

**DEPARTMENT OF DEFENSE**

**Department of the Navy**

**Record of Decision for Hawaii Range Complex**

**AGENCY** Department of the Navy, Department of Defense

**ACTION** Notice of Record of Decision

**SUMMARY:** The Department of the Navy (Navy), after carefully weighing the operational and environmental consequences of the proposed action, announces its decision to support and conduct current and emerging Navy training and Department of Defense (DoD) or other federal agency research, development, test, and evaluation (RDT&E) activities in the Hawaii Range Complex (HRC), and upgrade or modernize range complex capabilities to enhance and sustain training and RDT&E.

**FOR FURTHER INFORMATION CONTACT:** Mr. Tom Clements, Pacific Missile Range Facility, P.O. Box 128, Kekaha, Kauai, Hawaii, 96752-0128, telephone number (866) 767-3347.

**INTRODUCTORY STATEMENT:** Pursuant to section 4332(2)(c) of Title 42 of the United States Code (section 102(2)(c) of the National Environmental Policy Act of 1969 [NEPA]); the regulations of the President's Council on Environmental Quality (CEQ) that implement NEPA procedures (40 Code of Federal Regulations [CFR] Parts 1500-1508); DoD Instruction 4715.9, Environmental Planning and Analysis; and the applicable Navy environmental regulations that implement these laws and regulations, the Navy announces its decision to support and conduct current and emerging Navy training and DoD's or other federal agencies' RDT&E activities in the HRC, and upgrade or modernize range complex capabilities to enhance and sustain training and RDT&E. The Navy considered applicable executive orders, including an analysis of the environmental effects of its actions outside the United States or its territories under the provisions of Executive Order 12114 (*Environmental Effects Abroad of Major Federal Actions*) and the requirements of Executive Order 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*).

The HRC geographically encompasses the open ocean (outside 12 nautical miles [nm] from land), offshore waters (within 12 nm from land), and onshore areas located on or around the islands of the

Hawaiian Islands chain. There are three component areas of the HRC: (1) the Hawaii Operating Area (OPAREA) (includes surface and subsurface ocean areas and special use airspace); (2) the Temporary Operating Area (TOA) (composed of sea and airspace north and west of Kauai for RDT&E activities); and (3) various Navy land ranges and other Services' land for military training and RDT&E activities.

The Final Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) was developed as part of the Navy's Tactical Training Theater Assessment and Planning (TAP) Program, which serves as the Navy's range sustainment program and focuses on the sustainability of ranges, OPAREAs, and airspaces that support the Fleet Response Training Plan (FRTP).

In addition to the HRC, the Navy has maintained range complexes throughout the United States since before World War II. A range complex is an organized and designated set of specifically bounded geographic areas that can encompass land masses, bodies of water, and airspace used to conduct training of naval and other military forces and personnel, and RDT&E of military systems and equipment. A range complex can consist of several ranges, OPAREAs, and special use airspace (special use airspace is defined and charted by the Federal Aviation Administration as airspace where activities such as military use are confined because of their nature and where limitations may be imposed on non-participating aircraft).

To ensure that Navy range complexes can sustain the nation's need for ready and trained forces, while satisfying federal legal requirements, each range complex is undergoing analysis in accordance with applicable environmental laws, regulations, and executive orders. The Navy has prepared numerous analyses for various exercises, events, and RDT&E activities. The Navy has prepared the HRC Final EIS/OEIS as part of a long-term program to consolidate analyses and comprehensively assess the overall cumulative impacts of training and RDT&E. This Final EIS/OEIS assessed the potential environmental impacts associated with conducting current and emerging training and RDT&E activities within the existing HRC, and upgrading or modernizing range complex capabilities to enhance and sustain training and RDT&E.

Actions analyzed in the Final EIS/OEIS are required to enable the Navy to meet its statutory responsibilities under sections 5013 and 5062 of Title 10 of the United States Code to organize, train, equip, and maintain combat-ready naval forces and to successfully fulfill its current and future global mission of winning wars, deterring aggression, and maintaining freedom of the seas. Activities involving RDT&E for DoD or other federal agency systems are an integral part of this readiness mandate.

The Final EIS/OEIS also updated and expanded the scope of the 1998 Pacific Missile Range Facility (PMRF) Enhanced Capability EIS. PMRF is the largest, fully instrumented military test and training range in the world, capable of simultaneously conducting and integrating training and RDT&E activities under water, on the surface, in the air, and in space.

Well before World War II, and throughout the existence of the HRC, training and RDT&E have occurred in Hawaii. As world tensions increased in the 1930s and early 1940s, the Navy rapidly increased its presence and number of facilities in Hawaii. Today, more than 20 surface ships and submarines are homeported in Hawaii. For more than a century, the HRC, including the Hawaii OPAREA, has been providing extensive, remote, and strategic training areas and facilities that enable Navy personnel to maintain and strengthen required proficiencies.

The proposed action will be accomplished as set out in Alternative 3, described in the Final EIS/OEIS as the preferred alternative. Implementation of the preferred alternative could begin immediately. Because the Navy is required by Section 5062 of Title 10 of the United States Code to organize, train, equip, and maintain combat-ready forces, ongoing training and RDT&E activities within the HRC will continue at current levels in the event that the preferred alternative is not implemented.

The Notice of Intent was published in the *Federal Register* (71 FR 51188) and *The Environmental Notice*, a semi-monthly bulletin of the State of Hawaii Office of Environmental Quality Control, on August 29, 2006, and September 8, 2006, respectively. Notification of public scoping was also made through local media outlets, as well as through letters to federal, state, and local agencies and officials, interested groups and organizations, and individuals. Four public scoping meetings were held in Hawaii between September 13-18, 2006: in Lihue on the Island of Kauai; in Kahului on the Island of Maui; in Honolulu on the Island of Oahu; and in Hilo on the Island of Hawaii.

The Notice of Availability of the Draft EIS/OEIS was published in the *Federal Register* on July 27, 2007 (72 FR 41324) and in *The Environmental Notice* on August 8, 2007. The Navy's Notice of Public Hearings was published in the *Federal Register* (72 FR 43251) on August 3, 2007. Public hearings were conducted in Lihue on the Island of Kauai, in Wailuku on the Island of Maui, in Honolulu on the Island of Oahu, and in Hilo on the Island of Hawaii, between August 21-29, 2007. A total of 677 individuals, agencies, and organizations submitted 2,575 comments on the Draft EIS/OEIS.

The Navy decided to prepare a Supplement to the Draft EIS/OEIS to address modifications to the analytical methodology used to evaluate the effects of mid-frequency active (MFA) sonar on marine

mammals, changes to the amount and types of active sonar allocated to each of the alternatives, and development of a new alternative. On February 22, 2008, the Notice of Availability of the Supplement to the Draft EIS/OEIS was published in the *Federal Register* (73 FR 9803). The Navy's Notice of Public Meetings was published in the *Federal Register* (73 FR 10232) on February 26, 2007, and in *The Environmental Notice* on March 8, 2008. Public hearings were conducted in Lihue on the Island of Kauai, in Kahului on the Island of Maui, in Honolulu on the Island of Oahu, and in Hilo on the Island of Hawaii, between March 13-18, 2008. A total of 265 individuals, agencies, and organizations submitted 1,608 comments on the Supplement to the Draft EIS/OEIS.

The Notice of Availability of the Final EIS/OEIS was published in the *Federal Register* on May 9, 2008, and in *The Environmental Notice* on May 23, 2008. Notices in newspapers published on the Islands of Kauai, Maui, Oahu, and Island of Hawaii newspapers also announced the release and summarized the results of the Final EIS/OEIS. The Final EIS/OEIS addressed all oral and written comments received during the Draft EIS/OEIS and Supplement to the Draft EIS/OEIS public and agency comment periods. The Final EIS/OEIS was mailed to all individuals, agencies, and organizations that requested a copy of the final document. The Final EIS/OEIS is publicly available on the website at <http://www.govsupport.us/navynepahawaii/hawaiiirceis.aspx>.

**BACKGROUND AND ISSUES:** The upgrade and modernization of HRC capabilities to enhance and sustain training and RDT&E activities and the increases in the tempos and frequencies of training events constitute the preferred alternative, as defined in the Final EIS/OEIS published in May 2008. In this setting, "tempo" means intensity and could include more forces or a change in training duration, and "frequency" means the number of training events in a given period. The preferred alternative represents an appropriate balance between the Navy's responsibility and strong commitment to protect the environment and the Navy's mission to train its Sailors, to deter aggression, and to win the nation's wars. The Final EIS/OEIS incorporates the training needs identified in other analyses of the HRC while ensuring compliance with applicable environmental laws, regulations, and executive orders.

As discussed below, the Navy is awaiting agency action on its July 16, 2007 request (as updated on February 19, 2008, and April 29, 2008) for authorization to the National Marine Fisheries Service (NMFS) under the Marine Mammal Protection Act (MMPA) for the incidental harassment of marine mammals resulting from Navy training and RDT&E activities conducted within the HRC, and the issuance of a Biological Opinion under the Endangered Species Act (ESA) for the proposed action presented in Alternative 3. NMFS, after public input is received, will decide whether and under what conditions to authorize the take of marine mammals incidental to the Navy's use in the HRC of hull-mounted MFA sonar systems and sonobuoys, high-frequency active (HFA) sonar as employed by the MK-

48 torpedo<sup>1</sup>, and underwater explosives. The Navy will comply with any additional requirements specified by NMFS in the MMPA Final Rule and the ESA Biological Opinion and associated Incidental Take Statement for the HRC that are not set forth in the Final EIS/OEIS. NMFS published the MMPA Proposed Rule for the HRC on June 23, 2008. The MMPA Proposed Rule is currently available for public comment.

On June 21, 2008 (as amended on June 24, 2008), NMFS issued a Biological Opinion and Incidental Take Statement for those activities the Navy plans to conduct in the HRC from July 2008 through January 23, 2009. The Biological Opinion concluded that "Navy activities on the HRC from July 1, 2008 through January 23, 2009, including the proposed 2008 RIMPAC exercise, in waters off the State of Hawaii may adversely affect, but are not likely to jeopardize the continued existence of these threatened and endangered species under NMFS jurisdiction."

**PURPOSE AND NEED:** Given the strategic importance of the HRC to the readiness of naval forces and the unique training environment provided by the HRC, the Navy proposes to take actions for the purposes of achieving and maintaining Fleet readiness using the HRC to support and conduct current, emerging, future training, assessment events, and RDT&E activities; conducting missions supported by the HRC, consistent with the requirements of the FRTP; and upgrading/modernizing existing range capabilities to enhance and ensure the sustainability of Navy training and DoD's and other federal agencies' testing.

The proposed action is needed to provide a training environment consisting of ranges, training areas, and range instrumentation with the capacity and capabilities to fully support required training tasks for operational units and military schools.

**ALTERNATIVES CONSIDERED:** The Navy identified a reasonable range of alternatives, based on criteria set out in the Final EIS/OEIS that would satisfy its purpose and need. Alternatives considered in the Final EIS/OEIS were identified as the No-action Alternative, Alternative 1, Alternative 2, and Alternative 3. Alternatives 1 through 3 include the No-action Alternative in their descriptions. Alternative 3 is identified in the Final EIS/OEIS as the preferred alternative.

**1. Alternatives Eliminated From Further Consideration:** In developing a reasonable range of alternatives, the Navy eliminated

---

<sup>1</sup> In coordination with NMFS, the Navy determined in the Final EIS/OEIS that the MK-48 torpedo is the only high frequency source requiring authorization under the MMPA. As discussed in Final EIS/OEIS (Section 4.1.2.4.12.2), the frequency range and characteristics of other high frequency sources would not result in an exposure of marine mammals to sound which NMFS would characterize as harassment.

three alternatives from further consideration: (1) reduction or elimination of training in the HRC; (2) alternative locations for training conducted in the HRC; and (3) computer simulation in lieu of live training (including active sonar). The Navy made this determination based on careful consideration, concluding that these alternatives were unreasonable because none would meet the Navy's purpose and need for the proposed action.

A reduction in current training levels or a complete elimination of training within the HRC would not support the Navy's ability to meet its requirements under Title 10 of the United States Code as discussed above. Such a reduction or elimination would jeopardize the ability of specialty forces, transient units, and Strike Groups, which rely upon training in the HRC, to be ready and qualified for deployment or to conduct other critically important training, as well as require local units to routinely travel significant distances across the Pacific Ocean to fulfill training requirements. The HRC provides the geography, infrastructure, space, and location necessary to accomplish Naval training in a safe and structured manner while retaining the flexibility for those who monitor and manage exercise events to create tactical challenges, such as the addition of a hostile submarine, to enhance realism for exercise participants. In order to provide the experience critical to the success and survival of the nation's Naval forces, training must be as realistic as possible. Similarly, moving training and RDT&E to alternative ranges, all of which would be a significant distance from Hawaii, ignores the specific value of the HRC as defined by its location in the Pacific Ocean and its obvious proximity to Hawaii-based forces, its presence on the route of transiting United States forces, and its central location for nations around the rim of the Pacific so that these nations can train with United States forces and with one another in the HRC.

