of surface waters). The northernmost boundary of the OPAREA is located 37 nautical

miles (nm) off the entrance to Delaware Bay at latitude 38° 45' N, the farthest point of the eastern boundary is 184 nm east of Chesapeake Bay at longitude 72° 41' W, and the southernmost point is 105 nm southeast of Cape Hatteras, North Carolina, at latitude of 34° 19' N. The western boundary of the OPAREA lies 3 nm from the shoreline at the boundary separating state and Federal waters.

A warning area is airspace of defined dimensions, extending from 3 nm outward from the U.S. coast, which contains activity that may be hazardous to nonparticipating aircraft. The purpose of such warning area is to warn nonparticipating pilots of the potential danger. A warning area may be located over domestic or international waters or both.

#### Description of the Specified Activities

The Navy requests an authorization for take of marine mammals incidental to conducting training operations within the VACAPES Range Complex. These training activities consist of surface warfare, mine warfare, amphibious warfare, strike warfare, and vessel movement. The locations of these activities are described in Figure 1 of the application. A description of each of these training activities within the VACAPES Range Complex is provided below:

#### Surface Warfare

Surface Warfare (SUW) supports defense of a geographical area (e.g., a zone or barrier) in cooperation with surface, subsurface, and air forces. SUW operations detect, localize, and track surface targets, primarily ships. Detected ships are monitored visually and with radar. Operations include identifying surface contacts, engaging with weapons, disengaging, evasion and avoiding attack, including implementation of radio silence and deceptive measures.

For the proposed VACAPES Range Complex training operations, SUW involving the use of explosive ordnance includes air-to-surface Missile Exercises and air-to-surface Bombing Exercises that occur at sea.

(1) Missile Exercise (Air-to-Surface) (MISSILEX (A-S)): This exercise would involve fixed winged aircraft crews and helicopter crews who launch missiles at at-sea surface targets with the goal of destroying or disabling the target. MISSILEX (A-S) training in the VACAPES Range Complex can occur during the day or at night in locations described in Figure 1 of the LOA application. Table 1 below summarizes the levels of MISSILEX planned in the VACAPES Range Complex for the proposed action.

TABLE 1. LEVELS OF MISSILEX PLANNED IN THE VACAPES RANGE COMPLEX PER YEAR

Operation	Platform	System/Ordnance	Number of Events
Missile Exercise (MISSILEX) (Air to Surface)	MH-60S, HH-60H	AGM-114 (Hellfire missile)	60 sorties (60 missiles)
	F/A-18, P-3C, and P-8A	AGM-65 E/F (Maverick missile)	20 sorties (20 missiles)

(2) Bombing Exercise (BOMBEX) (A-S): This exercise would involve strike fighter aircraft (F/A-18s) delivering explosive bombs against at-sea surface targets with the goal of destroying the

target. BOMBEX (A-S) training in the VACAPES Study Area occurs only during daylight hours in the locations described in Figure 1 of the LOA application. Table 2 below summarizes

the levels of BOMBEX planned in the VACAPES Range Complex for the proposed action.

TABLE 2. LEVELS OF BOMBEX PLANNED IN THE VACAPES RANGE COMPLEX PER YEAR

Operation	Platform	System/Ordnance	Number of Events
Bombing Exercise (BOMBEX) (Air-to-Surface, At-Sea)	F/A-18	MK-83/GBU-32 [1,000 lb High Explosive (HE) bomb]	5 events (20 bombs 4 bombs/event)

#### Mine Warfare/Mine Exercises

Mine Warfare (MIW) includes the strategic, operational, and tactical use of mines and mine countermeasure measures (MCM). MIW training events are also collectively referred to as Mine Exercises (MINEX). MIW training/

MINEX utilizes shapes to simulate mines. These shapes are either concrete-filled shapes or metal shapes. No actual explosive mines are used during MIW training in the VACAPES Range Complex study area. MIW training or MINEX is divided into the following.

(1) Mine laying: Crews practice the laying of mine shapes in simulated enemy areas;

(2) Mine countermeasures: Crews practice "countering" simulated enemy mines to permit the maneuver of friendly vessels and troops.

“Countering” refers to both the detection and identification of enemy mines, the marking and maneuver of vessels and troops around identified enemy mines and mine fields, and the disabling of enemy mines. A subset of mine countermeasures is mine neutralization. Mine neutralization

refers to the disabling of enemy mines by causing them to self-detonate either by setting a small explosive charge in the vicinity of the enemy mine, or by using various types of equipment that emit a sound, pressure, or a magnetic field that causes the mine to trip and self-detonate. In all cases, actual

explosive (live) mines would not be used during training events. Rather, mine shapes are used to simulate real enemy mines. Table 3 below summarizes the levels of mine warfare/ mine exercises planned in the VACAPES Range Complex for the proposed action.

TABLE 3. LEVELS OF MINE WARFARE/MINE EXERCISES PLANNED IN THE VACAPES RANGE COMPLEX PER YEAR

Operation	Platform	System/Ordnance	Number of Events
Mine Neutralization	MH-60S	AMNS	30 rounds
	EOD	20 lb charges	24 events

In the VACAPES Range Complex study areas, MIW training/MINEX events include the use of explosive charges for two and one types of mine countermeasures and neutralization training, respectively. This training would use the Airborne Mine Neutralization System (AMNS) and underwater detonations of mine shapes by Explosive Ordnance Disposal (EOD) divers. MIW training/MINEX would occur only during daylight hours in the locations described in Figure 1 of the LOA application.

*Amphibious Warfare*

Amphibious Warfare (AMW) involves the utilization of naval firepower and

logistics in combination with U.S. Marine Corps landing forces to project military power ashore. AMW encompasses a broad spectrum of operations involving maneuver from the sea to objectives ashore, ranging from shore assaults, boat raids, ship-to-shore maneuver, shore bombardment and other naval fire support, and air strike and close air support training. AMW that involves the use of explosive ordnance is limited to Firing Exercises (FIREX).

During a FIREX, surface ships use their main battery guns to fire from sea at land targets in support of military forces ashore. On the east coast, the land

ranges where FIREX training can take place are limited. Therefore, land masses are simulated during east coast FIREX training using the Integrated Maritime Portable Acoustic Scoring and Simulation System (IMPASS) system, a system of buoys that simulate a land mass. FIREX training using IMPASS would occur only during daylight hours in the locations described in Figure 1 of the LOA application. Table 4 below summarizes the levels of FIREX and IMPASS planned in the VACAPES Range Complex for the proposed action.

TABLE 4. LEVELS OF FIREX AND IMPASS PLANNED IN THE VACAPES RANGE COMPLEX PER YEAR

Operation	Platform	System/Ordnance	Number of Events
FIREX with IMPASS	CG, DDG	5” gun (IMPASS)	22 events (858 HE rounds)

*Strike Warfare*

Strike Warfare (STW) operations are the applications of offensive military power at any chosen time and place to help carry out national goals. The systems required to conduct STW include: weapons, launch platforms, and command and control systems, intelligence, surveillance, reconnaissance, and targeting systems, and pilots or crews to operate the systems. STW involving the use of

explosive ordnance includes air-to-air Missile Exercises (MISSILEX (A-A)).

Strike fighter and electronic attack aircraft use sensors to detect radar signals from a simulated threat radar site and either simulate or actually launch an explosive or non-explosive high-speed anti-radiation missile (HARM) with the goal of destroying or disabling the threat radar site. HARM missiles are designed to detonate 30 - 60 ft (9 - 18 m) above the water surface so

as to not destroy the barge target below. Therefore HARM missiles are not included in the underwater explosive exposure modeling since no marine mammal exposures are anticipated. HARM training events are conducted in the daytime and at night in locations described in Figure 1 of the LOA application. Table 5 below summarizes the levels of HARMEX (A-A) planned in the VACAPES Range Complex for the proposed action.

TABLE 5. LEVELS OF HARMEX (A-A) PLANNED IN THE VACAPES RANGE COMPLEX PER YEAR

Operation	Platform	System/Ordnance	Number of Events
HARM Missile Exercise (HARMEX)	F/A-18	AGM-88 (HARM)	26 sorties (26 missiles)

*Vessel Movement*

Vessel movements are associated with most training operations in the VACAPES Range Complex and include transits to and from the port. Some

training operations are strictly vessel movements such as Man Overboard Drills, Tow/Be Towed Exercises, Underway Replenishment, Aircraft Carrier Flight Operations, and use of the

transit lanes by submarines when surfaced. Currently, the number of Navy vessels operating in the VACAPES Range Complex study area varies based on training schedules and can range

from 0 to about 10 vessels at any given time. Ship sizes range from 362 ft (110 m) for a SSN to 1,092 ft (333 m) for a CVN and speeds generally range from 10 to 14 knots during training operations. Operations involving vessel movements occur intermittently and are variable in duration, ranging from a few hours up to 2 weeks. These operations are widely dispersed throughout the operation areas, which is a vast area encompassing 27,661 nm<sup>2</sup> (an area approximately the size of Indiana) for the VACAPES Range Complex. The Navy logs about 1,400

total vessel days within the Range Complex during a typical year. Consequently, the density of ships within the study area at any given time is extremely low (i.e., less than 0.0004 ships/nm<sup>2</sup>).

#### Description of Marine Mammals in the Area of the Specified Activities

There are 34 marine mammal species with possible or confirmed occurrence in the VACAPES Range Complex. As indicated in Table 6, there are 33 cetacean species (7 mysticetes and 26 odontocetes) and one pinniped species.

Table 6 also includes the federal status of these marine mammal species. Six marine mammal species listed as federally endangered under the Endangered Species Act (ESA) occur in the VACAPES Range Complex: the humpback whale, North Atlantic right whale, sei whale, fin whale, blue whale, and sperm whale. Although it is possible that any of the 34 species of marine mammals may occur in the VACAPES Range Complex, only 24 of those species are expected to occur regularly in the region.

TABLE 6. MARINE MAMMAL SPECIES FOUND IN THE VACAPES RANGE COMPLEX

Family and Scientific Name	Common Name	Federal Status
Order Cetacea		
Suborder Mysticeti (baleen whales)		
<i>Eubalaena glacialis</i>	North Atlantic right whale	Endangered
<i>Megaptera novaeangliae</i>	Humpback whale	Endangered
<i>Balaenoptera acutorostrata</i>	Minke whale	
<i>B. brydei</i>	Bryde's whale	
<i>B. borealis</i>	Sei whale	Endangered
<i>B. physalus</i>	Fin whale	Endangered
<i>B. musculus</i>	Blue whale	Endangered
Suborder Odontoceti (toothed whales)		
<i>Physeter macrocephalus</i>	Sperm whale	Endangered
<i>Kogia breviceps</i>	Pygmy sperm whale	
<i>K. sima</i>	Dwarf sperm whale	
<i>Ziphius cavirostris</i>	Cuvier's beaked whale	
<i>Mesoplodon minus</i>	True's beaked whale	
<i>M. europaeus</i>	Gervais' beaked whale	
<i>M. bidens</i>	Sowerby's beaked whale	
<i>M. densirostris</i>	Blainville's beaked whale	
<i>Steno bredanensis</i>	Rough-toothed dolphin	
<i>Tursiops truncatus</i>	Bottlenose dolphin	
<i>Stenella attenuata</i>	Pantropical spotted dolphin	
<i>S. frontalis</i>	Atlantic spotted dolphin	
<i>S. longirostris</i>	Spinner dolphin	
<i>S. clymene</i>	Clymene dolphin	
<i>S. coeruleoalba</i>	Striped dolphin	
<i>Delphinus delphis</i>	Common dolphin	
<i>Lagenodephis hosei</i>	Fraser's dolphin	
<i>Lagenorhynchus acutus</i>	Atlantic white-sided dolphin	

TABLE 6. MARINE MAMMAL SPECIES FOUND IN THE VACAPES RANGE COMPLEX—Continued

Family and Scientific Name	Common Name	Federal Status
<i>Grampus griseus</i>	Risso's dolphin	
<i>Peponocephala electra</i>	Melon-headed whale	
<i>Feresa attenuata</i>	Pygmy killer whale	
<i>Pseudorca crassidens</i>	False killer whale	
<i>Orcinus orca</i>	Killer whale	
<i>Globicephala melas</i>	Long-finned pilot whale	
<i>G. macrorhynchus</i>	Short-finned pilot whale	
<i>Phocoena phocoena</i>	Harbor porpoise	
Order Carnivora		
Suborder Pinnipedia		
<i>Phoca vitulina</i>	Harbor seal	

The information contained herein relies heavily on the data gathered in the Marine Resource Assessments (MRAs). The Navy MRA Program was implemented by the Commander, Fleet Forces Command, to initiate collection of data and information concerning the protected and commercial marine resources found in the Navy's OPAREAs. Specifically, the goal of the MRA program is to describe and document the marine resources present in each of the Navy's OPAREAs. The MRA for the VACAPES OPAREA was recently updated in 2007 (DoN, 2008).

The MRA data were used to provide a regional context for each species. The MRA represents a compilation and synthesis of available scientific literature (for example, journals, periodicals, theses, dissertations, project reports, and other technical reports published by government agencies, private businesses, or consulting firms), and NMFS reports including stock assessment reports, recovery plans, and survey reports.

The density estimates that were used in previous Navy environmental documents have been recently updated to provide a compilation of the most recent data and information on the occurrence, distribution, and density of marine mammals. The updated density estimates used for the analyses are derived from the Navy OPAREA Density Estimates (NODE) for the Southeast OPAREAS report (DON, 2007).

Density estimates for cetaceans were either modeled using available line-transect survey data or derived using available data in order of preference: (1) through spatial models using line-transect survey data provided by NMFS;

(2) using abundance estimates from Mullin and Fulling (2003); (3) or based on the cetacean abundance estimates found in the most current NMFS stock assessment report (SAR) (Waring *et al.*, 2007), which can be viewed at: <http://www.nmfs.noaa.gov/pr/sars/species.htm>.

For the model-based approach, density estimates were calculated for each species within areas containing survey effort. A relationship between these density estimates and the associated

environmental parameters such as depth, slope, distance from the shelf break, sea surface temperature, and chlorophyll a concentration was formulated using generalized additive models. This relationship was then used to generate a two-dimensional density surface for the region by predicting densities in areas where no survey data exist.

The analyses for cetaceans were based on sighting data collected through shipboard surveys conducted by NMFS-Northeast Fisheries Science Center (NEFSC) and Southeast Fisheries Science Center (SEFSC) between 1998 and 2005. Species-specific density estimates derived through spatial modeling were compared with abundance estimates found in the most current NMFS SAR to ensure consistency. All spatial models and density estimates were reviewed by and coordinated with NMFS Science Center technical staff and scientists with the University of St. Andrews, Scotland, Centre for Environmental and Ecological Modeling (CREEM). For a more detailed description of the methodology involved in calculating the density

estimates provided in this LOA, please refer to the NODE report for the Southeast (DON 2007).

#### Potential Impacts to Marine Mammal Species

The Navy considers that explosions associated with BOMBEX, MISSILEX, FIREX, and MINEX are the activities with the potential to result in Level A or Level B harassment or mortality of marine mammals. Vessel strikes were also analyzed for their potential effect to marine mammals.

#### Vessel Strikes

Ship strikes are known to affect large whales and sirenians in the VACAPES Study Area. The most vulnerable marine mammals are those that spend extended periods of time at the surface in order to restore oxygen levels within their tissues after deep dives (e.g., the sperm whale). In addition, some baleen whales, such as the North Atlantic right whale seem generally unresponsive to vessel sound, making them more susceptible to vessel collisions (Nowacek *et al.*, 2004). These species are primarily large, slow moving whales. Smaller marine mammals, for example, Atlantic bottlenose and Atlantic spotted dolphins-move quickly throughout the water column and are often seen riding the bow wave of large ships. Marine mammal responses to vessels may include avoidance and changes in dive pattern (NRC, 2003).

After reviewing historical records and computerized stranding databases for evidence of ship strikes involving baleen and sperm whales, Laist *et al.* (2001) found that accounts of large whale ship strikes involving motorized

boats in the area date back to at least the late 1800s. Ship collisions remained infrequent until the 1950s, after which point they increased. Laist *et al.* (2001) report that both the number and speed of motorized vessels have increased over time for trans-Atlantic passenger services, which transit through the area. They concluded that most strikes occur over or near the continental shelf, that ship strikes likely have a negligible effect on the status of most whale populations, but that for small populations or segments of populations the impact of ship strikes may be significant.