Lastly, while the Navy continues to research new ways to provide realistic training through simulation, simulated training does not fully develop the skills and capabilities necessary to attain appropriate military readiness; thus, such an alternative would also fail to meet the purpose and need of the proposed action. Simulators may assist in developing an understanding of certain basic skills and equipment operation, but cannot sufficiently capture the complexity and uncertainty of real-world training conditions, nor can they offer a complete picture of the detailed and instantaneous interaction within each command and among many commands and warfare communities that actual training at sea provides. The HRC provides realistic training in the most relevant environments replicating the operational stresses of warfare. Current simulation technology cannot adequately replicate the multi-dimensional training (e.g., training for simultaneous air, surface and subsurface threats) necessary to adequately prepare the nation's Naval forces for combat. Furthermore, it does not provide for adequate anti-submarine warfare (ASW) training, which involves the use of MFA and HFA sonar, with the degree of

fidelity necessary to develop and maintain proficiency. An alternative that would cause ASW skills to atrophy is not reasonable because it would put Naval forces at risk during combat.

**2. No-action Alternative:** Recognizing that for proposals involving changes to on-going activities, CEQ guidance describes "no action" as "'no change' from management direction or level of intensity" and "continuing with the present course of action until the action is changed." Consequently, the No-action Alternative is the current baseline of training and RDT&E activities being conducted in the HRC annually, and includes over 9,300 events and activities. Training, including major exercises (such as the Rim of the Pacific Exercise [RIMPAC], the Undersea Warfare Exercise [USWEX], and other Strike Group or Multi-Strike Group Exercises), and RDT&E activities would continue at baseline levels. The No-action Alternative was not selected because it is insufficient to meet the full range of emerging Navy and other agency mission requirements. The No-action Alternative is the environmentally preferred alternative.

**3. Alternative 1:** Alternative 1 includes all ongoing Navy training and RDT&E associated with the No-action Alternative, proposes an increased tempo and frequency of training events (including MFA and HFA sonar hours) and RDT&E, and further proposes upgrades to range complex capabilities to enhance and sustain training and RDT&E, as quantified in the Final EIS/OEIS (Table 2.2.2.3-1).

**4. Alternative 2:** Alternative 2 includes all of the training and RDT&E described in Alternative 1 plus a further increased tempo and frequency of training events, including MFA and HFA sonar hours, future RDT&E programs at PMRF, upgrades to range complex capabilities to enhance and sustain training and RDT&E, and the addition of Major Exercises, including exercises that may involve supporting as many as three carrier Strike Groups training simultaneously, as quantified in the Final EIS/OEIS (Table 2.2.2.3-1).

**5. Alternative 3, the Preferred Alternative:** The preferred alternative is Alternative 3, which includes all of the activities (training, range enhancements, and RDT&E) analyzed in Alternative 2 but undertaken with the amount of MFA and HFA sonar hours analyzed in the No-action Alternative. Alternative 3 allows the Navy to meet its future warfare training and DoD's and other federal agencies' RDT&E mission objectives while avoiding increases in potential effects on marine mammals above baseline levels of MFA and HFA sonar hours associated with ASW training in the HRC. With regard to MFA and HFA sonar training, Navy exercise planners will be afforded complete flexibility in selecting from the full range of activities covered by Alternative 3, including the Multi-Strike

Group (MSG) major exercise, accounting for the number of sonar hours analyzed in the No-action Alternative.

Due to deployment schedules, Naval commitments in areas of conflict, and the finite amount of time to train with vessels or platforms that use MFA or HFA sonar, the wide range of types, frequency, and tempo of training set forth in Alternative 3 will likely not result in a need to increase MFA and HFA sonar hours over the historical baseline. Should the Navy need to exceed the baseline sonar hours in a given year as permitted by the Final Rule NMFS will issue in accordance with its regulations, the Navy will coordinate with NMFS regarding the potential effects on marine mammals and seek modifications to the MMPA incidental take authorization, where appropriate.

## **6. Actions Associated with the Preferred Alternative**

**a. Support Activities:** Numerous support functions take place as an integral part of training occurring in the HRC. These functions can generally be described as supporting command and control events or ships, aircraft, or personnel. The nature of these support functions is primarily continuous and involves non-range activities that occur as part of major exercises. In general, the level of these activities increases as the level of range training and exercises increase. Examples of these support activities include providing berthing for personnel and ships, and facilities for the personnel who support range activities, in-port briefings and in-port training activities.

**b. Training Events:** Training events within the HRC range from unit-level training through major exercises such as USWEX and RIMPAC. The training activities that make up a major exercise are typically unit-level training conducted under the umbrella of a large coordinated event. Training events occur within the Hawaii OPAREA throughout the year, based on training schedules.

**(1) Unit-Level Activities:** Unit-level training (see Final EIS/OEIS, Table 2.2.2.3-1) includes activities in the mission areas of anti-air warfare, amphibious warfare, anti-surface warfare, ASW (to include the use of MFA and HFA sonar, Extended Echo Ranging/Improved Extended Echo Ranging [EER/IEER] sonobuoys, and torpedoes), electronic warfare, mine warfare, naval special warfare, strike warfare, and other activities including, but not limited to, salvage operations, field carrier landing practice (FCLP), live fire exercises, humanitarian assistance operations, non-combatant evacuation operations, humanitarian assistance operations, ship sinking exercises (SINKEXs), and disaster relief operations.



(2) **USWEX:** The USWEX is an important ASW exercise conducted by Strike Groups while in transit from the west coast of the United States to the Western Pacific Ocean. USWEX occurs after the ships within the Strike Group have separately completed relevant unit-level training and after the Strike Group itself has completed integrated basic certification training required for deployment. USWEX focuses on ASW warfare and is composed of more complex ASW scenarios that can be magnified in scale by adding increased numbers of adversary submarine threats to the training scenario. USWEX thus is an invaluable training resource for Strike Groups as they prepare to deploy and execute existing war plans, if necessary. The ability to operate MFA sonar as part of ASW is a highly perishable skill, and USWEXs are designed to enable a Strike Group to maintain ASW proficiency during deployment by maintaining the proficiency level and skills of ASW personnel immediately before they face real world events on deployment. USWEX prepares Strike Groups for their missions and provides an extremely valuable opportunity to conduct ASW in a very realistic environment, against the level of threat expected in real world theaters of operation.

In addition, USWEX allows the Navy to assess separately the ASW capabilities of a certified Strike Group and, using data gathered over many exercises, to evaluate the Navy's ASW capabilities. USWEX therefore is an important resource for evaluating and effecting changes in both Naval training and capabilities, such as tactics, equipment, and size and manning of Strike Groups.

(3) **RIMPAC:** RIMPAC is a unique multinational major exercise that occurs every two years. It offers the only opportunity for military forces from the Pacific Rim to train together in scripted, but realistic, hostile scenarios. Participating Pacific Rim nations have included Australia, Japan, Republic of Korea, Indonesia, Malaysia, Singapore, Chile, Peru, and Canada.<sup>2</sup> Training with MFA sonar during ASW is a key element of this training. The Navy's goal is to enhance key war fighting skill sets and interoperability to enable participating nations to develop proficiency in advanced maritime operations. Modern naval warfare typically involves multiple navies and other military Services organized in a naval force to address the threat they face. For the naval force to succeed, the U.S. and other navies must be interoperable. "Interoperable" means that the commanders and units of all the forces must be able to communicate effectively, understand the capabilities and limitations of each others' forces, and execute tactics and common doctrine quickly and precisely.

To prepare adequately, the force must train under the same stressful conditions over a prolonged period while planning and executing actions in the same complicated multi-warfare environment

---

<sup>2</sup> The 2008 RIMPAC major exercise is scheduled to begin on June 27, 2008, with a series of in-port activities which will include efforts to ensure participants have received and understand the mitigation measures required during the exercise. The ships involved in the RIMPAC exercise are not scheduled to leave port until July 7-8, 2008. The major exercise will end on or about July 31.

that these forces may experience during modern warfare. Forces have increased challenges because of language differences, different weapons and communications systems, and varying procedures for deploying these systems. Unless the force can operate effectively to perform its mission, the lives of not only the Sailors and embarked Marines are at risk, but also the lives of all the troops and airmen ashore that depend upon this force for protection, support, and logistics. Precise coordination is crucial for the safety of Sailors in combat, and that level of coordination is only achieved by training together in a realistic setting. RIMPAC provides an opportunity for this type of training.

For example, RIMPAC 2008 will provide an invaluable opportunity for the United States and Pacific Rim nations to train together and learn from one another. It is in the national security interests of the U.S. and other nations to be well-trained to work with and support each other in the event of a threat in the Pacific Theater. RIMPAC 2008 aims to significantly enhance the interoperability and proficiency of military forces. RIMPAC is a vital training exercise because it offers the only opportunity for military forces from both the Western and Eastern Pacific to train together in scripted, but realistic, scenarios. Training with MFA sonar is a fundamental element of the ASW training provided by this major exercise. ASW training, in turn, is a fundamental component of any RIMPAC major exercise.

**c. RDT&E Activities:** The preferred alternative provides for increases in RDT&E activities relating to anti-air warfare, ASW, combat system ship qualification trials, electronic warfare, high frequency radio signals, missile defense, joint task force wide area relay network, shipboard electronic systems evaluation facility (SESEF) quick look tests, SESEF system performance tests, and fleet operational readiness accuracy check site tests. Future RDT&E activities include using additional simulants in target vehicles; intercepting targets launched into the HRC; launching the Standard Missile-6 (SM-6) from a sea-based platform; launching interceptor and target missiles from land-, sea-, or air-based platforms, from within, outside, or over the HRC, with planned intercepts in the HRC; launching micro-satellites; and testing unmanned surface, aerial, and hypersonic vehicles.

**d. Planned Enhancements:** The Navy will enhance the HRC by deploying the portable undersea tracking range, upgrading the large area tracking range, enhancing electronic warfare training, and expanding the training capability for transient air wings. On Oahu, the Navy will install new equipment at the Acoustic Test Facility at Ford Island in Pearl Harbor. The Navy will also develop new capabilities and enhance current training for the Mobile Diving and Salvage Unit in the Naval Defensive Sea Area. This action will involve the sinking by non-explosive means of an appropriately remediated vessel onto the seabed to conduct training with various underwater salvage equipment and tools. At PMRF, the Navy will enhance a communication system antenna, enhance the auto-

identification system and force protection capability, construct a range operations control building, upgrade and relocate the Kingfisher Underwater Training Area off the coast of the Island of Niihau, and improve the fiber optics infrastructure. In the future, the Navy may develop the capability to support the Directed Energy and the Advanced Hypersonic Weapons programs at PMRF, including a Maritime Directed Energy Test Center.

**ENVIRONMENTAL IMPACTS:** The Navy analyzed the potential impacts of the proposed action in terms of 13 resource areas: air quality, airspace, biological resources (marine and terrestrial), cultural resources, geology and soils, hazardous materials and hazardous waste, health and safety, land use, noise, socioeconomics, transportation, utilities, and water resources. The potential for environmental impacts at various locations was analyzed and documented in the Final EIS/OEIS. Locations analyzed included the potentially affected parts of the open ocean area; the Hawaiian Islands Humpback Whale National Marine Sanctuary; the Northwestern Hawaiian Islands (including the Papahānaumokuākea Marine National Monument); the Islands of Kauai, Niihau, Kaula, Oahu, Maui, and Hawaii. This Record of Decision (ROD) summarizes the potential impacts associated with implementation of the preferred alternative, which includes both the continuation and increased amount of existing training events (accounting for the number of active sonar hours analyzed in the No-action Alternative), RDT&E activities, and facilities enhancements.

**1. Air Quality:** Potential air quality impacts from training and RDT&E activities have been analyzed, and no significant short- or long-term impacts are expected. Future air quality conditions will not differ from existing conditions. Compliance with standard operating procedures and air permits will continue to minimize impacts. No change in regional air quality is anticipated. Mitigation measures include modification or renewal of the current air quality operating permit for PMRF to accommodate testing and operation of a future Maritime Directed Energy Test Center.

**2. Airspace:** No significant airspace impacts are expected. Any potential impacts on airspace from continued activities as well as activities to controlled and uncontrolled airspace, special use airspace, en route airways and jet routes, or airports and airfields are minimized through standard operating procedures (SOPs), compliance with DoD Directive 4540.1, Office of the Chief of Naval Operations Instruction (OPNAVINST) 3770.4A, OPNAVINST 3721.20, and continued close coordination with the Federal Aviation Administration (FAA). Mitigation measures include Notices to Airmen and Notices to Mariners for certain test events, addition of nomenclature to aeronautical charts depending on the intensity of proposed laser use, and coordinating with the FAA on the anticipated number of aircraft expected to be used, including FCLP operations.

**3. Biological Resources (Marine):** Training and RDT&E activities will follow applicable requirements contained in relevant ESA Biological Opinions and associated incidental take statements, the MMPA incidental take authorization (or, as discussed below, pending issuance of the authorization, applicable requirements contained in the current national defense exemption from compliance with the legal requirements of the MMPA for use of MFA sonar or EER/IEER sonobuoys), and DoD Service policies and procedures to minimize impacts on biological resources.

**a. Marine Mammals:** Among the most controversial training activities analyzed in the Final EIS/OEIS are the use of MFA sonar and underwater detonations. NMFS specified the criteria to be used by the Navy in analyzing the potential effects on marine mammals from these activities.