Although ship strikes may result in the mortality of a limited number of whales within a population or stock, Laist *et al.* (2001) also concluded that, when considered in combination with other human-related mortalities in the area (e.g., entanglement in fishing gear), these ship strikes may present a concern for whale populations.

Of 11 species known to be hit by ships, fin whales are struck most frequently; right whales, humpback whales, sperm whales, and gray whales are all hit commonly (Laist *et al.*, 2001). In some areas, one-third of all fin whale and right whale strandings appear to involve ship strikes. Sperm whales spend long periods (typically up to 10 minutes; Jacquet *et al.*, 1996) "rafting" at the surface between deep dives. This could make them exceptionally vulnerable to ship strikes. Berzin (1972) noted that there were "many" reports of sperm whales of different age classes being struck by vessels, including passenger ships and tug boats. There were also instances in which sperm whales approached vessels too closely and were cut by the propellers (NMFS, 2006d).

The east coast is a principal migratory corridor for North Atlantic right whales that travel between the calving/nursery areas in the Southeastern United States and feeding grounds in the northeast U.S. and Canada. Transit to the Study Area from mid-Atlantic ports requires Navy vessels to cross the migratory route of North Atlantic right whales. Southward right whale migration generally occurs from mid- to late November, although some right whales may arrive off the Florida coast in early November and stay into late March (Kraus *et al.*, 1993). The northbound migration generally takes place between January and late March. Data indicate that during the spring and fall migration, right whales typically occur in shallow water immediately adjacent to the coast, with over half the sightings (63 percent) occurring within 18.5 km (10 NM), and 94.1 percent reported

within 55 km (30 NM) of the coast (Knowlton *et al.*, 2002). Given the low abundance of North Atlantic right whales relative to other species, the frequency of occurrence of vessel collisions to right whales suggests that the threat of ship strikes is proportionally greater to this species (Jensen and Silber, 2003). Therefore, in 2004, NMFS proposed a right whale vessel collision reduction strategy to consider the establishment of operational measures for the shipping industry to reduce the potential for large vessel collisions with North Atlantic right whales while transiting to and from mid-Atlantic ports during right whale migratory periods. Although Navy vessel traffic generally represents only 2 - 3 percent of overall large vessel traffic, based on this biological characteristic and the presence of critical Navy ports along the whales of mid-Atlantic migratory corridor, the Navy was the first Federal agency to proactively adopt additional mitigation measures for transits in the vicinity of mid-Atlantic ports during right whale migration. For purposes of these measures, the mid-Atlantic is defined broadly to include ports south and east of Block Island Sound southward to South Carolina.

Accordingly, the Navy has proposed mitigation measures to reduce the potential for collisions with surfaced marine mammals (for more details refer to Proposed Mitigation section below). Based on the implementation of Navy mitigation measures, especially during times of anticipated right whale occurrence, and the relatively low density of Navy ships in the Study Area the likelihood that a vessel collision would occur is very low.

#### *Assessment of Marine Mammal Response to Anthropogenic Sound*

Marine mammals respond to various types of anthropogenic sounds introduced into the ocean environment. Responses are typically subtle and can include shorter surfacings, shorter dives, fewer blows per surfacing, longer intervals between blows (breaths), ceasing or increasing vocalizations, shortening or lengthening vocalizations, and changing frequency or intensity of vocalizations (NRC, 2005). However, it is not known how these responses relate to significant effects (e.g., long-term effects or population consequences). The following is an assessment of marine mammal responses and disturbances when exposed to anthropogenic sound.

#### I. Physiology

Potential impacts to the auditory system are assessed by considering the characteristics of the received sound (e.g., amplitude, frequency, duration) and the sensitivity of the exposed animals. Some of these assessments can be numerically based (e.g., temporary threshold shift [TTS] of hearing sensitivity, permanent threshold shift [PTS] of hearing sensitivity, perception). Others will be necessarily qualitative, due to lack of information, or will need to be extrapolated from other species for which information exists.

Potential physiological responses to the sound exposure are ranked in descending order, with the most severe impact (auditory trauma) occurring at the top and the least severe impact occurring at the bottom (the sound is not perceived).

Auditory trauma represents direct mechanical injury to hearing related structures, including tympanic membrane rupture, disarticulation of the middle ear ossicles, and trauma to the inner ear structures such as the organ of Corti and the associated hair cells. Auditory trauma is always injurious that could result in PTS. Auditory trauma is always assumed to result in a stress response.

Auditory fatigue refers to a loss of hearing sensitivity after sound stimulation. The loss of sensitivity persists after, sometimes long after, the cessation of the sound. The mechanisms responsible for auditory fatigue differ from auditory trauma and would primarily consist of metabolic exhaustion of the hair cells and cochlear tissues. The features of the exposure (e.g., amplitude, frequency, duration, temporal pattern) and the individual animal's susceptibility would determine the severity of fatigue and whether the effects were temporary (TTS) or permanent (PTS). Auditory fatigue (PTS or TTS) is always assumed to result in a stress response.

Sounds with sufficient amplitude and duration to be detected among the background ambient noise are considered to be perceived. This category includes sounds from the threshold of audibility through the normal dynamic range of hearing (i.e., not capable of producing fatigue).

To determine whether an animal perceives the sound, the received level, frequency, and duration of the sound are compared to what is known of the species' hearing sensitivity.

Since audible sounds may interfere with an animal's ability to detect other sounds at the same time, perceived sounds have the potential to result in

auditory masking. Unlike auditory fatigue, which always results in a stress response because the sensory tissues are being stimulated beyond their normal physiological range, masking may or may not result in a stress response, depending on the degree and duration of the masking effect. Masking may also result in a unique circumstance where an animal's ability to detect other sounds is compromised without the animal's knowledge. This could conceivably result in sensory impairment and subsequent behavior change; in this case, the change in behavior is the lack of a response that would normally be made if sensory impairment did not occur. For this reason, masking also may lead directly to behavior change without first causing a stress response.

The features of perceived sound (e.g., amplitude, duration, temporal pattern) are also used to judge whether the sound exposure is capable of producing a stress response. Factors to consider in this decision include the probability of the animal being naive or experienced with the sound (i.e., what are the known/unknown consequences of the exposure).

The received level is not of sufficient amplitude, frequency, and duration to be perceptible by the animal. By extension, this does not result in a stress response (not perceived).

Potential impacts to tissues other than those related to the auditory system are assessed by considering the characteristics of the sound (e.g., amplitude, frequency, duration) and the known or estimated response characteristics of nonauditory tissues. Some of these assessments can be numerically based (e.g., exposure required for rectified diffusion). Others will be necessarily qualitative, due to lack of information. Each of the potential responses may or may not result in a stress response.

**Direct tissue effects** – Direct tissue responses to sound stimulation may range from tissue shearing (injury) to mechanical vibration with no resulting injury. Any tissue injury would produce a stress response, whereas noninjurious stimulation may or may not.

**Indirect tissue effects** – Based on the amplitude, frequency, and duration of the sound, it must be assessed whether exposure is sufficient to indirectly affect tissues. For example, the hypothesis that rectified diffusion occurs is based on the idea that bubbles that naturally exist in biological tissues can be stimulated to grow by an acoustic field. Under this hypothesis, one of three things could happen: (a) bubbles grow to the extent that tissue hemorrhage

occurs (injury); (b) bubbles develop to the extent that a complement immune response is triggered or nervous tissue is subjected to enough localized pressure that pain or dysfunction occurs (a stress response without injury); or (c) the bubbles are cleared by the lung without negative consequence to the animal.

**No tissue effects** – The received sound is insufficient to cause either direct (mechanical) or indirect effects to tissues. No stress response occurs.

## II. The Stress Response

The acoustic source is considered a potential stressor if, by its action on the animal, via auditory or nonauditory means, it may produce a stress response in the animal. The term "stress" has taken on an ambiguous meaning in the scientific literature, but with respect to the later discussions of allostasis and allostatic loading, the stress response will refer to an increase in energetic expenditure that results from exposure to the stressor and which is predominantly characterized by either the stimulation of the sympathetic nervous system (SNS) or the hypothalamic-pituitary-adrenal (HPA) axis (Reeder and Kramer, 2005). The SNS response to a stressor is immediate and acute and is characterized by the release of the catecholamine neurohormones norepinephrine and epinephrine (i.e., adrenaline). These hormones produce elevations in the heart and respiration rate, increase awareness, and increase the availability of glucose and lipids for energy. The HPA response is ultimately defined by increases in the secretion of the glucocorticoid steroid hormones, predominantly cortisol in mammals. The amount of increase in circulating glucocorticoids above baseline may be an indicator of the overall severity of a stress response (Hennessy *et al.*, 1979). Each component of the stress response is variable in time; e.g., adrenaline is released nearly immediately and is used or cleared by the system quickly, whereas cortisol levels may take long periods of time to return to baseline.

The presence and magnitude of a stress response in an animal depends on a number of factors. These include the animal's life history stage (e.g., neonate, juvenile, adult), the environmental conditions, reproductive or developmental state, and experience with the stressor. Not only will these factors be subject to individual variation, but they will also vary within an individual over time. In considering potential stress responses of marine mammals to acoustic stressors, each of these should be considered. For example, is the acoustic stressor in an

area where animals engage in breeding activity? Are animals in the region resident and likely to have experience with the stressor (i.e., repeated exposures)? Is the region a foraging ground or are the animals passing through as transients? What is the ratio of young (naive) to old (experienced) animals in the population? It is unlikely that all such questions can be answered from empirical data; however, they should be addressed in any qualitative assessment of a potential stress response as based on the available literature.

The stress response may or may not result in a behavioral change, depending on the characteristics of the exposed animal. However, provided a stress response occurs, we assume that some contribution is made to the animal's allostatic load. Allostasis is the ability of an animal to maintain stability through change by adjusting its physiology in response to both predictable and unpredictable events (McEwen and Wingfield, 2003). The same hormones associated with the stress response vary naturally throughout an animal's life, providing support for particular life history events (e.g., pregnancy) and predictable environmental conditions (e.g., seasonal changes). The allostatic load is the cumulative cost of allostasis incurred by an animal and is generally characterized with respect to an animal's energetic expenditure. Perturbations to an animal that may occur with the presence of a stressor, either biological (e.g., predator) or anthropogenic (e.g., construction), can contribute to the allostatic load (Wingfield, 2003). Additional costs are cumulative and additions to the allostatic load over time may contribute to reductions in the probability of achieving ultimate life history functions (e.g., survival, maturation, reproductive effort and success) by producing pathophysiological states. The contribution to the allostatic load from a stressor requires estimating the magnitude and duration of the stress response, as well as any secondary contributions that might result from a change in behavior.

If the acoustic source does not produce tissue effects, is not perceived by the animal, or does not produce a stress response by any other means, we assume that the exposure does not contribute to the allostatic load. Additionally, without a stress response or auditory masking, it is assumed that there can be no behavioral change. Conversely, any immediate effect of exposure that produces an injury is assumed to also produce a stress response and contribute to the allostatic load.



### III. Behavior

Changes in marine mammal behavior are expected to result from an acute stress response. This expectation is based on the idea that some sort of physiological trigger must exist to change any behavior that is already being performed. The exception to this rule is the case of auditory masking. The presence of a masking sound may not produce a stress response, but may interfere with the animal's ability to detect and discriminate biologically relevant signals. The inability to detect and discriminate biologically relevant signals hinders the potential for normal behavioral responses to auditory cues and is thus considered a behavioral change.

Impulsive sounds from explosions have very short durations as compared to other sounds like sonar or ship noise, which are more likely to produce auditory masking. Additionally the explosive sources analyzed in this document are used infrequently and the training events are typically of short duration. Therefore, the potential for auditory masking is unlikely and no impacts to marine mammals due to auditory masking are anticipated due to implementing the proposed action.

Numerous behavioral changes can occur as a result of stress response. For each potential behavioral change, the magnitude in the change and the severity of the response needs to be estimated. Certain conditions, such as stampeding (i.e., flight response) or a response to a predator, might have a probability of resulting in injury. For example, a flight response, if significant enough, could produce a stranding event. Each altered behavior may also have the potential to disrupt biologically significant events (e.g., breeding or nursing) and may need to be classified as Level B harassment. All behavioral disruptions have the potential to contribute to the allostatic load. This secondary potential is signified by the feedback from the collective behaviors to allostatic loading.

### IV. Life Function

#### IV.1. Proximate Life Functions

Proximate life history functions are the functions that the animal is engaged in at the time of acoustic exposure. The disruption of these functions, and the magnitude of the disruption, is something that must be considered in determining how the ultimate life history functions are affected. Consideration of the magnitude of the effect to each of the proximate life history functions is dependent upon the

life stage of the animal. For example, an animal on a breeding ground which is sexually immature will suffer relatively little consequence to disruption of breeding behavior when compared to an actively displaying adult of prime reproductive age.

#### IV.2. Ultimate Life Functions

The ultimate life functions are those that enable an animal to contribute to the population (or stock, or species, etc.). The impact to ultimate life functions will depend on the nature and magnitude of the perturbation to proximate life history functions. Depending on the severity of the response to the stressor, acute perturbations may have nominal to profound impacts on ultimate life functions. For example, unit-level use of sonar by a vessel transiting through an area that is utilized for foraging, but not for breeding, may disrupt feeding by exposed animals for a brief period of time. Because of the brevity of the perturbation, the impact to ultimate life functions may be negligible. By contrast, weekly training over a period of years may have a more substantial impact because the stressor is chronic. Assessment of the magnitude of the stress response from the chronic perturbation would require an understanding of how and whether animals acclimate to a specific, repeated stressor and whether chronic elevations in the stress response (e.g., cortisol levels) produce fitness deficits.

The proximate life functions are loosely ordered in decreasing severity of impact. Mortality (survival) has an immediate effect, in that no future reproductive success is feasible and there is no further addition to the population resulting from reproduction. Severe injuries may also lead to reduced survivorship (longevity) and prolonged alterations in behavior. The latter may further affect an animal's overall reproductive success and reproductive effort. Disruptions of breeding have an immediate impact on reproductive effort and may impact reproductive success. The magnitude of the effect will depend on the duration of the disruption and the type of behavior change that was provoked. Disruptions to feeding and migration can affect all of the ultimate life functions; however, the impacts to reproductive effort and success are not likely to be as severe or immediate as those incurred by mortality and breeding disruptions.

#### Explosive Ordnance Exposure Analysis

The underwater explosion from a weapon would send a shock wave and blast noise through the water, release

gaseous by-products, create an oscillating bubble, and cause a plume of water to shoot up from the water surface. The shock wave and blast noise are of most concern to marine animals. The effects of an underwater explosion on a marine mammal depends on many factors, including the size, type, and depth of both the animal and the explosive charge; the depth of the water column; and the standoff distance between the charge and the animal, as well as the sound propagation properties of the environment. Potential impacts can range from brief effects (such as behavioral disturbance), tactile perception, physical discomfort, slight injury of the internal organs and the auditory system, to death of the animal (Yelverton *et al.*, 1973; O'Keeffe and Young, 1984; DoN, 2001). Non-lethal injury includes slight injury to internal organs and the auditory system; however, delayed lethality can be a result of individual or cumulative sublethal injuries (DoN, 2001). Immediate lethal injury would be a result of massive combined trauma to internal organs as a direct result of proximity to the point of detonation (DoN, 2001). Generally, exposures to higher levels of impulse and pressure levels would result in worse impacts to an individual animal.

Injuries resulting from a shock wave take place at boundaries between tissues of different density. Different velocities are imparted to tissues of different densities, and this can lead to their physical disruption. Blast effects are greatest at the gas-liquid interface (Landsberg, 2000). Gas-containing organs, particularly the lungs and gastrointestinal tract, are especially susceptible (Goertner, 1982; Hill, 1978; Yelverton *et al.*, 1973). In addition, gas-containing organs including the nasal sacs, larynx, pharynx, trachea, and lungs may be damaged by compression/expansion caused by the oscillations of the blast gas bubble (Reidenberg and Laitman, 2003). Intestinal walls can bruise or rupture, with subsequent hemorrhage and escape of gut contents into the body cavity. Less severe gastrointestinal tract injuries include contusions, petechiae (small red or purple spots caused by bleeding in the skin), and slight hemorrhaging (Yelverton *et al.*, 1973).