**(1) MFA and HFA Sonar:** The Final EIS/OEIS employed separate criteria to assess physiological and behavioral effects on marine mammals from exposure to MFA and HFA sonar. The approach to estimating potential physiological effects from ASW training within the HRC on marine mammals used methods that were developed in cooperation with NMFS for the Navy's Undersea Warfare Training Range (USWTR) Draft EIS/OEIS (U.S. Department of Navy, 2005), USWEX Programmatic EA/OEA (U.S. Department of the Navy, 2007b), the 2006 Supplement to the 2002 RIMPAC Programmatic EA/OEA (U.S. Department of the Navy, Commander Third Fleet, 2006), and Composite Training Unit Exercise (COMPTUEX) / Joint Task Force Exercise (JTFEX) EA/OEA (U.S. Department of the Navy, 2007c). The approach to estimating potential behavioral effects of ASW training within the HRC on marine mammals, meanwhile, was adopted as a result of comments and recommendations received on these previous documents, as well as comments on the HRC Draft EIS/OEIS.

**(A) Physiological Effects Analysis:** The impact analysis in the Final EIS/OEIS used auditory tissues as indicators of both injurious and non-injurious physiological effects and supported the determination that permanent threshold shift (PTS) and temporary threshold shift (TTS) were the most appropriate biological indicators of physiological effects that equate to the onset of injury (Level A harassment under the MMPA) and non-injurious behavioral disturbance (Level B harassment under the MMPA). Alternative views have challenged this determination, arguing that it is inconsistent with other types of observed or reported injury. Such observed or reported injuries, however, have not been linked directly to sound exposure and may result from other processes related to the behavior of the animal. The impact analysis as presented in the Final EIS/OEIS is consistent with the scientific literature. No scientific literature exists that demonstrates a direct mechanism by which injury will occur as a

result of sound exposure levels less than those predicted to cause a PTS in a marine mammal.

The Final EIS/OEIS expressed the physiological effects thresholds in terms of the total received energy flux density level (EL), which is a measure of the flow of sound energy through an area because marine and terrestrial mammal data show that, for continuous-type sounds of interest (e.g., MFA sonar pings), TTS and PTS are more closely related to the energy in the sound exposure than to the exposure sound pressure level (SPL). The EL includes both the ping SPL and duration. Longer-duration MFA and HFA sonar pings and/or higher-SPL pings will have a higher EL. If an animal is exposed to multiple pings, the energy flux density in each individual ping is summed to calculate the total EL. Therefore, the total received EL depends on the SPL, duration, and number of pings received.

Because mammalian auditory threshold shift data show less effect from intermittent exposures than from continuous exposures with the same energy (Ward, 1997), basing the physiological effect thresholds on the total received EL is a conservative approach for treating multiple pings that will likely overestimate any adverse effects; in reality, some recovery will occur between pings and lessen the effect of a particular exposure. In the Final EIS/OEIS, the sound exposure thresholds for TTS and PTS in cetacea are 195 dB re 1  $\mu\text{Pa}^2\text{-s}$  received EL for TTS and 215 dB re 1  $\mu\text{Pa}^2\text{-s}$  received EL for PTS.

During coordination with NMFS, concerns were raised regarding the critically endangered Hawaiian monk seal and the need to establish criteria for physiological effects specific to this species. Therefore, the Final EIS/OEIS analyzed the sound exposure thresholds for the Hawaiian monk seal at 204 dB re 1 $\mu\text{Pa}^2\text{-s}$  received EL for TTS and 224 dB re 1 $\mu\text{Pa}^2\text{-s}$  received EL for PTS. The Navy used the northern elephant seal threshold for the Hawaiian monk seal because taxonomically, the northern elephant seal is more closely related to it than any other seal. The audiogram of the northern elephant seal closely approximates that of the Hawaiian monk seal; therefore, it is the most applicable and best available scientific data.

The Navy considered criticism of its reliance on Navy studies of TTS in highly trained captive animals in the Navy's marine mammal program for its primary source of data for physiological effects. Contrary to this criticism, the Navy, with the full support of NMFS, relied on these studies because they are the most controlled studies of behavioral reactions to sound exposure available and provide the greatest amount of data. These studies recorded baseline behavior of the test subjects over many sessions so that behavioral alterations could be defined as a deviation from normal behavior. The sound exposure level received by each animal was recorded and quantified. The exposure signals used were close

to the frequencies typically employed by MFA sonar. No other study provided the same degree of control or relevance to mid-frequency signal types as the TTS studies from which many of the behavioral response thresholds were derived.

The data from these studies are the best available scientific data both with respect to quality and quantity. Data from animals in the wild were utilized when sufficient information on animal behavior (both baseline and reactionary) and sound exposure levels existed. This is unfortunately a sparse amount of data. Utilization of other studies with inadequate control, observational periods, or ability to determine exposure levels of the animals would introduce a large amount of guesswork and estimation that weakens any numerical association between behavioral reactions and sound exposure. Furthermore, the limitations of the TTS studies referred to in the comment were acknowledged in the original behavioral analysis. Please see Finneran, J.J. and Schlundt, C.E. (2004), "Effects of intense pure tones on the behavior of trained odontocetes" (SSC San Diego, San Diego, CA), in particular Section 5.1.1, which details the limitations of the data collection and analysis. NMFS is aware of these limitations yet still approves, as discussed below, the usage of the data at this time because of the quality and quantity of the data. As quality data continue to be collected on animals in the wild, the relevance of the behavioral data collected during the TTS studies will decrease and will eventually be replaced. However, at this time, they provide the best available data for assessing the relationship between behavioral reactions and sound exposure.

**(B) Behavioral Effects Analysis:** The Final EIS/OEIS concluded that the necessary information (i.e., variable and context specific behavioral responses as well as causal factors of marine mammal stranding events associated with MFA sonar) to assess behavioral effects on each species from exposure to MFA and HFA sonar is not yet complete due to the lack of empirical data, although ongoing research efforts will continue to develop the available body of data. The Final EIS/OEIS noted that the Navy has funded, and will continue to fund, research efforts to develop these data, but such an undertaking will require years to complete. The present unavailability of such information is relevant to the ability to develop species-specific behavioral effects criteria. The science of understanding the effects of sound on marine mammals is dynamic. The analysis in the Final EIS/OEIS employed the best available science. The Navy is fully committed to the use of the best available science for evaluating the potential effects of training and testing activities.

**(i) History of Assessing Potential Harassment from Behavioral Effects:** The Final EIS/OEIS summarized the Navy's and NMFS's efforts to identify the appropriate criteria for assessing non-injurious behavioral effects on marine mammals of exposure to MFA and HFA sonar. The Incidental Harassment Authorization (IHA) of June 27, 2006 for MFA sonar training during

RIMPAC 2006, in part, and the USWTR Draft EIS/OEIS relied on behavioral observations of trained cetaceans exposed to intense underwater sound under controlled circumstances to develop a criterion and threshold for behavioral effects of sound based on energy flux density. Subsequent to issuance of the RIMPAC 2006 IHA, additional public comments were received and considered by Navy and NMFS. Based on this input, and as required by the six-month national defense exemption from the requirements of the MMPA issued by the Deputy Secretary of Defense on June 30, 2006, the Navy continued to coordinate with NMFS to determine whether an improved approach to energy flux density could be used to evaluate when a marine mammal may behaviorally be affected by MFA sound exposure. Coordination between the Navy and NMFS resulted in the adoption of two risk function curves for evaluation of behavioral effects.

**(ii) Development of the Two Risk Function**

**Curves:** In Section 4.1.2.4.9 of the Draft EIS/OEIS, the Navy presented a dose methodology to assess the probability of Level B non-injurious, behavioral harassment from the effects of MFA and HFA sonar on marine mammals.<sup>3</sup> Following publication of the Draft EIS/OEIS, the Navy continued working with NMFS to refine the mathematically representative curve previously used, along with applicable input parameters, for the purpose of increasing the accuracy of the Navy's assessment. As the regulating and cooperating agency, NMFS presented two methods to six scientists (marine mammalogists and acousticians from within and outside the federal government) for an independent review (National Marine Fisheries Service, 2008). One of the methods was a normal curve fit to a "mean of means" calculated from the mean of: (1) the estimated mean received level produced by the reconstruction of the USS SHOUP event of May 2003, in which killer whales were exposed to MFA sonar (U.S. Department of the Navy, 2004b); (2) the mean of the five maximum received levels at which Nowacek et al. (2004) observed significantly different responses of right whales to an alert stimuli; and (3) the mean of the lowest received levels from the 3-kHz data that the Space and Warfare Naval Systems Center (SSC) classified as altered behavior from Finneran and Schlundt (2004). The second method was a derivation of a mathematical function used for assessing the percentage of a marine mammal population experiencing the risk of harassment under the MMPA associated with the Navy's use of Surveillance Towed Array Sensor System (SURTASS) Low Frequency Active (LFA) sonar (U.S. Department of the Navy, 2001c). This function is appropriate for application in a number of contexts, including instances where there are limited data (Feller, 1968). This method is identified as "the risk function" in this document.

---

<sup>3</sup> The definition of Level B Harassment used in the Final EIS/OEIS for military readiness activities is "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."

Two NMFS scientists, one from the NMFS Office of Science and Technology and one from the Office of Protected Resources, summarized the reviews of the six scientists, and developed a recommendation. The NMFS Office of Protected Resources decided to use two risk functions, one for odontocetes and pinnipeds and one for mysticetes, with applicable input parameters to estimate the risk of behavioral harassment from exposure to MFA and HFA sonar. The particular acoustic risk functions specified by NMFS estimate the probability of behavioral responses that NMFS would classify as Level B harassment under the MMPA given exposure to specific received levels of MFA and HFA sonar. The mathematical function was derived from a solution in Feller (1968), as defined in the SURTASS LFA Sonar Final OEIS/EIS (U.S. Department of the Navy, 2001c) and relied on in the Supplemental SURTASS LFA Sonar EIS/OEIS (U.S. Department of the Navy, 2007d) with respect to potential impact from the SURTASS LFA sonar, for the probability of MFA and HFA sonar risk for MMPA Level B behavioral harassment with input parameters modified by NMFS for MFA and HFA sonar for mysticetes, odontocetes, and pinnipeds. This determination was based on the recommendation of the two NMFS scientists; consideration of the independent reviews from six scientists; and NMFS MMPA regulations affecting the Navy's use of SURTASS LFA sonar (U.S. Department of the Navy, 2002b; National Oceanic and Atmospheric Administration, 2007b).

The Navy has not used acoustic risk functions in previous MFA or HFA sonar assessments of the potential behavioral effects of MFA and HFA sonar on marine mammals, but risk functions are not new concepts for risk assessments. The Final EIS/OEIS noted that common elements are contained in the process used for developing criteria for air, water, radiation, and ambient noise, and for assessing the effects of sources of air, water, and noise pollution. The Final EIS/OEIS also acknowledged a widespread consensus that cetacean response to MFA sound signals needs to be better defined using controlled experiments (Cox et al., 2006; Southall et al., 2007). The Navy is contributing to an ongoing behavioral response study in the Bahamas that is anticipated to provide some initial information on beaked whales, the species identified as the most sensitive to MFA sonar. NMFS is leading this international effort with scientists from various academic institutions and research organizations to conduct studies on how marine mammals respond to underwater sound exposures. Until additional data are available, NMFS and the Navy have determined that the three data sets detailed in Section 4.1.2.4.9.4 of the Final EIS/OEIS are most applicable for the direct use in developing risk function parameters for MFA and HFA sonar. Accordingly, both risk functions specified by NMFS were developed using these data sets. NMFS determined that these data sets represent the only known data that specifically relate to altered behavioral responses to exposure to mid-frequency sound sources. Until applicable data sets are evaluated to better quantify harassment from HFA sources, the Final EIS/OEIS concluded that the risk function derived for MFA sources will apply to HFA sources.



(C) **Effects Estimates:** Using the criteria specified by NMFS and the application of the Navy's post-modeling analysis, the Navy does not estimate any mortalities or injurious effects on marine mammals as a result of exposure to MFA and HFA sonar as set forth under Alternative 3. While the current national defense exemption provides legal coverage under the MMPA for the Navy's use of MFA sonar on the HRC, the Navy estimates 27,561 non-injurious effects on marine mammals annually as a result of exposure to MFA and HFA sonar that NMFS would classify as Level B harassment under the MMPA. Of this total, 522 exposures represent temporary, non-injurious physiological effects resulting from the onset of temporary threshold shift (TTS) in the animals from exposure to MFA and HFA sonar, and the remaining 27,039 exposures represent temporary, non-injurious behavioral effects. Regarding use of MFA and HFA sonar under the selected alternative, Navy is seeking authorization from NMFS for 27,561 annual MMPA Level B incidental harassment takes.