Because the ears are the most sensitive to pressure, they are the organs most sensitive to injury (Ketten, 2000). Sound-related damage associated with blast noise can be theoretically distinct from injury from the shock wave, particularly farther from the explosion. If an animal is able to hear a noise, at some level it can damage its hearing by

causing decreased sensitivity (Ketten, 1995) (See *Assessment of Marine Mammal Response to Anthropogenic Sound* Section above). Sound-related trauma can be lethal or sublethal. Lethal impacts are those that result in immediate death or serious debilitation in or near an intense source and are not, technically, pure acoustic trauma (Ketten, 1995). Sublethal impacts include hearing loss, which is caused by exposures to perceptible sounds. Severe damage (from the shock wave) to the ears includes tympanic membrane rupture, fracture of the ossicles, damage to the cochlea, hemorrhage, and

cerebrospinal fluid leakage into the middle ear. Moderate injury implies partial hearing loss due to tympanic membrane rupture and blood in the middle ear. Permanent hearing loss also can occur when the hair cells are damaged by one very loud event, as well as by prolonged exposure to a loud noise or chronic exposure to noise. The level of impact from blasts depends on both an animal's location and, at outer zones, on its sensitivity to the residual noise (Ketten, 1995).

The exercises that use explosives include: FIREX with IMPASS, MISSILEX, BOMBEX, and MINEX. Table 7 summarizes the number of

events (per year by season) and specific areas where each occurs for each type of explosive ordnance used. For most of the operations, there is no difference in how many events take place between the different seasons. Fractional values are a result of evenly distributing the annual totals over the four seasons. For example, there are 45 Hellfire events per year that can take place in Air Kilo during any season, so there are 11.25 events modeled for each season. However, the 20 lb charge MINEX events are more likely to take place in the summer and this is represented in the seasonal allocation of events.

TABLE 7. NUMBER OF EXPLOSIVE EVENTS WITHIN THE VACAPES RANGE COMPLEX

Sub-Area	Ordnance	Winter	Spring	Summer	Fall	Annual Totals
	MISSILEX					106
Air-K	Hellfire	11.25	11.25	11.25	11.25	
W-72A (2)	Hellfire	3.75	3.75	3.75	3.75	
Air-E, F, I, J	Harm	6.50	6.50	6.50	6.50	
Air-K	Maverick	5	5	5	5	
	FIREX					22
5C/D	5" rounds	1.83	1.83	1.83	1.83	
7C/D and 8C/D	5" rounds	1.83	1.83	1.83	1.83	
1C1/2	5" rounds	1.83	1.83	1.83	1.83	
	MINEX					54
W-50 UNDET	5 LB*	7.50	7.50	7.50	7.50	
W-50 UNDET	20 LB	4.00	4.00	12.00	4.00	
	BOMBEX					5
Air-K	MK-83**	1.25	1.25	1.25	1.25	

\* The use of 3.24 lb charges during AMNS training were conservatively modeled as 5 lb charges.

\*\* One event using the MK 83 bombs consists of 4 bombs being dropped in succession. For example, in VACAPES Air K there are 5 MK 83 events, which mean that a total of 20 bombs will be dropped per year.

### Acoustic Environment

Sound propagation (the spreading or attenuation of sound) in the oceans of the world is affected by several environmental factors: water depth, variations in sound speed within the water column, surface roughness, and the geo-acoustic properties of the ocean bottom. These parameters can vary widely with location.

Four types of data are used to define the acoustic environment for each analysis site:

Seasonal Sound Velocity Profiles (SVP) – Plots of propagation speed (velocity) as a function of depth, or SVPs, are a fundamental tool used for predicting how sound will travel.

Seasonal SVP averages were obtained for each training area.

Seabed Geo-acoustics – The type of sea floor influences how much sound is absorbed and how much sound is reflected back into the water column.

Wind Speeds – Several environmental inputs, such as wind speed and surface roughness, are necessary to model acoustic propagation in the prospective training areas.

Bathymetry data – Bathymetry data are necessary to model acoustic propagation and were obtained for each of the training areas.

### Acoustic Effects Analysis

The acoustic effects analysis presented in the following sections is

briefly described for each major type of exercise. A more in-depth effects analysis is in Appendix A of the LOA application.

#### 1. FIREX (with IMPASS)

Modeling was completed for a 5-in. round, 8-lb NEW charge exploding at a depth of 1 ft (0.3 m). The analytical approach begins using a high-fidelity acoustic model to estimate energy in each 5-in. explosive round. Impact areas are calculated by summing the energy from multiple explosions over a firing exercise (FIREX) mission, and determining the impact area based on the thresholds and criteria. Level B exposures were determined based on

the 177 dB re 1 microPa<sup>2</sup>-sec (energy) criteria for behavioral disturbance (without TTS) due to the use of multiple explosions.

Impact areas for a full FIREX (with IMPASS) event must account for the

time and space distribution of 39 explosions, as well as the movement of animals over the several hours of the exercise. The total impact area for the 39-shot event is calculated as the sum of small effect areas for seven FIREX

missions (each with four to six rounds fired) and one pre-FIREX action (with six rounds fired). Table 8 shows the Zone of Influence (ZOI) results of the model estimation.

TABLE 8. ESTIMATED ZOIS (KM<sup>2</sup>) FOR A SINGLE FIREX (WITH IMPASS) EVENT (39 ROUNDS)

Area*	Level B ZOI @ 177 dB re 1 μPa <sup>2</sup> -sec (multiple detonations only)	Level B ZOI @ 23 psi-ms	Level A ZOI @ 205 dB re 1 microPa <sup>2</sup> -sec or 13 psi-ms
5C/D	NA**	3.7044	0.16464
7C/D and 8C/D VACAPES 5C/D	5.6595	3.7044	0.16464
1C1/2	NA**	3.7044	0.16464

\*Please see Figure 1 on page 2-2 of the LOA application for the locations of these areas.

\*\*In these areas, which occur in deeper water, the 23 psi-ms criteria dominates over the 177 dB re 1 microPa<sup>2</sup>-sec behavioral disturbance criteria and therefore was used in the analysis.

The ZOI, when multiplied by the animal densities and the total number of events (Table 7), provides the exposure estimates for that animal species for the nominal exercise case of 39 5-in.

explosive rounds. The potential effects would occur within a series of small impact areas associated with the pre-calibration rounds and missions spread out over a period of several hours.

Additionally, target locations are changed from event to event and because of the time lag between events, it is highly unlikely, even if a marine mammal were present (not accounting for mitigation), that the marine mammal would be within the small exposure zone for more than one event.

FIREX (with IMPASS) is restricted to three locations in the VACAPES Range Complex. In addition to other mitigation measures, dedicated lookouts monitor the target area for marine mammals before the exercise, during the deployment of the IMPASS array, and during the return to firing position. Prior to the exercise, the area would be visually monitored when the IMPASS sonobuoy array is being deployed by the ship at the detonation location, as well as while returning to the firing position. During the actual firing of the weapon,

the participants involved must be able to observe the intended ordnance impact area to ensure the area is free of range transients, however, this observation would be conducted from the firing position or other safe distance. Due to distance between the firing position and the safety zone, lookouts are only expected to visually detect breaching whales, whale blows, and large pods of dolphins and porpoises. Firing would not commence unless the intended ordnance impact area is visible. Implementation of mitigation measures like these reduce the likelihood of exposure and potential effects in the ZOI and eliminate the likelihood of mortality.

2. BOMBEX

Modeling was completed for one explosive source involved in BOMBEX, each assumed detonation at 1-m depth. The NEW used in simulations of the MK83 is 415.8-lb. Determining the ZOI for the thresholds in terms of total energy flux density (EFD), impulse, peak pressure and 1/3-octave bands EFD must treat the sequential explosions differently than the single detonations. For the MK-83, two factors are involved for the sequential explosives that deal with the spatial and

temporal distribution of the detonations as well as the effective accumulation of the resultant acoustics. In view of the ZOI determinations, the sequential detonations are modeled as a single point event with only the EFD summed incoherently. The multiple explosion energy criterion was used to determine the ZOI for the Level B without TTS exposure analysis.

Table 9 shows the ZOI results of the model estimation. The ZOI, when multiplied by the animal densities and total number of events (Table 7), provides the exposure estimates for that animal species for the given bomb source.

BOMBEX is restricted to one location in the VACAPES Range Complex. In addition to other mitigation measures, aircraft will survey the target area for marine mammals before and during the exercise. Ships will not fire on the target until the area is surveyed and determined to be free of marine mammals. The exercise will be suspended if any marine mammals enter the buffer area. Implementation of mitigation measures like these effectively reduce exposures in the ZOI and eliminate the likelihood of mortality.

TABLE 9. ESTIMATED ZOIS (KM<sup>2</sup>) FOR BOMBEX

Area	Ord-nance	Level B ZOI @ 177 dB re 1 microPa <sup>2</sup> -sec (multiple detonations only)				Level B ZOI @ 182 dB re 1 microPa <sup>2</sup> -sec or 23 psi				Level A ZOI @ 205 dB re 1 microPa <sup>2</sup> -sec or 13 psi				Mortality ZOI @ 30.5 psi			
		Win	Spr	Sum	Fall	Win	Spr	Sum	Fall	Win	Spr	Sum	Fall	Win	Spr	Sum	Fall
Air-K	MK-83*	135.04	555.51	713.99	912.05	NA	NA	NA	NA	4.28	4.01	6.39	4.55	0.05	0.05	0.05	0.05

3. MINEX

The Comprehensive Acoustic System Simulation/Gaussian Ray Bundle (CASS/GRAB) (OAML, 2002) model, modified to account for impulse response, shock-wave waveform, and nonlinear shock-wave effects, was run for acoustic-environmental conditions derived from the Oceanographic and Atmospheric Master Library (OAML) standard databases. The explosive source was modeled with standard similitude formulas, as in the Churchill FEIS. Because all the sites are shallow (less than 50 m), propagation model runs were made for bathymetry in the range from 10 m to 40 m.

Estimated ZOIs varied as much within a single area as from one area to another, which had been the case for the Virtual

At Sea Training (VAST)/IMPASS (DoN, 2003). There was, however, little seasonal dependence. As a result, the ZOIs are stated as mean values with a percentage variation. Generally, in the case of ranges determined from energy metrics, as the depth of water increases, the range shortens. The single explosion TTS-energy criterion (182 dB re 1 microPa<sup>2</sup>•sec) was dominant and therefore used to determine the ZOI for the Level B exposure analysis. Table 10 shows the ZOI results of the model estimation.

The total ZOI, when multiplied by the animal densities and total number of events (Table 7), provides the exposure estimates for that animal species for each specified charge. Because of the time lag between detonations, it is

highly unlikely, even if a marine mammal were present (not accounting for mitigation), that the marine mammal would be within the small exposure zone for more than one detonation. Underwater detonations are restricted to one area in the VACAPES Range Complex. In addition to other mitigation measures, observers will survey the target area for marine mammals for 30 minutes pre- and 30 minutes post-detonation. Detonations will be suspended if a marine mammal enters the Zone of Influence and will only restart after the area has been clear for a full 30 minutes. Implementation of mitigation measures like these reduce the likelihood of exposure and potential effects in the ZOI and eliminate the likelihood of mortality.

TABLE 10. ESTIMATED ZOIS (KM<sup>2</sup>) FOR MINEX

Threshold	ZOIs	
	5-lb shot	20-lb shot
Level A ZOI @ 13 psi	0.03 km <sup>2</sup> ± 10%	0.13 km <sup>2</sup> ± 10%
Level B ZOI @ 182 dB re 1 microPa <sup>2</sup> •sec	0.2 km <sup>2</sup> ± 25%	0.8 km <sup>2</sup> ± 25%

4. MISSILEX (Hellfire, Harm, and Maverick)

The HARM missile explodes no less than 30 feet (9.1 m) above the surface of the water, so it is assumed the amount of acoustic energy entering the water will be negligible. Therefore, modeling was completed for two of the explosive missiles involved in MISSILEX, each assumed detonation at 1-meter depth.

The NEW used in simulations of the Hellfire and Maverick missiles are 8 lbs and 100 lbs, respectively. The single explosion TTS-energy criterion (182 dB re 1 microPa<sup>2</sup>–sec) was used to determine the ZOI for the Level B exposure analysis. Table 11 shows the ZOI results of the model estimation. MISSILEX is restricted two locations in the VACAPES Range Complex. In addition to other mitigation measures,

aircraft will survey the target area for marine mammals before and during the exercise. Ships will not fire on the target until the area is clear of marine mammals, and will suspend the exercise if any enter the buffer area. Implementation of mitigation measures like these reduce the likelihood of exposure and potential effects in the ZOI.

TABLE 11. ESTIMATED ZOIS (KM<sup>2</sup>) FOR MISSILEX

Area	Ordnance	@ 182 dB re 1 microPa <sup>2</sup> -s Level B ZOI or 23 psi				@ 205 dB re 1 microPa <sup>2</sup> -s Level A ZOI or 13 psi				Mortality ZOI @ 30.5 psi			
		Win	Spr	Sum	Fall	Win	Spr	Sum	Fall	Win	Spr	Sum	Fall
Air-K	Hellfire	0.44	0.49	0.48	0.49	0.02	0.02	0.02	0.02	<0.01	<0.01	<0.01	<0.01
W-72A (2)	Hellfire	0.58	0.60	0.57	0.59	0.03	0.02	0.02	0.02	<0.01	<0.01	<0.01	<0.01
Air-K	Maverick	1.99	2.80	10.56	1.64	0.09	0.07	0.07	0.09	0.04	0.02	0.04	0.04

The total ZOI, when multiplied by the animal densities and total number of events (Table 7), provides the exposure estimates for that animal species for each specified missile. Because of the time lag between detonations, it is highly unlikely, even if a marine mammal were present (not accounting for mitigation), that the marine mammal would be within the small exposure zone for more than one detonation.

*Summary of Potential Exposures from Explosive Ordnance Use*

Explosions that occur in the VACAPES Range Complex are associated with training exercises that use explosive ordnance, including bombs (BOMBEX), missiles (MISSILEX), 5-in. explosive naval gun shells with FIREX (with IMPASS), as well as underwater detonations associated with Mine Neutralization training (MINEX). Explosive ordnance use is limited to specific training areas.

An explosive analysis was conducted to estimate the number of marine mammals that could be exposed to impacts from explosions. Table 12 provides a summary of the explosive analysis results. Exposure estimates could not be calculated for many species (blue whale, sei whale, Bryde's whale, killer whale, pygmy killer whale, false killer whale, melon-headed whale, spinner dolphin, Fraser's dolphin, Atlantic white-sided dolphin, and harbor porpoise) because density data could not be calculated due to the

limited available data for these species. However, since these species are considered rare in the VACAPES Range Complex, they are not expected to be exposed to explosive detonations. Fin, humpback whales, and sperm whales

would have high detection rates at the surface because of their large body size and pronounced blows. Because of large group sizes, it is likely that lookouts would detect Atlantic spotted dolphins, bottlenose dolphins, Clymene, common,

pan-tropical spotted dolphins, Risso's dolphins, rough-toothed dolphin, and striped dolphins. Implementation of mitigation measures will reduce the likelihood of exposure and potential effects.

TABLE 12. SUMMARY OF POTENTIAL EXPOSURES FROM EXPLOSIVE ORDNANCE (PER YEAR) FOR MARINE MAMMALS IN THE VACAPES RANGE COMPLEX

Species/Training Operation	Potential Exposures @ 177 dB re 1 microPa <sup>2</sup> -s (multiple detonations only)	Potential Exposures @ 182 dB re 1 microPa <sup>2</sup> -s or 23 psi	Potential Exposures @ 205 dB re 1 microPa <sup>2</sup> -s or 13 psi	Potential Exposures @ 30.5 psi
<b>Fin whale</b>				
BOMBEX training	2	NA	0	0
MISSILEX training	NA	0	0	0
FIREX training	0	NA	0	0
MINEX training	NA	0	0	0
Total Exposures	2	0	0	0
<b>Humpback whale</b>				
BOMBEX training	2	NA	0	0
MISSILEX training	NA	0	0	0
FIREX training	0	NA	0	0
MINEX training	NA	0	0	0
Total Exposures	2	0	0	0
<b>North Atlantic right whale</b>				
BOMBEX training	0	NA	0	0
MISSILEX training	NA	0	0	0
FIREX training	0	NA	0	0
MINEX training	NA	0	0	0
Total Exposures	0	0	0	0
<b>Sperm whale</b>				
BOMBEX training	0	NA	0	0
MISSILEX training	NA	0	0	0
FIREX training	2	NA	0	0
MINEX training	NA	0	0	0
Total Exposures	2	0	0	0
<b>Atlantic Spotted dolphin</b>				
BOMBEX training	9	NA	0	0
MISSILEX training	NA	4	0	0
FIREX training	30	NA	1	0
MINEX training	NA	0	0	0
Total Exposures	39	4	1	0
<b>Beaked whale</b>				

TABLE 12. SUMMARY OF POTENTIAL EXPOSURES FROM EXPLOSIVE ORDNANCE (PER YEAR) FOR MARINE MAMMALS IN THE VACAPES RANGE COMPLEX—Continued

Species/Training Operation	Potential Exposures @ 177 dB re 1 microPa <sup>2</sup> -s (multiple detonations only)	Potential Exposures @ 182 dB re 1 microPa <sup>2</sup> -s or 23 psi	Potential Exposures @ 205 dB re 1 microPa <sup>2</sup> -s or 13 psi	Potential Exposures @ 30.5 psi
BOMBEX training	0	NA	0	0
MISSILEX training	NA	0	0	0
FIREX training	0	NA	0	0
MINEX training	NA	0	0	0
Total Exposures	0	0	0	0
<b>Bottlenose dolphin</b>				
BOMBEX training	17	NA	0	0
MISSILEX training	NA	7	0	0
FIREX training	5	NA	0	0
MINEX training	NA	0	0	0
Total Exposures	22	7	0	0
<b>Clymene dolphin</b>				
BOMBEX training	31	NA	0	0
MISSILEX training	NA	1	0	0
FIREX training	1	NA	0	0
MINEX training	NA	0	0	0
Total Exposures	32	1	0	0
<b>Common dolphin</b>				
BOMBEX training	2,059	NA	17	0
MISSILEX training	NA	97	2	1
FIREX training	37	NA	1	0
MINEX training	NA	0	0	0
Total Exposures	2,096	97	20	1
<b><i>Kogia spp.</i></b>				
BOMBEX training	3	NA	0	0
MISSILEX training	NA	0	0	0
FIREX training	0	NA	0	0
MINEX training	NA	0	0	0
Total Exposures	3	0	0	0
<b>Minke whale</b>				
BOMBEX training	0	NA	0	0
MISSILEX training	NA	0	0	0
FIREX training	0	NA	0	0
MINEX training	NA	0	0	0
Total Exposures	0	0	0	0

TABLE 12. SUMMARY OF POTENTIAL EXPOSURES FROM EXPLOSIVE ORDNANCE (PER YEAR) FOR MARINE MAMMALS IN THE VACAPES RANGE COMPLEX—Continued

Species/Training Operation	Potential Exposures @ 177 dB re 1 microPa <sup>2</sup> -s (multiple detonations only)	Potential Exposures @ 182 dB re 1 microPa <sup>2</sup> -s or 23 psi	Potential Exposures @ 205 dB re 1 microPa <sup>2</sup> -s or 13 psi	Potential Exposures @ 30.5 psi
Pantropical spotted dolphin				
BOMBEX training	64	NA	1	0
MISSILEX training	NA	3	0	0
FIREX training	2	NA	0	0
MINEX training	NA	1	0	0
Total Exposures	66	4	1	0
Pilot whales				
BOMBEX training	1	NA	0	0
MISSILEX training	NA	2	0	0
FIREX training	7	NA	0	0
MINEX training	NA	0	0	0
Total Exposures	8	2	0	0
Risso's dolphin				
BOMBEX training	11	NA	0	0
MISSILEX training	NA	2	0	0
FIREX training	3	NA	0	0
MINEX training	NA	0	0	0
Total Exposures	14	2	0	0
Rough-toothed dolphin				
BOMBEX training	1	NA	0	0
MISSILEX training	NA	0	0	0
FIREX training	0	NA	0	0
MINEX training	NA	0	0	0
Total Exposures	1	0	0	0
Striped dolphin				
BOMBEX training	1	NA	0	0
MISSILEX training	NA	26	1	0
FIREX training	41	NA	2	0
MINEX training	NA	0	0	0
Total Exposures	42	26	3	0

Note: Events were either modeled for 177 dB re 1 microPa<sup>2</sup> sec due to multiple detonations (BOMBEX and FIREX) or modeled for 182 dB re 1 microPa<sup>2</sup> sec or 23 psi due to single detonations (MISSILEX and MINEX). Therefore, for BOMBEX and FIREX the NA refers to the criteria that were less dominant and therefore not used in the analysis. For MISSILEX and MINEX the NA refers to the fact that these events are not multiple detonations and therefore not modeled at 177 dB re 1 microPa<sup>2</sup> sec.

## VI. Potential Effects of Exposures to Explosives

Effects from exposure to explosives vary depending on the level of exposure. Animals exposed to levels that constitute MMPA Level B harassment may experience a behavioral disruption from the use of explosive ordnance. Behavioral responses can include shorter surfacings, shorter dives, fewer blows per surfacing, longer intervals between blows (breaths), ceasing or increasing vocalizations, shortening or lengthening vocalizations, and changing frequency or intensity of vocalizations (NRC, 2005). However, it is not known how these responses relate to significant effects (e.g., long-term effects or population consequences) (NRC, 2005). In addition, animals

exposed to levels that constitute MMPA Level B harassment may experience a temporary threshold shift (TTS), which may result in a slight, recoverable loss of hearing sensitivity (DoN, 2001).

Exposures that reach Level A harassment may result in long-term injuries such as permanent threshold shift (PTS). The resulting injuries may limit an animal's ability to find food, communicate with other animals, and/or interpret the environment around them. Impairment of these abilities can decrease an individual's chance of survival or impact their ability to successfully reproduce. Level A harassment will have a long-term impact on an exposed individual.

Mortality of an animal will remove the animal entirely from the population

as well as eliminate any future reproductive potential.

Based on best available science, NMFS preliminarily concludes that takes from explosive ordnance and underwater detonations would result in only short-term effects to most individuals exposed and would likely not affect annual rates of recruitment or survival of the species. The mitigation measures presented below would further reduce the potential for exposures, and there would be no mortality of marine mammals from the proposed training activities. Table 13 provides a list of potential takes of marine mammal species as a result of the proposed VACAPES Range Complex training activities.

TABLE 13. SUMMARY OF POTENTIAL TAKES FROM EXPLOSIVE ORDNANCE (PER YEAR) FOR MARINE MAMMALS IN THE VACAPES RANGE COMPLEX

Species	Level B harassment	Level A harassment	Mortality
Fin whale	2	0	0
Humpback whale	2	0	0
North Atlantic right whale	0	0	0
Sperm whale	2	0	0
Atlantic spotted dolphin	39	5	0
Beaked whales	0	0	0
Bottlenose dolphin	22	7	0
Clymene dolphin	32	1	0
Common dolphin	2,096	117	0
Kogia sp.	3	0	0
Pantropical spotted dolphin	66	5	0
Pilot whale	8	2	0
Risso's dolphin	14	2	0
Rough-toothed dolphin	1	0	0
Striped dolphin	42	29	0

## Proposed Mitigation Measures

### General Maritime Measures

#### I. Personnel Training Lookouts

The use of shipboard lookouts is a critical component of all Navy standard operating procedures. Navy shipboard lookouts (also referred to as "watchstanders") are highly qualified and experienced observers of the marine environment. Their duties require that they report all objects sighted in the water to the Officer of the Deck (OOD) (e.g., trash, a periscope, marine

mammals, sea turtles) and all disturbances (e.g., surface disturbance, discoloration) that may be indicative of a threat to the vessel and its crew. There are personnel serving as lookouts on station at all times (day and night) when a ship or surfaced submarine is moving through the water.

For the past few years, the Navy has implemented marine mammal spotter training for its bridge lookout personnel on ships and submarines. This training has been revamped and updated as the Marine Species Awareness Training (MSAT) and is provided to all

applicable units. The lookout training program incorporates MSAT, which addresses the lookout's role in environmental protection, laws governing the protection of marine species, Navy stewardship commitments, and general observation information, including more detailed information for spotting marine mammals. MSAT has been reviewed by NMFS and acknowledged as suitable training. MSAT may also be viewed online at <https://portal.navfac.navy.mil/go/msat>.



1. All bridge personnel, Commanding Officers, Executive Officers, officers standing watch on the bridge, maritime patrol aircraft aircrews, and Mine Warfare (MIW) helicopter crews will complete MSAT.

2. Navy lookouts will undertake extensive training to qualify as a watchstander in accordance with the Lookout Training Handbook (NAVEDTRA 12968–D).

3. Lookout training will include on-the-job instruction under the supervision of a qualified, experienced watchstander. Following successful completion of this supervised training period, lookouts will complete the Personal Qualification Standard Program, certifying that they have demonstrated the necessary skills (such as detection and reporting of partially submerged objects).

4. Lookouts will be trained in the most effective means to ensure quick and effective communication within the command structure to facilitate implementation of protective measures if marine species are spotted.

5. Surface lookouts would scan the water from the ship to the horizon and be responsible for all contacts in their sector. In searching the assigned sector, the lookout would always start at the forward part of the sector and search aft (toward the back). To search and scan, the lookout would hold the binoculars steady so the horizon is in the top third of the field of vision and direct the eyes just below the horizon. The lookout would scan for approximately five seconds in as many small steps as possible across the field seen through the binoculars. They would search the entire sector in approximately five-degree steps, pausing between steps for approximately five seconds to scan the field of view. At the end of the sector search, the glasses would be lowered to allow the eyes to rest for a few seconds, and then the lookout would search back across the sector with the naked eye.

6. At night, lookouts would not sweep the horizon with their eyes, because eyes do not see well when they are moving. Lookouts would scan the horizon in a series of movements that would allow their eyes to come to periodic rests as they scan the sector. When visually searching at night, they would look a little to one side and out of the corners of their eyes, paying attention to the things on the outer edges of their field of vision. Lookouts will also have night vision devices available for use.

## II. Operating Procedures & Collision Avoidance

1. Prior to major exercises, a Letter of Instruction, Mitigation Measures Message or Environmental Annex to the Operational Order will be issued to further disseminate the personnel training requirement and general marine species mitigation measures.

2. Commanding Officers will make use of marine species detection cues and information to limit interaction with marine species to the maximum extent possible consistent with safety of the ship.

3. While underway, surface vessels will have at least two lookouts with binoculars; surfaced submarines will have at least one lookout with binoculars. Lookouts already posted for safety of navigation and man-overboard precautions may be used to fill this requirement. As part of their regular duties, lookouts will watch for and report to the OOD the presence of marine mammals and sea turtles.

4. On surface vessels equipped with a mid-frequency active sonar, pedestal mounted “Big Eye” (20x110) binoculars will be properly installed and in good working order to assist in the detection of marine mammals and sea turtles in the vicinity of the vessel.

5. Personnel on lookout will employ visual search procedures employing a scanning method in accordance with the Lookout Training Handbook (NAVEDTRA 12968–D).

6. After sunset and prior to sunrise, lookouts will employ Night Lookouts Techniques in accordance with the Lookout Training Handbook (NAVEDTRA 12968–D).

7. While in transit, naval vessels will be alert at all times, use extreme caution, and proceed at a “safe speed” so that the vessel can take proper and effective action to avoid a collision with any marine animal and can be stopped within a distance appropriate to the prevailing circumstances and conditions.

8. When whales have been sighted in the area, Navy vessels will increase vigilance and implement measures to avoid collisions with marine mammals and activities that might result in close interaction of naval assets and marine mammals. Such measures shall include changing speed and/or direction and would be dictated by environmental and other conditions (e.g., safety, weather).

9. Naval vessels will maneuver to keep at least 500 yds (460 m) away from any observed whale and avoid approaching whales head-on. This requirement does not apply if a vessel’s safety is threatened, such as when

change of course will create an imminent and serious threat to a person, vessel, or aircraft, and to the extent vessels are restricted in their ability to maneuver. Restricted maneuverability includes, but is not limited to, situations when vessels are engaged in dredging, submerged operations, launching and recovering aircraft or landing craft, minesweeping operations, replenishment while underway and towing operations that severely restrict a vessel’s ability to deviate course. Vessels will take reasonable steps to alert other vessels in the vicinity of the whale.

10. Where feasible and consistent with mission and safety, vessels will avoid closing to within 200–yd (183 m) of marine mammals other than whales (whales addressed above).

11. Floating weeds, algal mats, Sargassum rafts, clusters of seabirds, and jellyfish are good indicators of and marine mammal presence. Therefore, increased vigilance in watching for marine mammals will be taken where these indicators are present.

12. Navy aircraft participating in exercises at sea will conduct and maintain, when operationally feasible and safe, surveillance for marine species of concern as long as it does not violate safety constraints or interfere with the accomplishment of primary operational duties. Marine mammal detections will be reported immediately to the assigned Aircraft Control Unit for further dissemination to ships in the vicinity of the marine species as appropriate where it is reasonable to conclude that the course of the ship will likely result in a closing of the distance to the detected marine mammal.

13. All vessels will maintain logs and records documenting training operations to support event reconstruction, as necessary. Logs and records will be kept for a period of 30 days following completion of a major training exercise.

### *Coordination and Reporting Requirements*

The Navy will coordinate with the local NMFS Stranding Coordinator for any unusual marine mammal behavior and any stranding, beached live/dead, or floating marine mammals that may occur at any time during or within 24 hours after completion of training activities. Additionally, the Navy will follow internal chain of command reporting procedures as promulgated through Navy instructions and orders.

*Mitigation Measures Applicable to Vessel Transits in the Mid-Atlantic during North Atlantic Right Whale Migration*

For purposes of these measures, the mid-Atlantic is defined broadly to include ports south and east of Block Island Sound southward to South Carolina. The procedure described below would be established as mitigation measures for Navy vessel transits during North Atlantic right whale migratory seasons near ports located off the western North Atlantic, offshore of the eastern United States. The mitigation measures would apply to all Navy vessel transits, including those

vessels that would transit to and from East Coast ports and OPAREAs. Seasonal migration of right whales is generally described by NMFS as occurring from October 15th through April 30th, when right whales migrate between feeding grounds farther north and calving grounds farther south. The Navy mitigation measures have been established in accordance with rolling dates identified by NMFS consistent with these seasonal patterns.

NMFS has identified ports located in the western Atlantic Ocean, offshore of the southeastern United States, where vessel transit during right whale migration is of highest concern for potential ship strike. The ports include

the Hampton Roads entrance to the Chesapeake Bay, which includes the concentration of Atlantic Fleet vessels in Norfolk, Virginia. Navy vessels are required to use extreme caution and operate at a slow, safe speed consistent with mission and safety during the months indicated in Table 13 below and within a 20 nm (37 km) arc (except as noted) of the specified reference points.

During the indicated months, Navy vessels would practice increased vigilance with respect to avoidance of vessel-whale interactions along the mid-Atlantic coast, including transits to and from any mid-Atlantic ports not specifically identified above.

TABLE 14. NORTH ATLANTIC RIGHT WHALE MIGRATION PORT REFERENCES

Region	Months	Port Reference Points
South and East of Block Island	Sep-Oct and Mar-Apr	37 km (20 nm) seaward of line 41°4.49 N, 71°51.15 W and 41°18.58 N, 70°50.23 W
New York/New Jersey	Sep-Oct and Feb-Apr	40°30.64 N, 73°57.76 W
Delaware Bay (Philadelphia)	Oct-Dec and Feb-Mar	38°52.13 N, 75°01.93 W
Chesapeake Bay (Hampton Roads and Baltimore)	Nov-Dec and Feb-Apr	37°01.11 N, 75°57.56 W
North Carolina	Dec-Apr	34°41.54 N, 76°40.20 W
South Carolina	Oct-Apr	33°11.84 N, 79°08.99 W and 32°43.39 N, 79°48.72 W

*Proposed Mitigation Measures for Specific At-sea Training Events*

The proposed mitigation measures in the following sections are standard operating procedures currently in place and would be used in the future for all activities being analyzed in this document.