(i) **Mortality Considerations:** In a letter from NMFS to Navy dated October 2006, NMFS indicated in part that Section 101(a)(5)(A) authorization is appropriate for MFA and HFA sonar activities because it allows NMFS to consider the potential for incidental mortality. The Navy's modeling did not estimate any mortalities or injurious effects on marine mammals and neither NMFS nor the Navy anticipates that marine mammal strandings or mortality will result from the use of MFA and HFA sonar during Navy exercises within the HRC. Given the uncertainty regarding the exact physiological and behavioral mechanisms that have linked MFA sonar exercises to marine mammal strandings in different areas under certain circumstances and conditions, authorization for a very small number of mortalities for beaked whales and commonly stranded species is prudent given the potential for a single individual of these species to be found dead coincident with Navy activities and given an average of two strandings per month in Hawaii. Accordingly, although the Navy does not conclude that such lethal takes likely would be caused by Navy activity, the Navy's incidental take authorization application includes requests for take, by mortality, of two of each of the ten species of the most commonly stranded non ESA-listed species (i.e., two bottlenose dolphins, two *Kogia spp.*, two melon-headed whales, two pantropical spotted dolphins, two pygmy killer whales, two short-finned pilot whales, two striped dolphins, and two Cuvier's, two Longman's, and two Blainville's beaked whales). In addition to the Navy's request for an incidental take authorization under the MMPA for the proposed action, the Navy has also entered into formal consultation with NMFS under Section 7 of the ESA.

(D) **Mitigation Measures:** Until the Navy receives authorization under the MMPA from NMFS for these activities, the Navy will continue to implement the mitigation measures required as a part of the current national defense exemption from the legal requirements of the MMPA for training and testing associated with MFA sonar occurring on the HRC. The Navy will ensure, as part of

the safety zone measures, that relevant power down or shutdown measures at specified distances are implemented. Further, the Navy notes the inapplicability of the requirement to avoid planning major ASW training exercises in conditions which, in the aggregate, are associated with marine mammal stranding events, because these conditions do not exist in the aggregate in Hawaii. This includes the absence of any "chokepoints" as defined by the current exemption.

Regarding use of MFA and HFA sonar, as discussed in the Final EIS/OEIS, the Navy's mitigation measures for marine biological resources shall include the following: training personnel in lookout/watchstander duties; stationing at least three people on watch with binoculars at all times; stationing at least two additional people on watch during ASW exercises when MFA sonar is being used; requiring all personnel engaged in passive acoustic sonar operation to monitor for marine mammal vocalizations; using all available sensor and optical systems, such as night vision goggles, during MFA and HFA sonar training; using only passive capability of sonobuoys when marine mammals are detected within 200 yards; limiting ship or submarine active transmission levels to at least 6 decibels (dB) below normal operating levels when marine mammals are detected by any means within 1,000 yards of the sonar dome (the bow), limiting ship or submarine active transmission levels to at least 10 decibels (dB) below normal operating levels when marine mammals are detected by any means within 500 yards of the sonar dome, or ceasing ship or submarine active transmissions when a marine mammal is detected by any means within 200 yards of the sonar dome; if the need for such power-down arises, following power-down requirements as though the system is operating at 235 dB, the normal operating level (i.e., power-down would be to 229 db or 225 dB, as appropriate); operating sonar at the lowest practicable level, not to exceed 235 dB, except as required to meet tactical training objectives; requiring helicopters to observe or survey the vicinity of an ASW activity for ten minutes before first deployment of active (dipping) sonar in the water; prohibiting dipping sonar within 200 yards of a marine mammal and ceasing pinging if a marine mammal closes to within 200 yards after pinging has begun; coordinating with the local NMFS Stranding Coordinator; and submitting a report containing a discussion of the nature of any observed effects based on both modeled results of real-time events and sightings of marine mammals.

(i) **Humpback Whale Cautionary Area:** Consistent with the requirements of section 101(5)(A) of the MMPA, NMFS and the Navy have also explored ways of effecting the least practicable adverse impact to humpback whales from exposure to MFA and HFA sonar in the HRC (which included a consideration of personnel safety, practicality of implementation, and impacts to the effectiveness of the military readiness activity). NMFS reviewed the Navy's data on MFA and HFA sonar training in areas of dense humpback whale concentration since June 2006 and found it to be rare and infrequent. While past data are no guarantee of future

activity, the available data document a history of low level MFA and HFA sonar activity in dense humpback areas. In order to be successful at operational missions and against the threat of quiet, diesel-electric submarines, the Navy has, for more than 40 years, routinely conducted ASW training in major exercises in the waters off the Hawaiian Islands, including the Humpback Whale National Marine Sanctuary. During this period, MFA sonar source levels and frequencies have remained relatively constant, and no reported cases of harmful effects to humpback whales attributed to MFA and HFA sonar use have occurred in the HRC or at any other location. Coincident with this use of MFA and HFA sonar, abundance estimates reflect an annual increase in the humpback whale stock (Calambokidis, et al. 2008, Mobley, 2001, 2004).

Proficiency in ASW requires that Sailors gain and maintain expert skills and experience in operating MFA and HFA sonar in myriad marine environments. As discussed below, exclusion zones or restricted areas are impracticable and adversely impact MFA and HFA sonar training fidelity. The Hawaiian Islands, including areas in which humpback whales concentrate, contain unique bathymetric features the Navy needs to ensure Sailors gain critical skills and experience by training in littoral waters.

Recognizing the significance of the Hawaiian Islands for humpback whales, the Navy has also designated a Humpback Whale Cautionary Area which consists of a 5-kilometer buffer zone that has been identified as having one of the highest concentrations of humpback whales during the critical winter months.<sup>4</sup> The Navy has agreed that MFA sonar training exercises in the Humpback Whale Cautionary Area will require a much higher level of clearance than is normal practice in planning and conducting MFA sonar training. Should national security needs require MFA sonar training and testing in the cautionary area between the dates of December 15 and April 15, it shall be personally authorized by the Commander, U.S. Pacific Fleet (CPF). CPF shall base such authorization on the unique characteristics of the area from a military readiness perspective, taking into account the importance of the area for humpback whales. Approval at this level for this type of activity is extraordinary. CPF is a four-star Admiral and the highest ranking officer in the United States Pacific Fleet. This case-by-case authorization cannot be delegated and represents the Navy's commitment to fully consider mission requirements in light of the Navy's commitment to environmental stewardship. Further, CPF will provide specific direction on required mitigation prior to

---

<sup>4</sup> **Humpback Whale Cautionary Area:** An area extending 5 kilometers from a line drawn from Kaunakakai on the island of Molokai to Kaena Point on the Island of Lanai; and an area extending 5 kilometers from a line drawn from Kaunolu on the Island of Lanai to the most Northeastern point on the Island of Kahoolawe; and within a line drawn from Kanapou Bay on the Island of Kahoolawe to Kanahena Point on the Island of Maui and a line drawn from Cape Halawa on the Island of Molokai to Lipoa Point on the Island of Maui, excluding the existing submarine operating area.

operational units transiting to and training in the cautionary area using MFA sonar. This process will ensure that decisions to train using MFA sonar in this area are made at the highest level in the Pacific Fleet, heighten awareness of humpback activities in the cautionary area, and serve to reemphasize that mitigation measures required by this ROD are to be scrupulously followed. The Navy will provide NMFS with advance notification of any such MFA sonar training and testing activities in the cautionary area.

Under regulations promulgated by NMFS, federally protected humpback whales seasonally inhabiting waters off the Hawaiian Islands receive additional protection from human disruption. Specifically the regulation indicates "it is unlawful for a person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit, or to cause to be committed, within 200 nm (370.4 kilometers) of the Islands of Hawaii, any of the following acts with respect to humpback whales (*Megaptera novaeangliae*): (1) operate any aircraft within 1,000 feet (300 meters) of any humpback whale; (2) approach, by any means, within 100 yards (90 meters) of any humpback whale; (3) cause a vessel or other object to approach within 100 yards (90 m) of a humpback whale; or (4) disrupt the normal behavior or prior activity of a whale by any other act or omission. A disruption of normal behavior may be manifested by, among other actions on the part of the whale, a rapid change in direction or speed; escape tactics such as prolonged diving, underwater course changes, underwater exhalation, or evasive swimming patterns; interruptions of breeding, nursing, or resting activities, attempts by a whale to shield a calf from a vessel or human observer by tail swishing or by other protective movement; or the abandonment of a previously frequented area." In order to consistently remind the U.S. Pacific Fleet of the presence of these protected species and this approach restriction to avoid collisions, Navy Region Hawaii sends the U.S. Pacific Fleet commands a message annually reminding them of the humpback whale approach restrictions. Most recently, that message was sent on November 9, 2007. To ensure awareness of humpback whale presence in Hawaiian waters during the winter months, Navy Region Hawaii will continue to inform Fleet units at the beginning of each humpback whale season.

NMFS believes that the range clearance procedures and shutdown/safety zone/exclusion zone measures the Navy has proposed will enable the Navy to avoid injuring any marine mammals and will enable them to minimize the numbers of marine mammals exposed to levels associated with TTS. The Stranding Response Plan discussed below will minimize the probability of distressed live-stranded animals responding to the proximity of sonar in a manner that further stresses them or increases the likelihood of mortality. The Humpback Whale Cautionary Area discussed above further minimizes the likely impacts to humpback whales.

NMFS has preliminarily determined that the above mitigation

measures are adequate means of "effecting the least practicable adverse impacts on marine mammals species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance," while also considering "personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity."

These mitigation measures may be refined, modified, removed, or added to prior to the issuance of the MMPA Final Rule based on the comments and information received during the public comment period.

**(ii) The ESA Incidental Take Statement for the 2008 RIMPAC Major Exercise and All Other MFA and HFA Sonar and Underwater Detonations Use on the HRC not Covered by the September 26, 2007 USWEX Amended Biological Opinion:** The Incidental Take Statement issued on June 21, 2008 (as amended on June 24, 2008) for the 2008 RIMPAC major exercise and all other MFA and HFA sonar and underwater detonations use on the HRC not covered by the September 26, 2007 USWEX Amended Biological Opinion included the following terms and conditions:

Delineation of a Humpback Whale Cautionary Area matching the Humpback Whale Cautionary Area discussed in Footnote 4 above. Should national security needs require MFA sonar training and testing in the cautionary area between 15 December and 15 April, it must be personally authorized by the Commander, U.S. Pacific Fleet based on his determination that training and testing in that specific area is required for national security purposes. This authorization shall be documented by the CPF in advance of transiting and training in the cautionary area. Further, Commander, U.S. Pacific Fleet will provide specific direction on required mitigation measures prior to operational units transiting to and training in the cautionary area. The Navy will provide advance notification to NMFS of any such activities. The Navy will include in its periodic reports for compliance with the MMPA whether or not activities occurred in the area above and any observed effects on humpback whales due to the conduct of these activities.

Within 15 business days of completing a major exercise (i.e., RIMPAC and USWEX), the Navy shall provide to the Chief, Endangered Species Division, Office of Protected Resources with a verbal briefing that summarizes the starting and ending dates of the major exercise, initial counts of the number of the different marine mammal species that were observed within 2,000 yards of a vessel that had been transmitting MFA sonar, and the initial estimated distance between those mammals and the transmitting vessel.

Within 120 calendar days of completing a major exercise, the Navy shall provide to the Chief, Endangered Species Division,

Office of Protected Resources (with a copy provided to the Assistant Regional Administrator for Protected Resources in NMFS's Pacific Islands Regional Office) with a written report that shall include a summary of the exercise (the starting and ending date of the exercise, the number of ships and aircraft involved in the exercise, and the number of hours passive and active sonar was used during the exercise; the specific mitigation measures the Navy implemented during the exercise; the number of blue whales, fin whales, humpback whales, sei whales, and sperm whales that had been detected within 500, 1,000, and 2,000 yards of a sonar dome during an active transmission and the Navy's estimate of the number of fin whales, humpback whales, sei whales, and sperm whales that had been exposed to MFA sonar at received levels equal to or greater than 173 dB and 190 dB (species identification is required only to the extent possible by the watchstander, unidentified animals should be reported as such with appropriate descriptors such as "baleen whale," "large whale," etc.); reports of the activity or activities that blue whales, fin whales, humpback whales, sei whales, and sperm whales had been observed to exhibit while they were within 500, 1,000, and 2,000 yards of a sonar dome that were actively transmitting during the exercise (for example, a report should not identify "playing;" it should identify the behavior that allowed the observer to conclude the animal was "playing") (reports of an observation shall identify the date, time, and visual conditions associated [for example, if the observation is produced from a helicopter, the report should identify the speed, vector, and altitude of the airship; the sea state, and lighting conditions) with the observation; and how long an observer or set of observers maintained visual contact with a marine mammal]); an evaluation of the effectiveness of those mitigation measures at avoiding exposing endangered whales to ship traffic and MFA sonar (this evaluation shall identify the specific observations that support any conclusion the Navy reaches about the effectiveness of the mitigation measures); an evaluation of the monitoring program's ability to detect whales that occur within 500, 1,000, and 2,000 yards of a sonar dome during an active transmission (or close enough to an exercise to be exposed to MFA sonar at received levels equal to or greater than 173 dB) with the specific evidence that supports any conclusion the Navy reaches; and estimates of the number of sonar hours during the exercise that occurred between the coastline and the 200 meter isopleth.

For the three major exercises the Navy plans to conduct in the HRC between July 2008 and the third week of January 2009, the Navy shall implement the draft stranding protocol contained in the MMPA Proposed Rule for the HRC.

For activities the Navy conducts in the HRC that are not major exercises and that employ active sonar, the Navy shall coordinate with the NMFS Stranding Coordinator for any unusual marine mammal behavior, including cetaceans that have stranded, beached (live or dead), are floating in the Action Area, or live cetaceans that are out of their habitat (including milling) at any time during or shortly after detonations associated with those activities.

**(E) Alternative or Additional Mitigation Measures**

**Considered but Rejected:** The Navy has continued to revise mitigation measures based on the best available scientific data, the Navy's training requirements, and evolving regulations. The Navy has previously analyzed and eliminated from further consideration several mitigation measures, many of which were suggested during the public comment period. The Final EIS/OEIS analyzed and rejected sixteen categories of potential alternative or additional mitigation measures. The analysis included the measures' likely effectiveness in avoiding harm to marine mammals and consideration of personnel safety, practicality of implementation, and the impact on the effectiveness on the military readiness activity.

**(i) Augmenting Navy lookouts on Navy vessels providing surveillance of ASW or other training events with non-Navy personnel:**

The protection of marine mammals is provided by a lookout sighting the mammal and prompting immediate action. The premise that Navy personnel cannot or will not do this is unsupported. Navy lookouts are extensively trained in spotting items at or near the water surface and relaying the information to their superiors who initiate action. Navy lookouts utilize their skills more frequently than many third-party trained non-Navy marine mammal observers. Use of Navy lookouts is the most effective means to ensure quick and efficient communication within the command structure, thus ensuring timely implementation of any relevant mitigation measures. A critical skill set of effective Navy training is communication via the chain of command. Navy lookouts are trained to report swiftly and decisively using precise terminology to ensure that critical information is passed to the appropriate supervisory personnel. Furthermore, as analyzed in the Final EIS/OEIS, available berthing space, integration of non-Navy personnel into the command structure, and security issues would present added challenges.

**(ii) Employing non-Navy observers on non-military aircraft or vessels:**

The Final EIS/OEIS concluded that measures in this category do not result in increased protection to marine mammals because the size of the areas, the time it takes to survey, and the movement of marine mammals preclude real-time mitigation. Recognizing that ASW training events could occur throughout the entire Hawaiian OPAREA (consisting of approximate 235,000 square nm), contiguous ASW events may cover many hundreds of square miles in a few hours. Event participants are usually not visible to each other (separated by many tens of miles) and are constantly in motion. The number of civilian ships and/or aircraft required to monitor the area around these events would be considerable. In addition to practical concerns, surveillance of an exercise area during an event raises safety issues. Multiple, land-based, slow civilian aircraft operating in the same airspace as military aircraft will limit both the time available for civilian aircraft to be in the training area and present a concern should such aircraft experience mechanical problems. Scheduling of

civilian vessel or aircraft surveillance also presents concerns, as exercise event timetables cannot be precisely fixed but develop freely from the flow of the tactical situation, thus mimicking real combat action. Waiting for civilian aircraft or vessels to complete surveys, refuel, or be on station would interrupt the necessary spontaneity of the exercise and would negatively impact the effectiveness of the military readiness activity. The Navy is committed to maintaining its marine mammal surveillance capability using both Navy surface and, to the extent that aviation assets are participants in the training activity, aerial monitoring.

(iii) Avoiding habitats and complex/steep bathymetry, including seamounts, and employing seasonal restrictions: Seamounts are used by submarines to hide or mask their presence, requiring the need to train in this complex ocean environment. This is precisely the type of area needed by the Navy to train with MFA sonar. Exercise locations are carefully chosen by planners based on training requirements and the ability of ships, aircraft, and submarines to operate safely. However, the full habitat requirements for most marine mammals in the Hawaiian Islands are unknown. Accordingly, there is insufficient information available regarding possible alternative exercise locations or environmental factors that would be less important to marine mammals in the Hawaiian Islands. When available, it must be factored with other considerations including safety and access to land ranges and facilities.

Avoidance of the seasonal presence of migrating marine mammals fails to take into account the fact that the Navy's current mitigation measures apply to all detected marine mammals no matter the season. To the degree possible, however, the Navy is committed to informing all naval vessels to increase vigilance when the first humpback whales have been sighted around the Hawaiian Islands. Limiting training activities to the remaining six months of the year would not only concentrate all annual training and testing activities into a shorter six-month time period, but would also not meet the readiness requirements of the Navy's mandate to deploy trained forces as might be required by unscheduled real world events. This alternative, considered but eliminated, is different than the humpback whale cautionary area which is not an exclusion area.

Avoiding seamounts without exception fails to define scientific parameters for seamounts critical to marine mammals, such as a critical depth from the surface, and it is impossible to establish scientifically what would constitute a buffer that would avoid these areas. In addition, without a scientifically derived definition, there is no means to implement any proposed mitigation measure based on avoidance of seamounts.

Avoidance of steep or complex bathymetry in the HRC ignores



the fact that all the islands in the Hawaiian Island chain present a steep bathymetric rise from the ocean floor. There are more than 300 seamounts in the HRC. Many of these areas of complex bathymetry and seamounts are in the very locations where Navy trains, and are valuable to Navy training. The purported need for this suggested mitigation measure is based on findings from other areas of the world that do not have direct application to the unique environment present in Hawaii (e.g., the circumstances surrounding the 2000 Bahamas mass-stranding event). Ultimately, the Navy needs to train in representative environments, including near seamounts and in areas of steep or complex bathymetry, as submarines use these environments to avoid detection. Not being allowed to conduct exercises in these areas would have an unacceptable impact on training effectiveness.

**(iv) Avoiding MFA and HFA sonar use within 12 nm from shore or, in the alternative, 15.5 miles (25 kilometers) from the 200-meter isobath:** During RIMPAC 2006, this mitigation measure precluded ASW training in the littoral region, which had a significant impact on realism and training effectiveness. There is no scientific evidence that any set distance from the coast is more protective of marine mammals than any other distance. The Navy has also determined that limiting MFA sonar use to outside 12 nm from the coast prevented crew members from gaining critical experience in training in shallow waters, and training in littoral waters. Sound propagates differently in shallower water. In real world events, it is highly likely crew members would be working in these types of areas, and these are the types of areas where diesel-electric submarines would be operating. Without the critical training near shore that ASW exercises provide, crews will not have the experience needed to successfully operate SONAR in these types of waters, impacting vital military readiness. These measures could make it impossible for the Navy to continue to maintain the ships, submarines, and aircraft currently homeported in Hawaii that are equipped with MFA sonar, as these measures would prohibit effective training for these units by depriving them of critical near-shore training.

**(v) Using MFA and HFA sonar with output levels as low as possible consistent with mission requirements or using active sonar only when necessary:** Operators of sonar equipment are trained to be aware of the environmental variables affecting sound propagation. In this regard, the sonar equipment power levels are always set consistent with mission requirements. Active sonar is only used when required by the mission since it has the potential to alert opposing forces to the sonar platform's presence. The Navy remains committed to using passive sonar and all other available sensors in concert with active sonar to the maximum extent practicable consistent with mission requirements.

**(vi) Suspending training at night, periods of low visibility and in high sea-states when marine mammals are not**

**readily visible:** It is imperative that the Navy train to be able to operate at night, in periods of low visibility, and in high sea-states using the full potential of MFA or HFA sonar as a sensor. Anti-submarine warfare requires many hours and days for the situation to develop, to be identified and for the forces to respond. It would be extremely impracticable and unrealistic for the Navy's forces at sea to train only in daylight hours or to wait for weather to clear. Naval forces must train during all conditions to ensure they understand how constantly changing environmental conditions (including changes between day and night) affect sonar's capabilities and their ability to detect and maintain contact with submerged objects. The naval forces must constantly identify those changing conditions and adapt to them.

Maneuvering a vessel at night and during restricted visibility is not a simple activity. Navy vessels use radar and night vision devices to detect any object, whether a marine mammal, a periscope of an adversary submarine, trash, debris, or another surface vessel. Under the International Navigation Rules of the Road, periods of fog, mist, falling snow, heavy rainstorm, sandstorms, or any similar events are referred to as "restricted visibility." In restricted visibility, all mariners, including Navy vessel crews, are required to maintain proper look-out by sight and hearing as well as "by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision." Therefore, Navy vessels are required to use all means available in restricted visibility, including sonar and positioning of additional lookouts for heightened vigilance to avoid collision. Navy vessels use radar and night vision goggles to avoid any object, whether a marine mammal, a periscope of an adversary submarine, trash, debris, or another surface vessel. Prohibiting or limiting vessels from using MFA sonar during periods of restricted visibility therefore violates international navigational rules, increases navigational risk, and jeopardizes the safety of the ship and crew.

(vii) **Reducing power in significant surface ducting conditions:** Surface ducting occurs when water conditions (e.g., temperature layers, lack of wave action) result in sound energy emitted at or near the surface to be refracted back up to the surface, then reflected from the surface only to be refracted back up to the surface so that relatively little sound energy penetrates to the depths that otherwise would be expected. This increases active detection ranges in a narrow layer near the surface, but decreases active sonar detection below the thermocline, a phenomenon that submarines have long exploited. Significant surface ducts are conditions under which ASW training must occur to ensure Sailors learn to identify these conditions, how they alter the abilities of MFA sonar systems, and how to deal with the resulting effects on MFA sonar capabilities. To be effective, the complexity of ASW requires the most realistic training possible. Reducing power in significant surface ducting conditions undermines training realism because the unit would be

operating differently than it would during actual warfare.

Additionally, and significantly, the necessary information regarding water conditions in the exercise areas is not uniform and can change over a period of a few hours as the effects of environmental conditions such as wind, sunlight, cloud cover, and tide changes alter surface duct conditions. Across a typical HRC exercise area, the determination of "significant surfacing ducting" is continually changing, and this mitigation measure could not be accurately implemented.

Furthermore, surface ducting alone does not increase the risk of MFA sonar impacts to marine mammals. While surface ducting causes sound to travel farther before losing intensity, simple spherical and cylindrical spreading losses result in a received level of no more than 175 dB at 1,000 meters, even in significant surface ducting conditions. There is no scientific evidence that this mitigation measure is effective or that it provides additional protection for marine mammals beyond that afforded by an appropriate safety zone.

Reduction of MFA sonar power levels by 6 dB to 10 dB results in a 50- to 80-percent reduction of detection of submarines in the area due to a decrease in power of 75 to 90 percent. This means reduction of sonar power levels results in an inability to detect submarines at greater distances which reflect real world situations. As submarines are capable of striking ships at distances greater than a powered-down sonar would be able to detect, effective training is compromised.

Measurements of surface ducting taken during RIMPAC 2006 indicated a large variation in the presence of strong surface ducts over relatively short distances. The models used in forecasting a strong surface duct used high resolution that still resulted in generalized sea state, Sound Speed Velocity Profile and cloud cover over a large operating area utilized by exercise participants. Therefore, these measured location variations so differ from forecasts that concluding whether a strong surface duct existed was inherently inaccurate. Additionally, the measure failed to account for location variations from tidal flux, differential sea-states frequently seen in channels, the fact that there are shear lines in some locations and the occurrence of currents and eddies. Variations due to these characteristics have significant effects on surface ducting. Because there is no evidence that surface ducting in and of itself causes MFA sonar overall effects to marine mammals to be greater, and because it is scientifically unknown to what extent the presence of surface ducting was significant in the known beaked whale stranding incidents, the Navy report on mitigations measures used in RIMPAC 2006 recommended omitting this separate measure. The Navy considers significant surface ducting as part of the mitigation measures required by the current national defense

exemption from the legal requirements of the MMPA.<sup>5</sup> As noted above, the requirement under the current MMPA national defense exemption to consider significant surface ducting as part of an aggregate of conditions in planning major exercises does not apply in the HRC because those conditions do not exist in the aggregate. Normal safety zone requirements always apply.

**(viii) Scaling down training to meet core**

**aims:** As with each Navy range complex, the primary mission of the HRC is to provide a realistic training environment for naval forces to ensure that they have the capabilities and high state of readiness required to accomplish assigned missions. Modern war and security operations are complex. Modern weaponry has brought both unprecedented opportunity and innumerable challenges to the Navy. Smart weapons, used properly, are very accurate and actually allow the military Services to accomplish their missions with greater precision and far less destruction than in past conflicts. But these modern smart weapons are very complex to use. U.S. military personnel must train regularly with them to understand their capabilities, limitations, and operation. Modern military actions require teamwork between hundreds or thousands of people, and their various equipment, vehicles, ships, and aircraft, all working individually and as a coordinated unit to achieve success. These teams must be prepared to conduct activities in multiple warfare areas simultaneously in an integrated and effective manner. Navy training addresses all aspects of the team, from the individual to joint and coalition teamwork. Training events are identified and planned because they are necessary to develop and maintain critical skills and proficiency in many warfare areas. Exercise planners and Commanding Officers are obligated to ensure they maximize the use of time, personnel and equipment during training. The level of training expressed in the proposed action and alternatives is essential to achieving the primary mission of the HRC.