**I. Firing Exercise (FIREX) Using the Integrated Maritime Portable Acoustic Scoring System (IMPASS) (5–in. Explosive Rounds)**

Historically FIREX using IMPASS occurs in four areas in the VACAPES Range Complex. The locations were established to be far enough from shore to reduce civilian encounters (e.g., diving and recreational fishing), while remaining a reasonable day's distance from the homeport of Norfolk, Virginia of participating ships. Surface ships conducting FIREX with IMPASS do not have strict distance from land restrictions like aircraft that embark from shore-based facilities.

1. FIREX using IMPASS would only be conducted in the four designated areas in the VACAPES Range Complex.

2. Pre-exercise monitoring of the target area will be conducted with "Big

Eyes" prior to the event, during deployment of the IMPASS sonobuoy array, and during return to the firing position.

Ships will maintain a lookout dedicated to visually searching for marine mammals 180o along the ship track line and 360o at each buoy drop-off location.

3. "Big Eyes" on the ship will be used to monitor a 640 yd (585 m) buffer zone around the target area for marine mammals during naval-gunfire events. Due to the distance between the firing position and the buffer zone, lookouts are only expected to visually detect breaching whales, whale blows, and large pods of dolphins and porpoises.

4. Ships will not fire on the target if marine mammals are detected within or approaching the 640 yd (585 m) buffer zone. If marine mammals are present, operations would be suspended. Visual observation will occur for approximately 45 minutes, or until the animal has been observed to have cleared the area and is heading away from the buffer zone.

5. Post-exercise monitoring of the entire effect range will take place with "Big Eyes" and the naked eye during the

retrieval of the IMPASS sonobuoy array following each firing exercise.

6. FIREX with IMPASS will take place during daylight hours only.

7. FIREX with IMPASS will only be used in Beaufort Sea State three (3) or less.

8. The visibility must be such that the fall of shot is visible from the firing ship during the exercise.

9. No firing would occur if marine mammals are detected within 70 yd (64 m) of the vessel.

**II. Air-to-Surface At-Sea Bombing Exercises (250–lbs to 2,000–lbs explosive bombs)**

This activity occurs in two locations in the VACAPES Study Area. The locations were established to be far enough from shore to reduce civilian encounters (e.g., diving and recreational fishing), while remaining within 150 nm from shore-based facilities (the established flight distance restriction for F-A18 jets during unit level training events).

1. Aircraft will visually survey the target and buffer zone for marine mammals prior to and during the exercise. The survey of the impact area will be made by flying at 1,500 ft

altitude or lower, if safe to do so, and at the slowest safe speed. Release of ordnance through cloud cover is prohibited: aircraft must be able to actually see ordnance impact areas. Survey aircraft should employ most effective search tactics and capabilities.

2. A buffer zone of 5,100-yd (4,663 m) radius would be established around the intended target zone. The exercises will be conducted only if the buffer zone is clear of sighted marine mammals.

3. At-sea BOMBEXs using live ordnance will occur during daylight hours only.

### III. Air-to-Surface Missile Exercises (Explosive)

1. Aircraft will initially survey the intended ordnance impact area for marine mammals. During the actual firing of the weapon, the aircraft involved must be able to observe the intended ordnance impact area to ensure the area is free of range transients, however, this observation would be conducted from the firing position or other safe distance. Visual inspection of the target area will be made by flying at 1,500 ft altitude or lower, if safe to do so, and at slowest safe speed. Firing or range clearance aircraft must be able to actually see ordnance impact areas. Explosive ordnance shall not be targeted to impact within 1,800 yd (1,646 m) of sighted marine mammals.

### IV. Mine Neutralization Training Involving Underwater Detonations (up to 20-lb charges)

Mine neutralization involving underwater detonations occurs in shallow water (0 - 120 ft, or 0 - 36 m) and is executed by divers using scuba. NMFS issued a Biological Opinion (BO) in 2002 for underwater detonations of up to 20-lb explosive charges related to MINEX training (NMFS, 2002). Historically this activity has occurred in shallow water portions of W-50 in the VACAPES Study Area per this BO. This location is just offshore from NAS Oceana Dam Neck Annex, a restricted-access Naval Installation and overlaps an established Surface Danger Zone for live ordnance use, therefore civilian encounters are minimized. This location has a low bathymetric relief and a sand-silt bottom.

These exercises utilize small boats that deploy from shore based facilities. Often times these small boats are rigid-hulled inflatable boats (RHIBs) which are designed for shallow water and have limited seaworthiness necessitating a nearshore location. The exercise is a one-day event that occurs only during

daylight hours therefore the distance from shore is limited.

1. This activity will only occur in W-50 of the VACAPES Range Complex.

2. Observers will survey the Zone of Influence (ZOI), a 656 yd (600 m) radius from detonation location, for marine mammals from all participating vessels during the entire operation. A survey of the ZOI (minimum of 3 parallel tracklines 219 yd [200 m] apart) using support craft will be conducted at the detonation location 30 minutes prior through 30 minutes post detonation. Aerial survey support will be utilized whenever assets are available.

3. Detonation operations will be conducted during daylight hours.

4. If a marine mammal is sighted within the ZOI, the animal will be allowed to leave of its own volition. The Navy will suspend detonation exercises and ensure the area is clear for a full 30 minutes prior to detonation.

5. Divers placing the charges on mines and dive support vessel personnel will survey the area for marine mammals and will report any sightings to the surface observers. These animals will be allowed to leave of their own volition and the ZOI will be clear for 30 minutes prior to detonation.

6. No detonations will take place within 3.2 NM (6 km) of an estuarine inlet (Chesapeake Bay Inlets).

7. No detonations will take place within 1.6 nm (3 km) of shoreline.

8. No detonations will take place within 1,000 ft (305 m) of any artificial reef, shipwreck, or live hard-bottom community.

9. Personnel will record any protected species observations during the exercise as well as measures taken if species are detected within the ZOI.

### Adaptive Management

The final regulations governing the take of marine mammals incidental to Navy training exercises in VACAPES will contain an adaptive management component. The use of adaptive management will give NMFS the ability to consider new data from different sources to determine (in coordination with the Navy), on an annual basis, if new or modified mitigation or monitoring measures are appropriate for subsequent annual LOAs. Following are some of the possible sources of applicable data:

- Results from the Navy's monitoring from the previous year (either from VACAPES or other locations)
- Compiled results of Navy funded research and development (R&D) studies (presented pursuant to the ICMP, which is discussed elsewhere in this document)

- Results from general marine mammal and sound research (funded by the Navy (described below) or otherwise)

Mitigation measures could be modified or added if new data suggests that such modifications would have a reasonable likelihood of accomplishing the goals of mitigation laid out in this proposed rule and if the measures are practicable. NMFS would also coordinate with the Navy to modify or add to the existing monitoring requirements if the new data suggest that the addition of a particular measure would more effectively accomplish the goals of monitoring laid out in this proposed rule. The reporting requirements associated with this rule are designed to provide NMFS with monitoring data from the previous year to allow NMFS to consider the data in issuing annual LOAs. NMFS and the Navy will meet annually prior to LOA issuance to discuss the monitoring reports, Navy R&D developments, and current science and whether mitigation or monitoring modifications are appropriate.

### Monitoring and Reporting Measures

The Navy would be required to cooperate with the NMFS, and any other Federal, state or local agency monitoring the impacts of the activity on marine mammals.

The Navy must notify NMFS immediately (or as soon as clearance procedures allow) if the specified activity is thought to have resulted in the mortality or injury of any marine mammals, or in any take of marine mammals not identified in this document.

The Navy must conduct all monitoring and/or research required under the Letter of Authorization, if issued. The monitoring methods proposed for use during training events in the VACAPES Range Complex include a combination of individual elements designed to allow a comprehensive assessment and include:

- (1) Vessel and aerial surveys
  - (i) Visual surveillance of 2 events per year. The primary goal will be to survey two different types of explosive events with one of them being a multiple detonation event.
  - (ii) For specified training events, aerial or vessel surveys will be used 1-2 days prior to, during (if reasonably safe), and 1-5 days post detonation. The variation in the number of days after allows for the detection of animals that gradually return to an area, if they indeed do change their distribution in response to underwater detonation events.

(iii) Surveys will include any specified exclusion zone around a particular detonation point plus 2000 yards beyond the exclusion zone. For vessel-based surveys a passive acoustic system (hydrophone or towed array) could be used to determine if marine mammals are in the area before and/or after a detonation event. Depending on animals sighted, it may be possible to conduct focal surveys of animals outside of the exclusion zone (detonations could be delayed if marine mammals are observed within the exclusion zone) to record behavioral responses to the detonations.

(iv) When conducting a particular survey, the survey team will collect:

(A) species identification and group size;

(B) location and relative distance from the detonation site;

(C) the behavior of marine mammals including standard environmental and oceanographic parameters;

(D) date, time and visual conditions associated with each observation;

(E) direction of travel relative to the detonation site; and

(F) duration of the observation.

(v) An aerial survey team will conduct pre- and post-aerial surveys, taking local oceanographic currents into account, of the exercise area.

(2) Passive acoustic monitoring

(i) When practicable, towed hydrophone array should be used whenever shipboard surveys are being conducted. The towed array would be deployed during daylight hours for each of the days the ship is at sea.

(ii) A towed hydrophone array is towed from the boat and can detect and localize marine mammals that vocalize and would be used to supplement the ship-based systematic line-transect surveys (particularly for species such as beaked whales that are rarely seen).

(iii) The array would need to detect low frequency vocalizations (<1,000 Hz) for baleen whales and relatively high frequency vocalizations (up to 30 kHz) for odontocetes such as sperm whales. The use of two simultaneously deployed arrays can also allow more accurate localization and determination of diving patterns.

(3) Marine mammal observers on Navy platforms

(i) Marine mammal observers (MMOs) will be placed on a Navy platform during one of the exercises being monitored per year.

(ii) Qualifications must include expertise in species identification of regional marine mammal species and experience collecting behavioral data. Experience as a NMFS marine mammal observer is preferred, but not required.

Navy biologists and contracted biologists will be used; contracted MMOs must have appropriate security clearance to board Navy platforms.

(iii) MMOs will not be placed aboard Navy platforms for every Navy training event or major exercise, but during specifically identified opportunities deemed appropriate for data collection efforts. The events selected for MMO participation will take into account safety, logistics, and operational concerns.

(iv) MMOs will observe from the same height above water as the lookouts.

(v) The MMOs will not be part of the Navy's formal reporting chain of command during their data collection efforts; Navy lookouts will continue to serve as the primary reporting means within the Navy chain of command for marine mammal sightings. The only exception is that if an animal is observed within the shutdown zone that has not been observed by the lookout, the MMO will inform the lookout of the sighting for the lookout to take the appropriate action through the chain of command.

(vi) The MMOs will collect species identification, behavior, direction of travel relative to the Navy platform, and distance first observed. All MMO sightings will be conducted according to a standard operating procedure.

Report from Monitoring required in paragraph (d) above – The Navy will submit a report annually on September 1 describing the implementation and results (through June 1 of the same year) of the monitoring required. Standard marine species sighting forms would be provided by the Navy and data collection methods will be standardized across ranges to allow for comparison in different geographic locations.

VACAPES Range Complex Comprehensive Report The Navy will submit to NMFS a draft report that analyzes and summarizes all of the multi-year marine mammal information gathered during explosive exercises. This report will be submitted at the end of the fourth year of the rule (November 2012), covering activities that have occurred through June 1, 2012.

The Navy will respond to NMFS comments on the draft comprehensive report if submitted within 3 months of receipt. The report will be considered final after the Navy has addressed NMFS' comments, or three months after the submittal of the draft if NMFS does not comment by then.

To implement the aforementioned mitigation measures, the Navy is developing an Integrated Comprehensive Monitoring Program (ICMP) for marine species in order to

assess the effects of training activities on marine species and investigate population-level trends in marine species distribution, abundance, and habitat use in various range complexes and geographic locations where Navy training occurs. Although the ICMP is intended to apply to all Navy training, use of mid-frequency active (MFA) sonar in training, testing, and research, development, test, and evaluation (RDT&E) will comprise a major component of the overall program.

The ICMP will establish the overarching structure and coordination that will facilitate the collection and synthesis of monitoring data from Navy training and research and development projects. The Program will compile data from range-specific monitoring efforts as well as research and development (R&D) studies that are fully or partially Navy-funded. Monitoring methods across the ranges will include methods such as vessel and aerial surveys, tagging, and passive acoustic monitoring.

The Navy will coordinate with the local NMFS Stranding Coordinator for any unusual marine mammal behavior and any stranding, beached live/dead, or floating marine mammals that may occur at any time during or within 24 hours after completion of explosives training activities.

#### Estimated Take of Marine Mammals

As mentioned previously, for the purposes of MMPA authorizations, NMFS' effects assessments have two primary purposes (in the context of the VACAPES Range Complex Final Rule and subsequent LOA, if appropriate): (1) to describe the permissible methods of taking within the context of MMPA Level B Harassment (behavioral harassment), Level A Harassment (injury), and mortality (i.e., identify the number and types of take that will occur); and (2) to determine whether the specified activity will have a negligible impact on the affected species or stocks of marine mammals (based on the likelihood that the activity will adversely affect the species or stock through effects on annual rates of recruitment or survival). No subsistence uses will be affected by the proposed action because no subsistence communities are present within the action area.

In the *Assessment of Marine Mammal Response to Anthropogenic Sound* section, NMFS' analysis identified the lethal responses, physical trauma, sensory impairment (permanent and temporary threshold shifts and acoustic masking), physiological responses (particular stress responses), and behavioral responses that could

potentially result from exposures from explosive ordnance. In this section, we will relate the potential effects to marine mammals from underwater detonation of explosives to the MMPA regulatory definitions of Level A and Level B Harassment and attempt to quantify the effects that might occur from the specific training activities that the Navy is proposing in the VACAPES Range Complex.

#### Definition of Harassment

As mentioned previously, with respect to military readiness activities, Section 3(18)(B) of the MMPA defines "harassment" as: (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].

#### Level B Harassment

Of the potential effects that were described in the *Assessment of Marine Mammal Response to Anthropogenic Sound* and the *Explosive Ordnance Exposure Analysis* sections, following are the types of effects that fall into the Level B Harassment category:

**Behavioral Harassment** – Behavioral disturbance that rises to the level described in the definition above, when resulting from exposures to underwater detonations, is considered Level B Harassment. Some of the lower level physiological stress responses discussed in the *Assessment of Marine Mammal Response to Anthropogenic Sound* section will also likely co-occur with the predicted harassments, although these responses are more difficult to detect and fewer data exist relating these responses to specific received levels of sound. When Level B Harassment is predicted based on estimated behavioral responses, those takes may have a stress-related physiological component as well.

**Acoustic Masking and Communication Impairment** – Acoustic masking is considered Level B Harassment as it can disrupt natural behavioral patterns by interrupting or limiting the marine mammal's receipt or transmittal of important information or environmental cues.

TTS As discussed previously, TTS can effect how an animal behaves in response to the environment, including

conspecifics, predators, and prey. The following physiological mechanisms are thought to play a role in inducing auditory fatigue: effects to sensory hair cells in the inner ear that reduce their sensitivity, modification of the chemical environment within the sensory cells, residual muscular activity in the middle ear, displacement of certain inner ear membranes, increased blood flow, and post-stimulatory reduction in both efferent and sensory neural output. Ward (1997) suggested that when these effects result in TTS rather than PTS, they are within the normal bounds of physiological variability and tolerance and do not represent a physical injury. Additionally, Southall *et al.* (2007) indicate that although PTS is a tissue injury, TTS is not because the reduced hearing sensitivity following exposure to intense sound results primarily from fatigue, not loss, of cochlear hair cells and supporting structures and is reversible. Accordingly, NMFS classifies TTS (when resulting from exposure to underwater detonations) as Level B Harassment, not Level A Harassment (injury).

#### Level A Harassment

Of the potential effects that were described in the *Assessment of Marine Mammal Response to Anthropogenic Sound* section, following are the types of effects that fall into the Level A Harassment category:

**PTS** – PTS (resulting either from exposure to explosive detonations) is irreversible and considered to be an injury. PTS results from exposure to intense sounds that cause a permanent loss of inner or outer cochlear hair cells or exceed the elastic limits of certain tissues and membranes in the middle and inner ears and result in changes in the chemical composition of the inner ear fluids.

**Physical Disruption of Tissues Resulting from Explosive Shock Wave** – Physical damage of tissues resulting from a shock wave (from an explosive detonation) is classified as an injury. Blast effects are greatest at the gas-liquid interface (Landsberg, 2000) and gas-containing organs, particularly the lungs and gastrointestinal tract, are especially susceptible to damage (Goertner, 1982; Hill 1978; Yelverton *et al.*, 1973). Nasal sacs, larynx, pharynx, trachea, and lungs may be damaged by compression/expansion caused by the oscillations of the blast gas bubble (Reidenberg and Laitman, 2003). Severe damage (from the shock wave) to the ears can include tympanic membrane rupture, fracture of the ossicles, damage to the cochlea, hemorrhage, and cerebrospinal fluid leakage into the middle ear.

#### Acoustic Take Criteria

For the purposes of an MMPA incidental take authorization, three types of take are identified: Level B Harassment; Level A Harassment; and mortality (or serious injury leading to mortality). The categories of marine mammal responses (physiological and behavioral) that fall into the two harassment categories were described in the previous section.

Because the physiological and behavioral responses of the majority of the marine mammals exposed to underwater detonations cannot be detected or measured (not all responses visible external to animal, portion of exposed animals underwater (so not visible), many animals located many miles from observers and covering very large area, etc.) and because NMFS must authorize take prior to the impacts to marine mammals, a method is needed to estimate the number of individuals that will be taken, pursuant to the MMPA, based on the proposed action. To this end, NMFS developed acoustic criteria that estimate at what received level (when exposed to explosive detonations) Level B Harassment, Level A Harassment, and mortality (for explosives) of marine mammals would occur. The acoustic criteria for Underwater Detonations are discussed below.

#### Thresholds and Criteria for Impulsive Sound

Criteria and thresholds for estimating the exposures from a single explosive activity on marine mammals were established for the Seawolf Submarine Shock Test Final Environmental Impact Statement (FEIS) ("Seawolf") and subsequently used in the USS Winston S. Churchill (DDG-81) Ship Shock FEIS ("Churchill") (DoN, 1998 and 2001a). NMFS adopted these criteria and thresholds in its final rule on unintentional taking of marine animals occurring incidental to the shock testing (NMFS, 2001a). Since the ship-shock events involve only one large explosive at a time, additional assumptions were made to extend the approach to cover multiple explosions for FIREX (with IMPASS) and BOMBEX. In addition, this section reflects a revised acoustic criterion for small underwater explosions (i.e., 23 pounds per square inch [psi] instead of previous acoustic criteria of 12 psi for peak pressure over all exposures), which is based on the final rule issued to the Air Force by NMFS (NMFS, 2005c).

## I.1. Thresholds and Criteria for Injurious Physiological Impacts

### I.1.a. Single Explosion

For injury, the Navy uses dual criteria: eardrum rupture (i.e., tympanic-membrane injury). These criteria are considered indicative of the onset of injury. The threshold for TM rupture corresponds to a 50 percent rate of rupture (i.e., 50 percent of animals exposed to the level are expected to suffer TM rupture); this is stated in terms of an Energy Flux Density Level (EL) value of 1.17 inch pounds per square inch (in-lb/in<sup>2</sup>) (about 205 dB re 1 microPa<sup>2</sup>-sec). This recognizes that TM rupture is not necessarily a serious or life-threatening injury, but is a useful index of possible injury that is well correlated with measures of permanent hearing impairment (Ketten [1998] indicates a 30 percent incidence of PTS at the same threshold).

The threshold for onset of slight lung injury is calculated for a small animal (a dolphin calf weighing 26.9 lbs), and is given in terms of the "Goertner modified positive impulse," indexed to 13 psi-msec (DoN, 2001). This threshold is conservative since the positive impulse needed to cause injury is proportional to animal mass, and therefore, larger animals require a higher impulse to cause the onset of injury. This analysis assumed the marine species populations were 100 percent small animals. The criterion with the largest potential impact range (most conservative), either TM rupture (energy threshold) or onset of slight lung injury (peak pressure), will be used in the analysis to determine Level A exposures.

For mortality, the Navy uses the criterion corresponding to the onset of extensive lung injury. This is conservative in that it corresponds to a 1 percent chance of mortal injury, and yet any animal experiencing onset severe lung injury is counted as a lethal exposure. For small animals, the threshold is given in terms of the Goertner modified positive impulse, indexed to 30.5 psi-msec. Since the Goertner approach depends on propagation, source/animal depths, and animal mass in a complex way, the actual impulse value corresponding to the 30.5 psi-msec index is a complicated calculation. To be conservative, the analysis used the mass of a calf dolphin (at 26.9 lbs) for 100 percent of the populations.

### I.1.b. Multiple Explosions

For this analysis, the use of multiple explosions only applies to FIREX (with IMPASS) and the MK-83 bombs used in

BOMBEX. Since FIREX and portions of BOMBEX require multiple explosions, the Churchill approach had to be extended to cover multiple sound events at the same training site. For multiple exposures, accumulated energy over the entire training time is the natural extension for energy thresholds since energy accumulates with each subsequent shot (detonation); this is consistent with the treatment of multiple arrivals in Churchill. For positive impulse, it is consistent with Churchill to use the maximum value over all impulses received.

## I.2. Thresholds and Criteria for Non-Injurious Physiological Effects

The Navy criterion for non-injurious harassment is TTS a slight, recoverable loss of hearing sensitivity (DoN, 2001). For this assessment, there are dual criteria for TTS, an energy threshold and a peak pressure threshold. The criterion with the largest potential impact range (most conservative) either the energy or peak pressure threshold, will be used in the analysis to determine Level B TTS exposures.

### I.2.a. Single Explosion TTS-Energy Threshold

The first threshold is a 182 dB re 1 microPa<sup>2</sup>-sec maximum energy flux density level in any 1/3-octave band at frequencies above 100 Hertz (Hz) for toothed whales and in any 1/3-octave band above 10 Hz for baleen whales. For large explosives, as in the case of the Churchill FEIS, frequency range cutoffs at 10 and 100 Hz make a difference in the range estimates. For small explosives (<1,500 lb NEW), as what was modeled for this analysis, the spectrum of the shot arrival is broad, and there is essentially no difference in impact ranges for toothed whales or baleen whales.

The TTS energy threshold for explosives is derived from the Space and Naval Warfare Systems Center (SSC) pure-tone tests for TTS (Schlundt *et al.*, 2000, Finneran and Schlundt 2004). The pure-tone threshold (192 dB as the lowest value) is modified for explosives by (a) interpreting it as an energy metric, (b) reducing it by 10 dB to account for the time constant of the mammal ear, and (c) measuring the energy in 1/3-octave bands, the natural filter band of the ear. The resulting threshold is 182 dB re 1 microPa<sup>2</sup>-sec in any 1/3-octave band. The energy threshold usually dominates and is used in the analysis to determine potential Level B TTS exposures for single explosion ordnance.

### I.2.b. Single Explosion – TTS-Peak Pressure Threshold

The second threshold applies to all species and is stated in terms of peak pressure at 23 psi (about 225 dB re 1 microPa). This criterion was adopted for Precision Strike Weapons (PSW) Testing and Training by Eglin Air Force Base in the Gulf of Mexico (NMFS, 2005b). It is important to note that for small shots near the surface (such as in this analysis), the 23-psi peak pressure threshold generally will produce longer impact ranges than the 182-dB energy metric. Furthermore, it is not unusual for the TTS impact range for the 23-psi pressure metric to actually exceed the behavioral (without TTS) impact range for the 177-dB energy metric.

### I.2.c. Multiple Explosions – TTS

For multiple explosions, accumulated energy over the entire training time is the natural extension for energy thresholds since energy accumulates with each subsequent shot/detonation. This is consistent with the energy argument in Churchill. For peak pressure, it is consistent with Churchill to use the maximum value over all impulses received.

## I.3. Thresholds and Criteria for Behavioral Effects

### I.3.a. Single Explosion

For a single explosion, to be consistent with Churchill, TTS is the criterion for Level B. In other words, because behavioral disturbance for a single explosion is likely to be limited to a short-lived startle reaction, use of the TTS criterion is considered sufficient protection and therefore behavioral effects (without TTS, impacts would be limited to behavioral effects only) are not considered for single explosions.

### I.3.b. Multiple Explosions – Without TTS

For this analysis, the use of multiple explosions only applies to FIREX (with IMPASS) and the MK-83 bombs used in BOMBEX. Because multiple explosions would occur within a discrete time period, a new acoustic criterion-behavioral disturbance (without TTS) is used to account for behavioral effects significant enough to be judged as harassment, but occurring at lower noise levels than those that may cause TTS.

The threshold is based on test results published in Schlundt *et al.* (2000), with derivation following the approach of the Churchill FEIS for the energy-based TTS threshold. The original Schlundt *et al.* (2000) data and the report of Finneran and Schlundt (2004) are the basis for thresholds for behavioral disturbance

(without TTS). As reported by Schlundt *et al.* (2000), instances of altered behavior generally began at lower exposures than those causing TTS; however, there were many instances when subjects exhibited no altered behavior at levels above the onset-TTS levels. Regardless of reactions at higher or lower levels, all instances of altered behavior were included in the statistical summary.

The behavioral disturbance (without TTS) threshold for tones is derived from the SSC tests, and is found to be 5 dB below the threshold for TTS, or 177 dB re 1 microPa<sup>2</sup>-sec maximum energy flux density level in any 1/3-octave band at

frequencies above 100 Hz for toothed whales and in any 1/3-octave band above 100 Hz for baleen whales. As stated previously for TTS, for small explosives (<1,500 lb NEW), as what was modeled for this analysis, the spectrum of the shot arrival is broad, and there is essentially no difference in impact ranges for whales. The behavioral disturbance (without TTS) impact range for FIREX with IMPASS can, especially in shallower water, be about twice the impact range for TTS. Based on modeling, for BOMBEX involving MK-83 bombs, behavioral disturbance (without TTS) (177 dB re 1 microPa<sup>2</sup>-s) is the criteria that

dominates in the analysis to determine potential Level B exposures due to the use of multiple explosions.

## II. Summary of Thresholds and Criteria for Impulsive Sounds

Table 15 summarizes the effects, criteria, and thresholds used in the assessment for impulsive sounds. The criteria for behavioral effects without physiological effects used in this analysis are based on use of multiple explosives that only take place during a FIREX (w/IMPASS) event or a BOMBEX event involving MK-83 bombs.

TABLE 15. EFFECTS, CRITERIA, AND THRESHOLDS FOR IMPULSIVE SOUNDS

Effect	Criteria	Metric	Threshold	Effect
Mortality	Onset of Extensive Lung Injury	Goertner modified positive impulse	indexed to 30.5 psi-msec (assumes 100 percent small animal at 26.9 lbs)	Mortality
Injurious Physiological	50% Tympanic Membrane Rupture	Energy flux density	1.17 in-lb/in <sup>2</sup> (about 205 dB re 1 microPa <sup>2</sup> -sec)	Level A
Injurious Physiological	Onset Slight Lung Injury	Goertner modified positive impulse	indexed to 13 psi-msec (assumes 100 percent small animal at 26.9 lbs)	Level A
Non-injurious Physiological	TTS	Greatest energy flux density level in any 1/3-octave band (> 100 Hz for toothed whales and > 10 Hz for baleen whales) - for total energy over all exposures	182 dB re 1 microPa <sup>2</sup> -sec	Level B
Non-injurious Physiological	TTS	Peak pressure over all exposures	23 psi (for small explosives <2,000 lbs, else 12 psi)	Level B
Non-injurious Behavioral	Multiple Explosions Without TTS	Greatest energy flux density level in any 1/3-octave (> 100 Hz for toothed whales and > 10 Hz for baleen whales) - for total energy over all exposures (multiple explosions only)	177 dB re 1 microPa <sup>2</sup> -sec	Level B

The criteria for mortality, Level A Harassment, and Level B Harassment resulting from explosive detonations were initially developed for the Navy's Sea Wolf and Churchill ship-shock trials and have not changed since other MMPA authorizations issued for explosive detonations. The criteria, which are applied to cetaceans and pinnipeds are summarized in Table 8. Additional information regarding the derivation of these criteria is available in the Navy's EIS for the VACAPES Range Complex and in the Navy's CHURCHILL FEIS (U.S. Department of the Navy, 2001c).

### Take Calculations

In estimating the potential for marine mammals to be exposed to an acoustic source, the Navy completed the following actions:

- (1) Evaluated potential effects within the context of existing and current regulations, thresholds, and criteria;
- (2) Identified all acoustic sources that will be used during Navy training activities;
- (3) Identified the location, season, and duration of the action to determine which marine mammal species are likely to be present;
- (4) Determined the estimated number of marine mammals (i.e., density) of

each species that will likely be present in the respective OPAREAs during the Navy training activities;

(5) Applied the applicable acoustic threshold criteria to the predicted sound exposures from the proposed activity. The results were then evaluated to determine whether the predicted sound exposures from the acoustic model might be considered harassment; and

(6) Considered potential harassment within the context of the affected marine mammal population, stock, and species to assess potential population viability. Particular focus on recruitment and survival are provided to analyze whether the effects of the action



can be considered to have negligible effects to marine mammal species or a population stock.

Starting with a sound source, the attenuation of an emitted sound due to propagation loss is determined. Uniform animal distribution is overlaid onto the calculated sound fields to assess if animals are physically present at sufficient received sound levels to be considered "exposed" to the sound. If the animal is determined to be exposed, two possible scenarios must be considered with respect to the animal's physiology - effects on the auditory system and effects on non-auditory system tissues. These are not independent pathways and both must be considered since the same sound could affect both auditory and non-auditory tissues. Note that the model does not account for any animal response; rather the animals are considered stationary, accumulating energy until the threshold is tripped.

Estimating the take that will result from the proposed activities entails the following four steps: propagation model estimates animals exposed to sources at different levels; further modeling determines the number of exposures to levels indicated in the criteria above (i.e., number of takes); post-modeling corrections refine estimates to make them more accurate; mitigation is taken into consideration. More information regarding the models used, the assumptions used in the models, and the process of estimating take is available in Appendix J of the Navy's EIS for the VACAPES Range Complex.

Modeling results from the analysis predict mortalities for 1 common dolphin from use of explosive ordnance in MISSILEX activities. These modeling results do not take into account the mitigation measures (detailed in the Proposed Mitigation Measure section above) that lower the potential for mortalities to occur given standard range clearance procedures and the likelihood that these species can be readily detected (e.g., small animals move quickly throughout the water column and are often seen riding the bow wave of large ships or in large groups). With the mitigation and monitoring measures implemented, NMFS does not believe that there would be mortality of any marine mammal resulting from the proposed training activities. Therefore, mortality of marine mammals would not be authorized.

#### **Effects on Marine Mammal Habitat**

Activities from Atlantic Fleet training activities in the VACAPES Range Complex that may affect marine mammal habitat include changes in

water quality, the introduction of sound into the water column, and temporary changes to prey distribution and abundance. There is no critical habitat designated in the VACAPES Range Complex.