**(ix) Limiting the active sonar event**

**locations:** Areas where events are scheduled to occur are carefully chosen to provide for the safety of events and to allow for the realistic development of the training scenario including the ability of the exercise participants to develop, maintain, and

---

<sup>5</sup> As described in Section 6.1.3 of the HRC Final EIS/OEIS, the historical presence of a significant surface duct is identified as one condition of an aggregate of many conditions: including land masses separated by less than 35 nm and at least 10 nm in length; areas of at least 1,000 meter depth near a shoreline where there is rapid change in bathymetry on the order of 1,000 to 6,000 meters within a relatively short horizontal distance (5 nm); and multiple ships (greater than or equal to three) are operating MFA sonar in the same area over extended periods of time (at least 6 hours) in close proximity (less than or equal to 10 nm apart). If those conditions exist in the aggregate (which is not the case with regards to the HRC), dedicated aerial surveillance will occur in the embayment or channel ahead of the exercise participants to detect marine mammals that may be in the area exposed to active sonar. Normal safety zone requirements always apply, and any detected marine mammals exhibiting unusual behaviors are required to be reported to those running the exercise so they can decide whether to delay, suspend or alter the exercise.

demonstrate proficiency in all areas of warfare simultaneously. Limiting the training event to a few areas would have an adverse impact the effectiveness of the training by limiting the ability to conduct other critical warfare areas including, but not limited to, the ability of the Strike Group to defend itself from threats on the surface and in the air while carrying out air strikes and/or amphibious assaults. Limiting the exercise areas would concentrate all active sonar use, resulting in unnecessarily prolonged and intensive sound levels rather than the more transient exposures predicted by the current planning that makes use of multiple exercise areas. Furthermore, major exercises using integrated warfare components require large areas of the littorals and open ocean for realistic and safe training.

**(x) Passive acoustic detection and location of marine mammals:** As noted above, the Navy uses its passive detection capabilities to the maximum extent practicable consistent with the mission requirements to alert training participants to the presence of marine mammals in an event location.

**(xi) Using "ramp-up" of MFA sonar to clear an area prior to the conduct of ASW training events:** Ramp-up procedures involve slowly increasing the sound in the water to levels that would clear an area of marine mammals prior to training at nominal source levels. Ramp-up procedures are not a viable alternative for MFA sonar training events as the ramp-up would alert opponents to the participants' presence, thus undermining training realism and effectiveness of the military readiness activity. When a Strike Group ship turns its sonar on, area submarines are alerted to its presence. A submarine can hear an active sonar transmission farther away than the surface ship can hear the echo of its sonar off the submarine. Ideally, the surface ship will detect the submarine in time to attack the submarine before the submarine can attack one of the ships of the Strike Group. If the MFA sonar ship starts out at a low power and gradually ramps up, it will give time for the submarine to take evasive action, hide, or close in for an attack before the MFA sonar is at a high enough power level to detect the submarine.

Ramp-up procedures purportedly provide marine mammals the opportunity to leave the area. There is no evidence that ramp-up procedures achieve the desired effect of causing the marine mammal to leave the area. Instead, it is well proven that dolphins ride the bow-waves of all vessels, including those employing MFA sonar, which indicates that some species of marine mammals do not flee.

**(xii) Implementing vessel speed reduction:** Vessels engaged in training use extreme caution and operate at a slow, safe speed consistent with mission and safety. Ships and submarines need to be able to react to changing tactical situations in training as they would in actual combat. Placing arbitrary

speed restrictions would not allow them to properly react to these situations. Training differently than that which would be needed in an actual combat scenario would decrease training effectiveness and reduce the crew's abilities.

**(xiii) Using new technology (e.g., unmanned reconnaissance aircraft, underwater gliders, and instrumented ranges) to detect and avoid marine animals:** Although the Navy works with many new technologies, they presently remain unproven and limited in availability. The Navy has been collecting data using the hydrophones in the underwater instrumented range at PMRF to collect passive acoustic data on marine mammals. The Navy is working to develop the capability to detect and localize vocalizing marine mammals using these sensors, but based on the current status of acoustic monitoring science, it is not yet possible to use installed systems as mitigation tools. Similarly, research involving a variety of other methodologies (e.g., underwater gliders, radar, and lasers) is not yet developed to the point where they are effective or could be used as an actual mitigation tool.

**(xiv) Using larger shut-down zones:** The current power down and shut down zones are based on scientific investigations specific to MFA sonar for a representative group of marine mammals. They are based on the source level, frequency, and sound propagation characteristics of MFA sonar. The zones are designed to preclude direct physiological effect from exposure to MFA sonar. Specifically, the current power-downs at 500 yards and 1,000 yards, as well as the 200 yard shut-down, were developed to minimize exposing marine mammals to sound levels that could cause TTS and PTS. These safety zone distances were based on experiments involving distances at which the onset of TTS and PTS were identified. They are also supported by the scientific community. The safety zone the Navy has developed is also based on a lookout's ability to realistically maintain situational awareness over a large area of the ocean, including the ability to detect marine mammals at that distance during most conditions at sea. Requirements to implement procedures when marine mammals are present well beyond 1,000 yards dictate that lookouts sight marine mammals at distances that, in reality, are not always practicable. These increased distances also significantly expand the area that must be monitored to implement these procedures. For instance, if a power down zone increases from 1,000 to 4,000 yards, the area that must be monitored increases sixteen-fold. Increases in safety zones are not based in science, do not provide any appreciable benefit to marine mammals and severely impact realistic ASW training. For example, increasing the shutdown zone for example from 200 yards to 2,187 yards contains 121 times the area of the Navy's current 200 yard shutdown zone. This restriction could increase the number of times that a ship would have to shut down active sonar, impacting realistic training and depriving ships of valuable submarine contact time. Commanders responsible for locating, tracking, and attacking a hostile submarine could lose awareness of the tactical situation through the constant stopping and starting of MFA sonar leading to significant exercise event

disruption. Increased shutdowns could allow a submarine to take advantage of the lapses of active sonar, and position itself for an attack.

**(xv) Restricting the use of MFA sonar during ASW training events while conducting transits between islands (i.e., choke-points):** This restriction is not applicable to transit in the Hawaiian Islands. A chokepoint is a strategic strait or canal. Although there are over 200 major straits around the world, only a handful are considered to be strategic "chokepoints," such as the Strait of Gibraltar, Panama Canal, Strait of Magellan, Strait of Malacca, Bosphorus and Dardanelles, Strait of Hormuz, Suez Canal, and Bab el Mandeb. While chokepoints are relatively few in number, significant quantities of international commerce and naval shipping move through these chokepoints, making them strategically important to the United States because a single quiet diesel submarine can position itself in the chokepoint and effectively block access beyond that point. The primary similarity of these chokepoints is lengthy shorelines that restrict maneuverability. The longer and more narrow the passage, the more likely the chokepoint creates an area of restricted egress for marine mammals. The conditions of the channels used in Hawaii differ from other channels around the world, including the Northwest Providence channel in the Bahamas. The Bahamas marine mammal stranding event in 2000 involved a critical confluence of conditions. The Northwest Providence channel is 100 nm long and between 25-30 nm wide. In contrast, the channels between the Hawaiian Islands (such as the Alenuihaha and the Kaulakahi channels) are formed by adjacent islands rather than long, adjacent land mass boundaries. Therefore, these channels do not constrict movement of marine mammals between two long land masses for many miles, as may have been the case in the Bahamas in 2000. Even if these channels were similar and thus did restrict movement, this is addressed in Section 6.1.3 of the Final EIS/OEIS. Conducting ASW training events while transiting between Hawaiian Islands does not present the same conditions as those that resulted in the Bahamas mass stranding event (see Section 4.1.2.4.10.2 of the Final EIS/OEIS). Most importantly, there is no limited egress for marine mammals for events that occur between the Hawaiian Islands.

**(xvi) Adopting mitigation measures of foreign nation navies:** The Navy typically operates in a Strike Group configuration where the group focuses its efforts on conducting air strikes and/or amphibious operations ashore. This requires that the Navy train to what it calls "integrated warfare" meaning that Strike Groups must conduct many different warfare areas simultaneously. These include the ability to defend itself from attacks from submarines, mines, ships, aircraft and missiles. Other nations do not possess the same integrated warfare capabilities as the United States. As a result, many foreign nations' measures are focused solely on reducing what they perceive to be impacts involving ASW. They are not required to locate training areas and position naval forces for the simultaneous and

integrated warfare elements that the Navy conducts. As a result, many nations are willing to move training to areas where they believe marine mammals may not exist and do not train in the same bathymetric and littoral environments as the Navy.

**(F) Monitoring and Stranding Response:** As a part of the NMFS rule-making process, NMFS and Navy are continuing to coordinate the development of a marine species monitoring plan and marine mammal stranding response protocol. When finalized, the monitoring plan is expected to contain the framework for research on the effectiveness of the Navy's suite of mitigation measures and analyze behavioral responses of marine mammals to MFA sonar and explosives. The monitoring plan is expected to utilize vessel, aerial and shore-based surveys, along with passive acoustics to accomplish its goals. The Navy will continue to work with the scientific community to better understand marine mammals and to assess what effect, if any, the Navy's training activities are having on marine mammals. As part of the stranding plan, the Navy and NMFS are working to ensure a dialogue is developed and maintained during any marine mammal stranding event as defined in the MMPA. This dialogue will be in support of NMFS' long term efforts to gather information on the wide range of marine mammal strandings.

**(2) *SURTASS LFA Sonar:*** The Navy analyzed use of SURTASS LFA sonar worldwide in the 2001 SURTASS LFA Sonar Final EIS/OEIS and 2007 Supplemental SURTASS LFA Sonar EIS/OEIS. On August 21, 2007, pursuant to the MMPA, NMFS published a Final Rule and regulations governing the unintentional taking of marine mammals incidental to the Navy's operation of the SURTASS LFA sonar system within the world's oceans (except for Arctic and Antarctic waters and certain other areas identified in the rule). Under these regulations, the take of marine mammals incidental to use of up to four SURTASS LFA sonar systems is authorized through annual Letters of Authorization (LOAs), for which the Navy must apply. At this time, the Navy cannot state how pending litigation over the SURTASS LFA sonar system will affect use of the system within the HRC. The Navy will adhere to any relevant terms and conditions that address its use of SURTASS LFA sonar in the HRC arising from that litigation, provided that an LOA is first obtained from NMFS for use in the HRC. The Navy addressed in the HRC Final EIS/OEIS the cumulative effects of use of SURTASS LFA sonar in the HRC.

**(3) *Underwater Detonations:*** Using the criteria specified by NMFS and the application of the Navy's post-modeling analysis, the Navy does not estimate any mortalities or injurious effects on marine mammals as a result of underwater detonations as set forth under Alternative 3. The Navy similarly estimates that for the sub-TTS behavioral threshold, there may be 63 exposures resulting in behavioral harassment from successive explosions in a single event involving underwater detonations effects on marine mammals annually. In addition, the modeling indicates 80 annual exposures



to pressure or acoustics from underwater detonations that could result in TTS. The total number of exposures from explosives that NMFS would classify as Level B harassment would be 143. Underwater detonations occurring during training and testing events are not likely to result in Level A impacts to marine species given range clearance procedures and the temporary nature and episodic number of the events involved.

Mitigation measures addressing underwater detonations are as follows: determining that the immediate training area is clear of marine mammals prior to detonation of explosives; and observing an exercise area 30 minutes before commencement of the exercise and after commencement of Demolition and Ship Mine Countermeasures Operations. A number of mitigation measures addressing EER/IEER sonobuoys have been developed. Crews will conduct visual reconnaissance of the drop area prior to laying their intended sonobuoy pattern. This search should be conducted below 1,500 feet at a slow speed when operationally feasible and weather conditions permit. Crews shall conduct a minimum of 30 minutes of visual and aural monitoring of the search area prior to commanding the first post (source/receiver sonobuoy pair) detonation. For any part of the briefed pattern where a post will be deployed within 1,000 yards of observed marine mammal activity, crews will deploy the receiver only and monitor while conducting a visual search. When marine mammals are no longer detected within 1,000 yards of the intended post position, crews will co-locate the AN/SSQ-110A sonobuoy (source) with the receiver. When operationally feasible, crews will conduct continuous visual and aural monitoring of marine mammal activity, including monitoring of their aircraft sensors from first sensor placement to checking off-station and out of radio frequency range of the sensors. Aural detection of marine mammals cues the aircrew to increase the diligence of their visual surveillance. If, following aural detection, no marine mammals are visually detected, then the crew may continue multi-static active search. If marine mammals are visually detected within 1,000 yards of the AN/SSQ-110A sonobuoy intended for use, then that payload shall not be detonated. Aircrews may utilize this post once the marine mammals have not been re-sighted for 30 minutes or are observed to have moved outside the 1,000-yard safety zone. Aircrews may shift their multi-static active search to another post, where marine mammals are outside the 1,000-yard safety zone; aircrews shall make every attempt to manually detonate the unexploded charges at each post in the pattern prior to departing the operations area by using the "Payload 1 Release" command followed by the "Payload 2 Release" command.<sup>6</sup> Aircrews shall

---

<sup>6</sup> "Payload 1 Release" and "Payload 2 Release" are the terms used when initiating the command detonation of the two charges. Simply stated, these terms are used rather than saying, "Detonate the first charge, now detonate the second charge." The IEER system's active sonobuoy component, the AN/SSQ-110A sonobuoy, would generate a ping (small detonation) and the passive AN/SSQ-101 ADAR sonobuoy would listen for the return echo of the sonar ping that has been bounced off the surface of a submarine. These sonobuoys are designed to provide underwater acoustic data necessary for naval aircrews to quickly and accurately detect submerged submarines. The expendable and commandable sonobuoy pairs are dropped

refrain from using the "Scuttle" command when two payloads remain at a given post. Aircrews will ensure a 1,000-yard safety zone, visually clear of marine mammals, is maintained around each post as is done during active search operations. Aircrews shall only leave posts with unexploded charges in the event of a sonobuoy malfunction, an aircraft system malfunction, or when an aircraft must immediately depart the area due to issues such as fuel constraints, inclement weather, and in-flight emergencies. In these cases, the sonobuoy will self-scuttle using the secondary method or tertiary method; aircrews ensure all payloads are accounted for. Sonobuoys that cannot be scuttled shall be reported as unexploded ordnance via voice communications while airborne and, upon landing, via Naval message; and mammal monitoring shall continue until out of their aircraft sensor range.