#### **Analysis and Negligible Impact Determination**

Pursuant to NMFS regulations implementing the MMPA, an applicant is required to estimate the number of animals that will be "taken" by the specified activities (i.e., takes by harassment only, or takes by harassment, injury, and/or death). This estimate informs the analysis that NMFS must perform to determine whether the activity will have a "negligible impact" on the species or stock. Level B (behavioral) harassment occurs at the level of the individual(s) and does not assume any resulting population-level consequences, though there are known avenues through which behavioral disturbance of individuals can result in population-level effects. A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (i.e., population-level effects). An estimate of the number of Level B harassment takes, alone, is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through behavioral harassment, NMFS must consider other factors, such as the likely nature of any responses (their intensity, duration, etc.), the context of any responses (critical reproductive time or location, migration, etc.), or any of the other variables mentioned in the first paragraph (if known), as well as the number and nature of estimated Level A takes, the number of estimated mortalities, and effects on habitat.

Based on the analysis contained herein, NMFS has preliminarily determined that Navy training exercises utilizing underwater detonations will have a negligible impact on the marine mammal species and stocks present in the VACAPES Range Complex.

#### **Subsistence Harvest of Marine Mammals**

NMFS has preliminarily determined that the issuance of 5-year regulations and subsequent LOAs (as warranted) for Navy training exercises in the VACAPES Range Complex would not have an unmitigable adverse impact on the availability of the affected species or stocks for subsistence use, since there are no such uses in the specified area.

#### **ESA**

There are four marine mammal species that are listed as endangered under the ESA with confirmed or possible occurrence in the VACAPES Range Complex: humpback whale, North Atlantic right whale, fin whale, and sperm whale. The Navy has begun consultation with NMFS pursuant to section 7 of the ESA, and NMFS will also consult internally on the issuance of an LOA under section 101(a)(5)(A) of the MMPA for training exercises in the VACAPES Range Complex. Consultation will be concluded prior to a determination on the issuance of the final rule and an LOA.

#### **NEPA**

The Navy is preparing an Environmental Impact Statement (EIS) for the proposed VACAPES Range Complex training activities. A draft EIS was released for public comment from June 27 - August 11, 2008 and it is available at <http://www.vacapessrangecomplexeis.com/>. NMFS is a cooperating agency (as defined by the Council on Environmental Quality (40 CFR 1501.6)) in the preparation of the EIS. NMFS has reviewed the Draft EIS and will be working with the Navy on the Final EIS (FEIS).

NMFS intends to adopt the Navy's FEIS, if adequate and appropriate, and we believe that the Navy's FEIS will allow NMFS to meet its responsibilities under NEPA for the issuance of the 5-year regulations and LOAs (as warranted) for training activities in the VACAPES Range Complex. If the Navy's FEIS is not adequate, NMFS would supplement the existing analysis and documents to ensure that we comply with NEPA prior to the issuance of the final rule or LOA.

#### **Preliminary Determination**

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat and dependent upon the implementation of the mitigation measures, NMFS preliminarily finds that the total taking from Navy training exercises utilizing underwater explosives in the VACAPES Range Complex will have a negligible impact on the affected marine mammal species or stocks. NMFS has proposed regulations for these exercises that prescribe the means of affecting the least practicable adverse impact on marine mammals and their habitat and set forth requirements pertaining to the monitoring and reporting of that taking.



## Classification

This action does not contain a collection of information requirement for purposes of the Paperwork Reduction Act

Pursuant to the procedures established to implement section 6 of Executive Order 12866, the Office of Management and Budget has determined that this proposed rule is not significant.

Pursuant to the Regulatory Flexibility Act, the Chief Counsel for Regulation of the Department of Commerce has certified to the Chief Counsel for Advocacy of the Small Business Administration that this proposed rule, if adopted, would not have a significant economic impact on a substantial number of small entities. The Regulatory Flexibility Act requires Federal agencies to prepare an analysis of a rule's impact on small entities whenever the agency is required to publish a notice of proposed rulemaking. However, a Federal agency may certify, pursuant to 5 U.S.C. section 605 (b), that the action will not have a significant economic impact on a substantial number of small entities. The Navy is the entity that will be affected by this rulemaking, not a small governmental jurisdiction, small organization or small business, as defined by the Regulatory Flexibility Act. Any requirements imposed by a Letter of Authorization issued pursuant to these regulations, and any monitoring or reporting requirements imposed by these regulations, will be applicable only to the Navy. Because this action, if adopted, would directly affect the Navy and not a small entity, NMFS concludes the action would not result in a significant economic impact on a substantial number of small entities.

## List of Subjects in 50 CFR Part 216

Exports, Fish, Imports, Incidental take, Indians, Labeling, Marine mammals, Navy, Penalties, Reporting and recordkeeping requirements, Seafood, Sonar, Transportation.

Dated: December 5, 2008.

### Samuel D. Rauch III,

Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.

For reasons set forth in the preamble, 50 CFR Chapter II is proposed to be amended by adding part 218 to read as follows:

2. Part 218 is added to read as follows:

## PART 218—REGULATIONS GOVERNING THE TAKING AND IMPORTING OF MARINE MAMMALS

### Subpart A—Taking Marine Mammals Incidental to U.S. Navy Training in the Virginia Capes Range Complex

Sec.

- 218.1 Specified activity and specified geographical region.
- 218.2 Permissible methods of taking.
- 218.3 Prohibitions.
- 218.4 Mitigation.
- 218.5 Requirements for monitoring and reporting.
- 218.6 Applications for Letters of Authorization.
- 218.7 Letters of Authorization.
- 218.8 Renewal of Letters of Authorization.
- 218.9 Modifications to Letters of Authorization.

### Subpart A—Taking Marine Mammals Incidental to U.S. Navy Training in the Virginia Capes Range Complex (VACAPES Range Complex)

Authority: 16 U.S.C. 1361 *et seq.*

#### § 218.1 Specified activity and specified geographical region.

(a) Regulations in this subpart apply only to the U.S. Navy for the taking of marine mammals that occurs in the area outlined in paragraph (b) of this section and that occur incidental to the activities described in paragraph (c) of this section.

(b) The taking of marine mammals by the Navy is only authorized if it occurs within the VACAPES OPAREA, which is located in the coastal and offshore waters of the western North Atlantic Ocean adjacent to Delaware, Maryland, Virginia, and North Carolina. The northernmost boundary of the OPAREA is located 37 nautical miles (nm) off the entrance to Delaware Bay at latitude 38° 45' N, the farthest point of the eastern boundary is 184 nm east of Chesapeake Bay at longitude 72° 41' W, and the southernmost point is 105 nm southeast of Cape Hatteras, North Carolina, at latitude of 34° 19' N. The western boundary of the OPAREA lies 3 nm from the shoreline at the boundary separating state and Federal waters.

(c) The taking of marine mammals by the Navy is only authorized if it occurs incidental to the following activities within the designated amounts of use:

- (1) The detonation of the underwater explosives indicated in this (c)(1)(i) conducted as part of the training exercises indicated in this (c)(1)(ii):
  - (i) Underwater Explosives:
    - (A) AGM-114 (Hellfire missile);
    - (B) AGM-65 E/F (Maverick missile);
    - (C) MK-83/GBU-32 (1,000 lb High Explosive bomb);

- (D) Airborne Mine Neutralization system (AMNS);
- (E) 20 lb NEW charges;
- (F) AGM-88 (HARM);
- (G) 5" Naval Gunfire.
- (ii) Training Events:
  - (A) Mine Neutralization (AMNS) up to 150 exercises over the course of 5 years (an average of 30 per year);
  - (B) Mine Neutralization (20 lb NEW charges) - up to 120 exercises over the course of 5 years (an average of 24 per year);
  - (C) Bombing Exercise (BOMBEX) (Air-to-Surface) - up to 100 exercises over the course of 5 years (an average of 20 per year);
  - (D) Missile Exercise (MISSILEX) (Air-to-Surface; Hellfire missile) - up to 300 exercises over the course of 5 years (an average of 60 per year);
  - (E) Missile Exercise (MISSILEX) (Air-to-Surface; Maverick, HE) - up to 100 exercises over the course of 5 years (an average of 20 per year);
  - (F) HARM Missile Exercise (HARMEX) - up to 130 exercises over the course of 5 years (an average of 26 per year);
  - (G) FIREX with IMPASS - up to 110 exercises over the course of 5 years (an average of 22 per year).
- (2) [Reserved]

#### § 218.2 Permissible methods of taking.

(a) Under Letters of Authorization issued pursuant to §§ 216.106 and 218.7, the Holder of the Letter of Authorization may incidentally, but not intentionally, take marine mammals within the area described in § 218.1 (b), provided the activity is in compliance with all terms, conditions, and requirements of this subpart and the appropriate Letter of Authorization.

(b) The activities identified in § 218.1 (c) must be conducted in a manner that minimizes, to the greatest extent practicable, any adverse impacts on marine mammals and their habitat.

(c) The incidental take of marine mammals under the activities identified in § 218.1 (c) is limited to the following species, by the indicated method of take the indicated number of times:

- (1) Level B Harassment:
  - (i) Mysticetes:
    - (A) Humpback whale (*Megaptera novaeangliae*) - 2;
    - (B) Fin whale (*Balaenoptera physalus*) - 2.
  - (ii) Odontocetes:
    - (A) Sperm whale (*Physeter macrocephalus*) - 2;
    - (B) Pygmy or dwarf sperm whales (*Kogia sp.*) - 3;
    - (C) Rough-toothed dolphin (*Steno bredanensis*) - 1;
    - (D) Bottlenose dolphin (*Tursiops truncatus*) - 29;

- (E) Pantropical spotted dolphin (*Stenella attenuata*) - 70;
- (F) Striped dolphin (*S. coerulealba*) - 68;
- (F) Clymene dolphin (*S. clymene*) - 33;
- (G) Atlantic spotted dolphin (*S. frontalis*) - 43;
- (H) Common dolphin (*Delphinus delphis*) - 2,193;
- (I) Risso's dolphin (*Grampus griseus*) - 16
- (J) Pilot whales (*Globicephala* sp.) - 10.
- (2) Level A Harassment (injury):
- (i) Atlantic spotted dolphin - 1;
- (ii) Common dolphin - 20;
- (iii) Pantropical spotted dolphin - 1;
- (iv) Striped dolphin - 3.

### § 218.3 Prohibitions.

Notwithstanding takings contemplated in § 218.2 and authorized by a Letter of Authorization issued under § 216.106 of this chapter and § 218.7. No person in connection with the activities described in § 218.1 may:

- (a) Take any marine mammal not specified in § 218.2 (c);
- (b) Take any marine mammal specified in § 218.2 (c) other than by incidental take as specified in § 218.2(c)(1) and (2);
- (c) Take a marine mammal specified in § 218.2 (c) if such taking results in more than a negligible impact on the species or stocks of such marine mammal; or
- (d) Violate, or fail to comply with, the terms, conditions, and requirements of this Subpart or a Letter of Authorization issued under § 216.106 of this chapter and § 218.7.

### § 218.4 Mitigation.

(a) When conducting training activities identified in § 218.1(c), the mitigation measures contained in the Letter of Authorization issued under § 216.106 of this chapter and § 218.7 must be implemented. These mitigation measures include (but are not limited to):

- (1) *General Maritime Measures:*
- (i) Personnel Training – Lookouts
- (A) All bridge personnel, Commanding Officers, Executive Officers, officers standing watch on the bridge, maritime patrol aircraft aircrews, and Mine Warfare (MIW) helicopter crews will complete Marine Species Awareness Training (MSAT).
- (B) Navy lookouts will undertake extensive training to qualify as a watchstander in accordance with the Lookout Training Handbook (NAVEDTRA 12968–D).
- (C) Lookout training will include on-the-job instruction under the

supervision of a qualified, experienced watchstander. Following successful completion of this supervised training period, lookouts will complete the Personal Qualification Standard Program, certifying that they have demonstrated the necessary skills (such as detection and reporting of partially submerged objects).

(D) Lookouts will be trained in the most effective means to ensure quick and effective communication within the command structure to facilitate implementation of protective measures if marine species are spotted.

(E) Surface lookouts would scan the water from the ship to the horizon and be responsible for all contacts in their sector. In searching the assigned sector, the lookout would always start at the forward part of the sector and search aft (toward the back). To search and scan, the lookout would hold the binoculars steady so the horizon is in the top third of the field of vision and direct the eyes just below the horizon. The lookout would scan for approximately five seconds in as many small steps as possible across the field seen through the binoculars. They would search the entire sector in approximately five-degree steps, pausing between steps for approximately five seconds to scan the field of view. At the end of the sector search, the glasses would be lowered to allow the eyes to rest for a few seconds, and then the lookout would search back across the sector with the naked eye.

(F) At night, lookouts would not sweep the horizon with their eyes, because eyes do not see well when they are moving. Lookouts would scan the horizon in a series of movements that would allow their eyes to come to periodic rests as they scan the sector. When visually searching at night, they would look a little to one side and out of the corners of their eyes, paying attention to the things on the outer edges of their field of vision. Lookouts will also have night vision devices available for use.

(ii) Operating Procedures & Collision Avoidance:

(A) Prior to major exercises, a Letter of Instruction, Mitigation Measures Message or Environmental Annex to the Operational Order will be issued to further disseminate the personnel training requirement and general marine species mitigation measures.

(B) Commanding Officers will make use of marine species detection cues and information to limit interaction with marine species to the maximum extent possible consistent with safety of the ship.

(C) While underway, surface vessels will have at least two lookouts with

binoculars; surfaced submarines will have at least one lookout with binoculars. Lookouts already posted for safety of navigation and man-overboard precautions may be used to fill this requirement. As part of their regular duties, lookouts will watch for and report to the OOD the presence of marine mammals and sea turtles.

(D) On surface vessels equipped with a mid-frequency active sonar, pedestal mounted “Big Eye” (20x110) binoculars will be properly installed and in good working order to assist in the detection of marine mammals and sea turtles in the vicinity of the vessel.

(E) Personnel on lookout will employ visual search procedures employing a scanning method in accordance with the Lookout Training Handbook (NAVEDTRA 12968–D).

(F) After sunset and prior to sunrise, lookouts will employ Night Lookouts Techniques in accordance with the Lookout Training Handbook (NAVEDTRA 12968–D).

(G) While in transit, naval vessels will be alert at all times, use extreme caution, and proceed at a “safe speed” so that the vessel can take proper and effective action to avoid a collision with any marine animal and can be stopped within a distance appropriate to the prevailing circumstances and conditions.

(H) When whales have been sighted in the area, Navy vessels will increase vigilance and implement measures to avoid collisions with marine mammals and avoid activities that might result in close interaction of naval assets and marine mammals. Such measures shall include changing speed and/or direction and would be dictated by environmental and other conditions (e.g., safety or weather).

(I) Naval vessels will maneuver to keep at least 500 yds (460 m) away from any observed whale and avoid approaching whales head-on. This requirement does not apply if a vessel's safety is threatened, such as when change of course will create an imminent and serious threat to a person, vessel, or aircraft, and to the extent vessels are restricted in their ability to maneuver. Restricted maneuverability includes, but is not limited to, situations when vessels are engaged in dredging, submerged operations, launching and recovering aircraft or landing craft, minesweeping operations, replenishment while underway and towing operations that severely restrict a vessel's ability to deviate course. Vessels will take reasonable steps to alert other vessels in the vicinity of the whale.

(J) Where feasible and consistent with mission and safety, vessels will avoid closing to within 200-yd (183 m) of marine mammals other than whales (whales addressed above).

(K) Floating weeds, algal mats, Sargassum rafts, clusters of seabirds, and jellyfish are good indicators of sea turtles and marine mammals. Therefore, increased vigilance in watching for sea turtles and marine mammals will be taken where these are present.

(L) Navy aircraft participating in exercises at sea will conduct and maintain, when operationally feasible and safe, surveillance for marine species of concern as long as it does not violate safety constraints or interfere with the accomplishment of primary operational duties. Marine mammal detections will be immediately reported to assigned Aircraft Control Unit for further dissemination to ships in the vicinity of the marine species as appropriate where it is reasonable to conclude that the course of the ship will likely result in a closing of the distance to the detected marine mammal.

(M) All vessels will maintain logs and records documenting training operations should they be required for event reconstruction purposes. Logs and records will be kept for a period of 30 days following completion of a major training exercise.

#### (2) Coordination and Reporting Requirements:

(i) The Navy shall coordinate with the local NMFS Stranding Coordinator for any unusual marine mammal behavior and any stranding, beached live/dead, or floating marine mammals that may occur at any time during or within 24 hours after completion of training activities.