(4) **Ship Strikes:** The ability of a ship to avoid a collision and to detect a collision depends on a variety of factors, including environmental conditions, ship design, size, and manning. The majority of ships participating in HRC training activities, such as Navy destroyers, have a number of advantages as compared to most commercial merchant vessels that enable them to avoid ship strikes, including the following factors: (1) Navy ships have their bridges positioned forward, offering good visibility ahead of the bow; (2) crew size is much larger than that of merchant ships allowing for more potential observers on the bridge; (3) dedicated lookouts are posted during a training activity scanning the ocean for anything detectible in the water; anything detected is reported to the Officer of the Deck; and (4) Navy lookouts receive extensive training including Marine Species Awareness Training designed to provide marine species detection cues and information necessary to detect marine mammals. The Navy has adopted standard operating procedures that reduce the potential for ship strikes with marine mammals. At all times when ships are underway, there are trained observers on watch scanning the area around the ship. If a marine mammal is sighted, appropriate action is taken to avoid the marine mammal. Collisions with cetaceans and pinnipeds are therefore not expected.

(5) **Ballistic Missile Intercept Tests:** Individual pieces of debris from ballistic missile intercept tests are dispersed over a large area. While a direct hit from a piece of debris would impact a marine mammal at the surface, it is extremely unlikely that this would ever occur.

(6) **Live Fire:** The weapons used in most Live Fire

---

from a fixed-wing aircraft into the ocean in a predetermined pattern (array) with a few buoys covering a very large area. Upon command from the aircraft, the bottom payload is released to sink to a designated operating depth. A second command is required from the aircraft to cause the second payload to release and detonate generating a "ping". There is only one detonation in the pattern of buoys at a time. Detonation of the buoys could result in the take of marine mammals.

Exercises pose little risk to marine mammals unless they are near the surface at the point of impact. Machine guns (.50 caliber) and close-in weapons systems (i.e., anti-missile systems) fire exclusively non-explosive ammunition. The same applies to larger weapons firing inert ordnance for training (5-inch guns and 76-millimeter [mm] guns). The rounds pose an extremely low risk of a direct hit and potential to directly affect a marine species. Target area clearance procedures will again reduce this risk. A SINKEX uses a variety of live fire weapons. These rounds pose a risk only at the point of impact.

There is a lead time for set-up and clearance of any area before an event using explosives takes place (this may be up to several hours for a SINKEX). There will, therefore, be a long period of rather intense activity before the event occurs when the area is under observation and before any live fire occurs. Ordnance cannot be released until the target area is determined clear.

Live fire mitigation measures include conducting all weapons firing during the period from one hour after official sunrise to 30 minutes before official sunset; determining that target areas are clear of marine mammals before beginning exercises; establishing an exclusion zone with a radius of one nautical mile around each target; before and during an exercise, conducting a series of surveillance over-flights within exclusion and safety zones when assets are available and if the surveillance is safe and feasible; monitoring the exclusion zone by passive acoustic means when assets are available; delaying firing if a protected species observed within the exclusion zone is diving until either the animal is re-sighted outside the exclusion zone or 30 minutes have elapsed; halting an exercise if marine mammals are detected on the beach or in a target area; and preparing an after action report.

## **b. Sea Turtles**

Analysis of potential impacts on sea turtles from training and RDT&E activities has been performed and the analysis concluded that no adverse effects would occur.

**1. MFA and HFA Sonar:** Sea turtle hearing is generally most sensitive between 100 Hz to 800 Hz for hard shell turtles, frequencies that are at the lower end of the sound spectrum. Although low-frequency hearing has not been studied in many sea turtle species, most of those that have been tested exhibit low audiometric and behavioral sensitivity to low-frequency sound. It appears, therefore, that if there were the potential for the MFA and HFA sonar to increase masking effects of any sea turtle species, it would be expected to be minimal as most sea turtle species are apparently low-frequency specialists. Given the relatively low hearing sensitivity even within the frequency ranges

that sea turtles hear best, which is for the most part below the frequency range of MFA and HFA sonar, it is unlikely that sea turtles would be affected by this type of sonar. Therefore, the Navy finds that the MFA and HFA activities are not likely to affect green, olive ridley, loggerhead, hawksbill, or leatherback sea turtles.

**2. Underwater Detonations:** Exercises that use explosive ordnance pose a greater risk to sea turtles; however, the area affected by the explosive is relatively small, and target area clearance procedures will reduce the potential for such an extremely unlikely event to occur. Therefore, the Navy finds that underwater detonation activities are not likely to affect green, olive ridley, loggerhead, hawksbill, or leatherback sea turtles. Mitigation measures require that all Mine Warfare and Mine Countermeasures Operations involving the use of explosive charges must include exclusion zones for sea turtles to prevent physical and/or acoustic effects on those species. These exclusion zones shall extend in a 700-yard radius arc around the detonation site. For Demolition and Ship Mine Countermeasures Operations, pre-exercise surveillance shall be conducted within 30 minutes prior to the commencement of the scheduled explosive event. The surveillance may be conducted from the surface, by divers, or from the air, and personnel shall be alert to the presence of any marine mammal or sea turtle. Should such an animal be present within the surveillance area, the exercise shall be paused until the animal voluntarily leaves the area. Mitigation measures addressing EER/IEER as previously described for marine mammals would also be implemented for sea turtles.

**3. Ship Strikes:** The Navy has adopted SOPs that reduce the potential for collisions between surface vessels and sea turtles. Mitigation measures include at least three people on watch whose duties include observing the water surface around the vessel during at-sea movements. If a sea turtle is sighted, appropriate action will be taken to avoid the animal. Given the SOPs and the relatively few number of turtles and Navy vessels in the open ocean, the Navy believes collisions with sea turtles are unlikely.

**4. Ballistic Missile Intercept Tests:** Individual pieces of debris from ballistic missile intercept tests are dispersed over a large area. While a direct hit from a piece of debris would impact a sea turtle at the surface, it is extremely unlikely that this would ever occur.

**5. Live Fire:** The weapons used in most Live Fire Exercises pose little risk to sea turtles unless they are near the surface at the point of impact. Machine guns (.50 caliber) and close-in weapons systems (anti-missile systems) fire exclusively non-explosive ammunition. The same applies to larger weapons firing

inert ordnance for training (5-inch guns and 76-mm guns). The rounds pose an extremely low risk of a direct hit and potential to directly affect a marine species. Target area clearance procedures will again reduce this risk. A SINKEX uses a variety of live fire weapons. These rounds pose a risk only at the point of impact.

There is a lead time for set up and clearance of any area before an event using explosives takes place (this may be up to several hours for a SINKEX). There will, therefore, be a long period of rather intense activity before the event occurs when the area is under observation and before any live fire occurs. Ordnance cannot be released until the target area is determined clear.

Live fire mitigation measures include conducting all weapons firing during the period from one hour after official sunrise to 30 minutes before official sunset; determining that target areas are clear of sea turtles before beginning exercises; establishing an exclusion zone with a radius of 1 nm mile around each target; before and during an exercise, conducting a series of surveillance over-flights within exclusion and safety zones when assets are available and if the surveillance is safe and feasible; monitoring the exclusion zone by passive acoustic means when assets are available; delaying firing if a protected species observed within the exclusion zone is diving until either the animal is re-sighted outside the exclusion zone or 30 minutes have elapsed; halting an exercise if sea turtles are detected on the beach or in a target area; and preparing an after action report.

In accordance with ESA requirements, the Navy has undertaken Section 7 consultation with NMFS for the proposed and ongoing activities in the HRC. The Navy finds that these activities are not likely to affect green, olive ridley, loggerhead, hawksbill, or leatherback sea turtles.

### **c. Fish**

Potential impacts from training and RDT&E activities on fish have been analyzed, and no significant short- or long-term impacts are expected.

(1) **MFA and HFA Sonar:** The potential effects on fish from MFA and HFA sonar used during ASW exercises will be negligible as most fish hear below the range of MFA and HFA sonar. Fish may detect the sonar but may not respond to it; therefore, it will not affect their hearing and the resulting effects are not biologically significant. The vast majority of sounds that are of biological relevance to fish are below 1 kHz. Considering that the vast majority of fish species studied to date are hearing generalists and cannot hear sounds above 500 Hz to 1,500 Hz (depending upon the

species), there are not likely to be behavioral effects on these species from the proposed activities in the HRC using MFA and HFA sonar. Moreover, even those marine species that may hear above 1.5 kHz have relatively poor hearing and it is likely the fish will only actually hear the sounds if the fish and source are very close to one another. Thus it is reasonable to conclude that there will be few, and more likely no, impacts on the behavior of fish.

**(2) Underwater Detonations:** Potential impacts on fish from underwater detonations would be negligible. A small number of fish are expected to be injured by detonation of explosives, and some fish located in proximity to the initial detonations can be expected to die. However, the overall impacts on water column habitat would be localized and transient.

**(3) Essential Fish Habitat:** Potential impacts on fish and Essential Fish Habitat (EFH) from training and RDT&E activities have been analyzed, and the analysis concluded that no adverse effects would occur with implementation of mitigation measures. Mitigation measures for Anti-Air Warfare, ASW, Mine Warfare, RDT&E specifically related to Missile Defense, Terminal High Altitude Area Defense and Fleet Operational Readiness Accuracy include conducting exercises away from sensitive EFH and Habitat Areas of Particular Concern. For Expeditionary Assault activities, mitigation measures include restricting amphibious landings to specific areas of designated beaches. For Mine Neutralization activities, mitigation measures include that only sandy areas are used when using explosive charges to avoid or minimize impacts to coral.

A copy of the *Essential Fish Habitat and Coral Reef Assessment for the Hawaii Range Complex EIS/OEIS (October 2007)* was provided to NMFS for an informal review. NMFS concluded that the document adequately addressed potential impacts to EFH and that no adverse impacts would occur to fish or fisheries encompassed within the various Western Pacific Regional Fishery Management Council Fishery Management Plans.

**4. Biological Resources (Terrestrial):** Potential terrestrial biological resource impacts from training and RDT&E activities have been analyzed, and no significant short or long-term impacts are expected. Training activities and major exercises will continue to be conducted within current OPAREAs.

The Final EIS/OEIS analytical approach for biological resources involved evaluating the degree to which the proposed action, including launch activities, can have an impact on vegetation, wildlife, threatened or endangered species, and sensitive habitat within the HRC. Criteria for assessing potential impacts on terrestrial biological resources are based on the

following: the number or amount of the resource that will be impacted relative to its occurrence at the project site, the sensitivity of the resource to proposed training and RDT&E activities, and the duration of the impact. Impacts are considered substantial if they have the potential to reduce the population size of federally listed threatened or endangered species, degradation of biologically important unique habitats, substantial long-term loss of vegetation, or reduction in capacity of a habitat to support wildlife.

Potential impacts of construction, building modification, and missile launches on terrestrial biological resources within the PMRF region of influence have been addressed in detail in the Strategic Target System EIS, the Restrictive Easement EIS, the PMRF Enhanced Capability EIS, and the Theater High Altitude Area Defense Pacific Flight Tests Environmental Assessment, (U.S. Army Strategic Defense Command, 1992; U.S. Army Space and Strategic Defense Command 1993a; U.S. Department of the Navy, 1998a; U.S. Army Space and Missile Defense Command, 2002). Based on these prior analyses and the effects of current and past missile launch activities, the potential impacts of activities related to continuing RDT&E on terrestrial biological resources are expected to be minimal.

The Navy, when using areas controlled by other military Services, will follow the relevant policies and procedures that are in place to minimize impacts on biological resources and prevent introduction of invasive species. Training and RDT&E activities will follow applicable requirements contained in relevant Biological Opinions and DoD Service policies and procedures to minimize impacts on biological resources. The Navy will work with the current DoD landowner or public trustee for activities that may not be covered under existing agency consultation or Service regulations. Proposed activities that would require coordination or consultation under the ESA would not be implemented until the appropriate process has been completed. Critical habitat and sensitive areas will be avoided where possible.

Terrestrial biological resource mitigation measures are site and installation specific. These measures, where applicable, include pressure washing vehicles before transport from the mainland to prevent spread of invasive plants; shielding night lighting to the extent practicable; fostering the reestablishment of native vegetation; monitoring and treating species to eliminate the establishment of exotic species; and prohibiting living plants brought from the mainland.