(ii) The Navy shall follow internal chain of command reporting procedures as promulgated through Navy instructions and orders.

#### (3) Mitigation Measures Applicable Vessel Transit in the Mid-Atlantic during North Atlantic Right Whale Migration:

(i) The mitigation measures apply to all Navy vessel transits, including those vessels that would transit to and from East Coast ports and OPAREAs.

(ii) Seasonal migration of right whales is described by NMFS as occurring from October 15th through April 30th, when right whales migrate between feeding grounds farther north and calving grounds farther south.

(A) Where vessel transits during the right whale migration season along certain identified ports including the Hampton Roads entrance to the Chesapeake Bay, Navy vessels shall use extreme caution and operate at a slow,

safe speed consistent with mission and safety within a 20 nm (37 km) arc of the specified reference points listed on Table 14 of this document.

(B) During the indicated months, Navy vessels would practice increased vigilance with respect to avoidance of vessel-whale interactions along the mid-Atlantic coast, including transits to and from any mid-Atlantic ports not specifically identified above.

#### (4) Proposed Mitigation Measures for Specific At-sea Training Events:

(i) Firing Exercise (FIREX) Using the Integrated Maritime Portable Acoustic Scoring System (IMPASS) (5-in. Explosive Rounds);

(A) FIREX using IMPASS would only be conducted in the four designated areas in the VACAPES Range Complex.

(B) Pre-exercise monitoring of the target area will be conducted with "Big Eyes" prior to the event, during deployment of the IMPASS sonobuoy array, and during return to the firing position.

Ships will maintain a lookout dedicated to visually searching for marine mammals 180o along the ship track line and 360o at each buoy drop-off location.

(C) "Big Eyes" on the ship shall be used to monitor a 640 yd (585 m) buffer zone around the target area for marine mammals during naval-gunfire events.

(D) Ships shall not fire on the target if any marine mammals are detected within or approaching the 640 yd (585 m) until the area is cleared. If marine mammals are present, operations shall be suspended. Visual observation shall occur for approximately 45 minutes, or until the animal has been observed to have cleared the area and is heading away from the buffer zone.

(E) Post-exercise monitoring of the entire effect range shall take place with "Big Eyes" and the naked eye during the retrieval of the IMPASS sonobuoy array following each firing exercise.

(F) FIREX with IMPASS shall take place during daylight hours only.

(G) FIREX with IMPASS shall only be used in Beaufort Sea State three (3) or less.

(H) The visibility must be such that the fall of shot is visible from the firing ship during the exercise.

(I) No firing shall occur if marine mammals are detected within 70 yd (64 m) of the vessel.

(ii) Air-to-Surface At-Sea Bombing Exercises (250-lbs to 2,000-lbs explosive bombs);

(A) Aircraft shall visually survey the target and buffer zone for marine mammals prior to and during the exercise. The survey of the impact area will be made by flying at 1,500 ft (457

m) altitude or lower, if safe to do so, and at the slowest safe speed.

(B) A buffer zone of 5,100-yd (4,663 m) radius shall be established around the intended target zone. The exercises shall be conducted only if the buffer zone is clear of sighted marine mammals.

(C) At-sea BOMBEXs using live ordnance shall occur during daylight hours only.

(iii) Air-to-Surface Missile Exercises (Explosive);

(A) Aircraft shall initially survey the intended ordnance impact area for marine mammals.

(B) During the actual firing of the weapon, the aircraft involved must be able to observe the intended ordnance impact area to ensure the area is free of range transients.

(C) Visual inspection of the target area shall be made by flying at 1,500 ft (457 m) altitude or lower, if safe to do so, and at slowest safe speed.

(D) Explosive ordnance shall not be targeted to impact within 1,800 yd (1,646 m) of sighted marine mammals.

(iv) Mine Neutralization Training Involving Underwater Detonations (up to 20-lb charges);

(A) This activity shall only occur in W-50 of the VACAPES Range Complex.

(B) Observers shall survey the Zone of Influence (ZOI), a 656 yd (600 m) radius from detonation location, for marine mammals from all participating vessels during the entire operation. A survey of the ZOI (minimum of 3 parallel tracklines 219 yd [200 m] apart) using support craft shall be conducted at the detonation location 30 minutes prior through 30 minutes post detonation. Aerial survey support shall be utilized whenever assets are available.

(C) Detonation operations shall be conducted during daylight hours.

(D) If a marine mammal is sighted within the ZOI, the animal shall be allowed to leave of its own volition. The Navy shall suspend detonation exercises and ensure the area is clear for a full 30 minutes prior to detonation.

(E) Divers placing the charges on mines and dive support vessel personnel shall survey the area for marine mammals and shall report any sightings to the surface observers. These animals shall be allowed to leave of their own volition and the ZOI shall be clear for 30 minutes prior to detonation.

(F) No detonations shall take place within 3.2 nm (6 km) of an estuarine inlet (Chesapeake Bay Inlets).

(G) No detonations shall take place within 1.6 nm (3 km) of shoreline.

(H) No detonations shall take place within 1,000 ft (305 m) of any artificial reef, shipwreck, or live hard-bottom community.

(I) Personnel shall record any protected species observations during the exercise as well as measures taken if species are detected within the ZOI.

(v) Adaptive management;

(A) The final regulations governing the take of marine mammals incidental to Navy training exercises in VACAPES shall contain an adaptive management component.

(B) The use of adaptive management shall give NMFS the ability to consider new data from different sources to determine (in coordination with the Navy), on an annual basis, if new or modified mitigation or monitoring measures are appropriate for subsequent annual LOAs.

#### **§ 218.5 Requirements for monitoring and reporting.**

(a) The Holder of the Letter of Authorization issued pursuant to § 216.106 of this chapter and § 218.7 for activities described in § 218.1(c) is required to cooperate with the NMFS, and any other Federal, state or local agency monitoring the impacts of the activity on marine mammals.

(b) The Holder of the Authorization must notify NMFS immediately (or as soon as clearance procedures allow) if the specified activity identified in § 218.1(c) is thought to have resulted in the mortality or injury of any marine mammals, or in any take of marine mammals not identified in § 218.2 (c).

(c) The Holder of the Letter of Authorization must conduct all monitoring and/or research required under the Letter of Authorization.(d) The monitoring methods proposed for use during training events in VACAPES Range Complex include a combination of individual elements designed to allow a comprehensive assessment include:

(1) Vessel and aerial surveys:

(i) The Holder of this Authorization shall visually survey a minimum of 2 explosive events per year, one of which shall be a multiple detonation event.

(ii) For specified training events, aerial or vessel surveys shall be used 1–2 days prior to, during (if reasonably safe), and 1–5 days post detonation.

(iii) Surveys shall include any specified exclusion zone around a particular detonation point plus 2000 yards beyond the exclusion zone. For vessel based surveys a passive acoustic system (hydrophone or towed array) could be used to determine if marine mammals are in the area before and/or after a detonation event.

(iv) When conducting a particular survey, the survey team shall collect:

(A) Species identification and group size;

(B) Location and relative distance from the detonation site;

(C) The behavior of marine mammal(s) including standard environmental and oceanographic parameters;

(D) Date, time and visual conditions associated with each observation;

(E) Direction of travel relative to the detonation site; and

(F) duration of the observation.

(v) An aerial survey team shall conduct pre and post aerial surveys, taking local oceanographic currents into account, of the exercise area.

(2) Passive acoustic monitoring:

(i) Any time a towed hydrophone array is employed during shipboard surveys the towed array shall be deployed during daylight hours for each of the days the ship is at sea.

(ii) The towed hydrophone array shall be used to supplement the ship-based systematic line-transect surveys (particularly for species such as beaked whales that are rarely seen).

(3) Marine mammal observers on Navy platforms:

(i) Marine mammal observers (MMOs) shall be placed on a Navy platform during one of the exercises being monitored per year.

(ii) The MMO must possess expertise in species identification of regional marine mammal species and experience collecting behavioral data.

(iii) MMOs shall not be placed aboard Navy platforms for every Navy training event or major exercise, but during specifically identified opportunities deemed appropriate for data collection efforts. The events selected for MMO participation shall take into account safety, logistics, and operational concerns.

(iv) MMOs shall observe from the same height above water as the lookouts.

(v) The MMOs shall not be part of the Navy's formal reporting chain of command during their data collection efforts; Navy lookouts shall continue to serve as the primary reporting means within the Navy chain of command for marine mammal sightings. The only exception is that if an animal is observed within the shutdown zone that has not been observed by the lookout, the MMO shall inform the lookout of the sighting for the lookout to take the appropriate action through the chain of command.

(vi) The MMOs shall collect species identification, behavior, direction of travel relative to the Navy platform, and distance first observed. All MMO sightings shall be conducted according to a standard operating procedure.

(e) Report from Monitoring required in paragraph d of this section The Navy

shall submit a report annually on September 1 describing the implementation and results (through June 1 of the same year) of the monitoring required in paragraph c of this section.

(f) VACAPES Range Complex Comprehensive Report The Navy shall submit to NMFS a draft report that analyzes and summarizes all of the multi-year marine mammal information gathered during explosive exercises for which individual reports are required in § 218.5 (d through e). This report will be submitted at the end of the fourth year of the rule (November 2012), covering activities that have occurred through June 1, 2012.

(g) The Navy shall respond to NMFS comments on the draft comprehensive report if submitted within 3 months of receipt. The report will be considered final after the Navy has addressed NMFS' comments, or three months after the submittal of the draft if NMFS does not comment by then.

#### **§ 218.6 Applications for Letters of Authorization.**

To incidentally take marine mammals pursuant to these regulations, the U.S. citizen (as defined by § 216.103) conducting the activity identified in § 218.1(c) (the U.S. Navy) must apply for and obtain either an initial Letter of Authorization in accordance with § 218.7 or a renewal under § 218.8.

#### **§ 218.7 Letters of Authorization.**

(a) A Letter of Authorization, unless suspended or revoked, will be valid for a period of time not to exceed the period of validity of this subpart, but must be renewed annually subject to annual renewal conditions in § 218.8.

(b) Each Letter of Authorization will set forth:

(1) Permissible methods of incidental taking;

(2) Means of effecting the least practicable adverse impact on the species, its habitat, and on the availability of the species for subsistence uses (i.e., mitigation); and

(3) Requirements for mitigation, monitoring and reporting.(c) Issuance and renewal of the Letter of Authorization will be based on a determination that the total number of marine mammals taken by the activity as a whole will have no more than a negligible impact on the affected species or stock of marine mammal(s).

#### **§ 218.8 Renewal of Letters of Authorization.**

(a) A Letter of Authorization issued under § 216.106 of this chapter and § 218.7 for the activity identified in

§ 218.1(c) will be renewed annually upon:

(1) Notification to NMFS that the activity described in the application submitted under § 218.6 will be undertaken and that there will not be a substantial modification to the described work, mitigation or monitoring undertaken during the upcoming 12 months;

(2) Timely receipt of the monitoring reports required under § 218.5(b); and

(3) A determination by NMFS that the mitigation, monitoring and reporting measures required under § 218.4 and the Letter of Authorization issued under § 216.106 of this chapter and § 218.7, were undertaken and will be undertaken during the upcoming annual period of validity of a renewed Letter of Authorization.

(b) If a request for a renewal of a Letter of Authorization issued under § 216.106 of this chapter and § 218.8 indicates that a substantial modification to the described work, mitigation or monitoring undertaken during the upcoming season will occur, NMFS will provide the public a period of 30 days for review and comment on the request. Review and comment on renewals of Letters of Authorization are restricted to:

(1) New cited information and data indicating that the determinations made in this document are in need of reconsideration, and

(2) Proposed changes to the mitigation and monitoring requirements contained in these regulations or in the current Letter of Authorization. (c) A notice of issuance or denial of a renewal of a Letter of Authorization will be published in the **Federal Register**.

#### **§ 218.9 Modifications to Letters of Authorization.**

(a) Except as provided in paragraph (b) of this section, no substantive modification (including withdrawal or suspension) to the Letter of Authorization by NMFS, issued pursuant to § 216.106 of this chapter and § 218.7 and subject to the provisions of this subpart shall be made until after notification and an opportunity for public comment has been provided. For purposes of this paragraph, a renewal of a Letter of Authorization under § 218.8, without modification (except for the period of validity), is not considered a substantive modification.

(b) If the Assistant Administrator determines that an emergency exists that poses a significant risk to the well-being of the species or stocks of marine mammals specified in § 218.2(c), a Letter of Authorization issued pursuant

to § 216.106 of this chapter and § 218.7 may be substantively modified without prior notification and an opportunity for public comment. Notification will be published in the **Federal Register** within 30 days subsequent to the action.

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## **DEPARTMENT OF COMMERCE**

### **National Oceanic and Atmospheric Administration**

#### **50 CFR Part 679**

**RIN 0648-AX14**

#### **Fisheries of the Exclusive Economic Zone Off Alaska; Bering Sea and Aleutian Islands Management Area and Gulf of Alaska License Limitation Program**

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

**ACTION:** Notice of availability of fishery management plan amendment; request for comments.

**SUMMARY:** Amendment 92 to the Fishery Management Plans for Groundfish of the Bering Sea/Aleutian Islands Management Area and Amendment 82 to the Fishery Management Plan for Groundfish of the Gulf of Alaska (FMPs) would remove trawl gear endorsements on licenses issued under the license limitation program in specific management areas if those licenses have not been used on vessels that meet minimum recent landing requirements using trawl gear. This action would provide exemptions to this requirement for licenses that are used in trawl fisheries subject to quota-based management. This action would issue new area endorsements for trawl catcher vessels in the Aleutian Islands if minimum recent landing requirements in the Aleutian Islands were met. This action is intended to promote the goals and objectives of the Magnuson-Stevens Fishery Conservation and Management Act, the FMP, and other applicable laws.

**DATES:** Comments on the amendments must be submitted on or before February 10, 2009.

**ADDRESSES:** Send comments to Sue Salvesson, Assistant Regional Administrator, Sustainable Fisheries Division, Alaska Region, NMFS, Attn: Ellen Sebastian. You may submit comments, identified by "RIN 0648-AX14," by any one of the following methods:

• **Electronic Submissions:** Submit all electronic public comments via the Federal eRulemaking Portal website at <http://www.regulations.gov>.

• **Mail:** P. O. Box 21668, Juneau, AK 99802.

• **Fax:** (907) 586-7557.

• **Hand delivery to the Federal Building:** 709 West 9<sup>th</sup> Street, Room 420A, Juneau, AK.

All comments received are a part of the public record and will generally be posted to <http://www.regulations.gov> without change. All Personal Identifying Information (e.g., name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit Confidential Business Information or otherwise sensitive or protected information.

NMFS will accept anonymous comments (enter "N/A" in the required fields if you wish to remain anonymous). Attachments to electronic comments will be accepted in Microsoft Word, Excel, WordPerfect, or Adobe portable document file (pdf) formats only.

Copies of Amendments 92 and 82, the Regulatory Impact Review (RIR)/Initial Regulatory Flexibility Analysis (IRFA), and the Environmental Assessment (EA) prepared for this action may be obtained from the NMFS Alaska Region at the address above or from the Alaska Region website at <http://www.fakr.noaa.gov/sustainablefisheries.htm>.

**FOR FURTHER INFORMATION CONTACT:** Glenn Merrill, 907-586-7228.

**SUPPLEMENTARY INFORMATION:** The Magnuson-Stevens Fishery Conservation and Management Act requires that each regional fishery management council submit any fishery management plan amendment it prepares to NMFS for review and approval, disapproval, or partial approval by the Secretary of Commerce (Secretary). The Magnuson-Stevens Act also requires that NMFS, upon receiving a fishery management plan amendment, immediately publish a notice in the **Federal Register** announcing that the amendment is available for public review and comment.

The license limitation program (LLP) for groundfish fisheries was recommended by the North Pacific Fishery Management Council (Council) in June 1995 as Amendments 39 and 41 to the Bering Sea/Aleutian Islands Management Area (BSAI) and the Gulf of Alaska (GOA) FMPs, respectively. NMFS published a final rule to implement the LLP on October 1, 1998 (63 FR 52642), and the LLP was implemented on January 1, 2000.