No significant adverse impacts to migratory birds, or listed and non-listed wildlife species are expected. Section 704(a) of the Migratory Bird Treaty Act (MBTA) prescribes regulations to exempt the Armed Forces for the incidental taking of migratory birds during military readiness activities authorized by the

Secretary of Defense or the Secretary of the military department concerned. Congress determined that allowing incidental take of migratory birds as a result of military readiness activities is consistent with the MBTA and the treaties. The Armed Forces must give appropriate consideration to the protection of migratory birds when planning and executing military readiness activities, but not at the expense of diminishing the effectiveness of such activities. With regard to Navy training activities and ongoing RDT&E, the low probability of either startling a population or of producing debris capable of having a significant impact on a population of a particular bird species should exempt the training and testing from the take prohibitions of the MBTA (U.S. Fish and Wildlife Service, 2007a; U.S. Department of the Navy, 2007a).

**5. Cultural Resources:** Potential cultural resources impacts from training and RDT&E activities have been analyzed and no significant short or long-term impacts are expected. Cultural resources that occur in the Open Ocean Area are generally deeply submerged and inherently protected from the effect of all types of activity. Activities that occur on the Hawaiian Islands are within designated areas and sensitive areas are avoided. Any potential for impacts on cultural resources are avoided through compliance with standard operating procedures.

Mitigation measures are site and installation specific. These measures, where applicable, include minimizing the potential for debris to fall in the vicinity of Necker and Nihoa Islands, within program requirements. Mitigation measures also include avoiding training or construction in areas with known cultural resources; monitoring all ground-disturbing activities and construction in medium and high sensitivity archaeological areas; providing briefings about cultural resources to project personnel; spraying water on vegetation in the immediate areas of a launch vehicle before the launch; using open spray nozzles when possible to minimize erosion damage; conducting post-burn archaeological surveys; and implementing a data recovery, research and documentation program. Other mitigation measures include ceasing all activities in the vicinity if unanticipated cultural resources are encountered (particularly human remains), and then following appropriate military branch protocols.

**6. Geology and Soils:** Potential geology and soils impacts from training and RDT&E activities have been analyzed, and no significant short or long-term impacts are expected. Training activities will continue to have minimal direct impacts on the beach and inland areas, and soils are not being permanently affected. Mitigation measures include minimizing the impact on Kaula by directing targeting to the southeastern tip of the island and using non-explosive rounds.

**7. Training Debris, Hazardous Waste and Hazardous Materials:**



Potential training debris and hazardous wastes from training and RDT&E activities have been analyzed, and no significant short or long-term impacts are expected. Appropriate plans are in place to manage hazardous materials and waste. Storage and transportation of hazardous materials are conducted in accordance with established Department of Transportation, DoD, and Navy safety procedures. Mitigation measures on the Islands of Kauai and Hawaii include surveying facility areas for asbestos and lead-based paint before undertaking any facility modifications. Mitigation measures at Oahu include restricting training activities in the Naval Defensive Sea Area to vessels owned and operated by military and DoD personnel.

**8. Health and Safety:** Potential health and safety impacts from training and RDT&E activities have been analyzed, and no significant short or long-term impacts are expected with implementation of mitigation measures. Mitigation measures include ensuring that no shipping is located with the hazard range of the longest-range weapon being fired for that event. Mitigation measures at PMRF include developing and implementing the necessary SOPs and range safety requirements to provide safe operations associated with future high-energy laser tests; and taking appropriate remedial procedures before initiating potentially hazardous laser operations. Mitigation measures also include reducing the potential that no shipping is located within the hazard range of the longest-range weapon being fired for that event.

**9. Land Use:** Potential land use impacts from training and RDT&E activities have been analyzed, and no significant short or long-term impacts are expected. Land use is compatible with on-going and proposed training and RDT&E activities. No new mitigation measures have been identified.

**10. Noise:** Potential impacts from sound in water have been addressed above. Other potential noise impacts from training and RDT&E activities have been analyzed, and no short or long-term impacts are expected. Notwithstanding, each installation has appropriate plans and protective measures in place regarding management of noise levels.

**11. Socioeconomics:** Potential socioeconomic impacts from training and RDT&E activities have been analyzed, and no significant short or long-term impacts are expected. The proposed action would have beneficial impacts on the economy and community on the Islands of Oahu and Kauai. No new mitigation measures have been identified.

**12. Transportation:** Potential transportation impacts from

training and RDT&E activities have been analyzed, and no significant short or long-term impacts are expected. Transportation of ordnance and liquid propellants is conducted in accordance with established procedures. No new mitigation measures have been identified.

**13. Utilities:** Potential utility impacts from training and RDT&E activities have been analyzed, and no significant short or long-term impacts are expected. Current utility capacity meets demands. No new mitigation measures have been identified.

**14. Water Resources:** Potential water resources impacts from training and RDT&E activities have been analyzed and no significant short or long-term impacts are expected. Compliance with SOPs and policies will continue to minimize impacts. Training activities have minimal impact on beach and inland areas, and surface drainage is not permanently affected. Emissions from launches and exercises do not significantly affect water resources. No new mitigation measures have been identified.

**15. Cumulative Impacts:** The Final EIS/OEIS analyzed cumulative impacts associated with implementation of Navy-sponsored activities and other non-Navy activities in the region. The analysis of cumulative impacts considered the effects of the proposed action in combination with other past, present, and reasonably foreseeable future actions taking place in the project area, regardless of what agency or person undertakes these actions. The cumulative project list included over 140 federal, state, and local projects ranging from minor construction to major infrastructure projects, as well as various military training projects. Other activities included commercial fishing, commercial and recreational vessel traffic, coastal development activities, environmental contamination and biotoxins, and scientific research permits. Potential cumulative impacts resulting from the analyzed relevant projects combined with the proposed action addressed in the Final EIS/OEIS were determined to be less than significant.

## **COMPLIANCE WITH ENVIRONMENTAL LAW**

### **1. Marine Mammal Protection Act**

In support of the proposed action, on July 13, 2007 the Navy applied for an authorization pursuant to Section 101(a)(5)(A) of the MMPA. On July 26, 2007, NMFS deemed the Navy's request adequate and complete. After the application was reviewed by NMFS, a Notice of Receipt of Application was published in the Federal Register. Publication of the Notice of Receipt of Application initiated the 30-day public comment period, during which anyone could obtain a copy of the application by contacting NMFS. NMFS

will consider and address comments received during the public comment period on the Proposed Rule. NMFS has advised the Navy that it will issue the MMPA Final Rule, if appropriate, during the Fourth Quarter of Calendar Year 2008.

Pending issuance by NMFS of the MMPA Final Rule and associated LOA, the Navy's testing and training with MFA sonar will be covered by the current MMPA national defense exemption issued by the Deputy Secretary of Defense on January 23, 2007. The Deputy Secretary of Defense exempted all military readiness activities employing MFA sonar or IEER sonobuoys from compliance with the requirements of the MMPA for two years, or until the Navy receives an incidental take authorization from NMFS for such activities, whichever is earliest. This exemption is limited to major exercises or training and RDT&E activities within established OPAREAs or established DoD maritime ranges.

While the national defense exemption remains applicable (until an MMPA authorization is issued for the range complex), the Navy will continue to employ the marine mammal mitigation measures outlined in Chapter 6.0 of the Final EIS/OEIS as summarized by resource area in the Environmental Impacts section above, and the Biological Opinions for the USWEX RIMPAC 2008 and USWEX major exercises to protect marine mammals while training with the use of MFA and HFA sonar. These measures include safety zones around ships and trained lookouts based on coordination of science-based measures with NMFS. Additional measures that may be required as a result of the MMPA authorization would be implemented once authorization is received.

## ***2. Endangered Species Act***

**a. NMFS:** As part of the environmental documentation for the Final EIS/OEIS, and as an MMPA permit applicant, the Navy entered into early consultation procedures with NMFS regarding the potential effects on ESA-listed species from the conduct of the activities outlined in the Final EIS/OEIS. In accordance with 50 CFR § 402.11, after reviewing the current status of the endangered blue whale, fin whale, humpback whale, sei whale, sperm whale, Hawaiian monk seal, green sea turtle, leatherback sea turtle, loggerhead sea turtle, and Pacific ridley sea turtle, the environmental baseline for the action area, the effects of the proposed research program, and the cumulative effects, prior to the issuance of this ROD, NMFS issued on June 26, 2008, a preliminary Biological Opinion concluding that the Navy's proposal to conduct major training exercises, unit-level and intermediate-level training activities, and RDT&E activities in the HRC each year for a five-year period beginning in January 2009 are likely to adversely affect but are not likely to jeopardize the continued existence of these threatened and endangered species under NMFS's jurisdiction. Critical habitat that has been designated for green,

hawkbill, and leatherback sea turtles, and other listed species is outside of the area of the proposed activities and would not be affected by those activities. This ROD is supported by the preliminary Biological Opinion for the HRC.

Pending issuance by NMFS of the Biological Opinion and associated Incidental Take Statement for the HRC that covers all training and RDT&E activities as analyzed in the Final EIS/OEIS, the Navy's testing and training with MFA and HFA sonar and in-water explosives on the HRC will be covered by two documents: (1) the Biological Opinion issued by NMFS on January 23, 2007, for the Navy's USWEXs on the HRC; (2) the Biological Opinion issued on June 21, 2008 (as amended on June, 24. 2008) for the 2008 RIMPAC major exercise and all other MFA and HFA sonar and underwater detonations use on the HRC not covered by the September 26, 2007 USWEX Amended Biological Opinion. NMFS advised the Navy that it will issue the ESA Final Biological Opinion for the HRC, including the associated Incidental Take Statement, in the Fourth Quarter of Calendar Year 2008.

**b. U.S. Fish and Wildlife Service (USFWS):** The Navy has been actively engaged in informal consultation with the Pacific Region USFWS regarding the potential effects on ESA-listed species from the conduct of the activities outlined in the Final EIS/OEIS. By letter of June 13, 2008, USFWS concluded its informal Section 7 consultation by concurring that listed species (except for the Newell's shearwater and Hawaiian dark-rumped petrels discussed below) at all Navy action areas, may be affected but are not likely to be adversely affected by activities set forth in the Final EIS/OEIS, nor will critical habitat be adversely affected or destroyed.

During consultations, USFWS had inquired about antennas at PMRF and interactions with Newell's shearwater and Hawaiian dark-rumped petrels. After discussions regarding the potential for adverse impacts from certain antennas on Newell's shearwaters and Hawaiian dark-rumped petrels the Navy conducted additional research and analysis. The Navy thoroughly reviewed data and documents from PMRF Natural Resources staff, the State of Hawaii Department of Land and Natural Resources, the U.S. Department of Agriculture, and Kauai Endangered Seabird Recovery Project, as well as several publications provided by the USFWS. Based upon the information reviewed, the Navy determined that there will be no effect to Newell's shearwaters or Hawaiian dark-rumped petrels from the proposed action. This determination was based on: (1) the location of the facility in relationship to recognized and documented flyways; (2) the locations of historic mortalities for these species associated with utility lines and high-intensity, unshielded lighting as reported in the cited and published references; (3) available Save Our Shearwater data and personal communication with cognizant program officials on Kauai; (4) the lack of observed Newell's shearwater and Hawaiian dark-rumped

petrel carcasses on the Island of Kauai at antenna facilities at PMRF, Kokee, or Makaha Ridge; (5) the absence of any proposed tower construction; and (6) the lack of any observed threatened or endangered seabird carcasses in proximity to the overhead power lines near internal roadways anywhere at PMRF. Concurrence from USFWS, therefore, was neither requested nor required for the Newell's shearwater and Hawaiian dark-rumped petrel.

In accordance with the mitigation measures adopted for PMRF's Enhanced Capability EIS (U.S. Department of the Navy, 1998a), night lighting is presently shielded to the extent practical to minimize potential effects on night-flying birds. The Navy will monitor for fallout of Newell's shearwaters and Hawaiian dark-rumped petrels, from mid-October to mid-November. Monitoring will occur at antennas, towers, base housing, and the active runway at Barking Sands.

### **3. Coastal Zone Management Act**

The Navy has determined that implementation of the proposed action and its alternatives are consistent to the maximum extent practicable with the enforceable policies of the State's Coastal Zone Management (CZM) Program, based on an evaluation in light of the applicable enforceable policies of the State of Hawaii's CZM Program. The Navy's coastal consistency determination of February 22, 2008 was based on analysis contained in the July 2007 Draft HRC EIS/OEIS and the February 2008 Supplement to the Draft EIS/OEIS. The State of Hawaii Office of Planning requested further information on April 18, 2008. The Navy provided additional consistency review information on May 12, 2008 pursuant to the State's request of April 18, 2008, including the mitigation section of the Final EIS/OEIS (Chapter 6). On May 22, 2008, the State Office of Planning completed its review of the Navy's coastal consistency determination. The State concurred in part and objected in part to the Navy's coastal consistency determination. The Navy responded to the Office of Planning by letter on June 20, 2008, addressing the State's conditions and objections, and asserting the Navy's intent to proceed with the proposed activities. A summary of the State's review of May 22, 2008, and the Navy's response of June 20, 2008 is set forth below.

**a. MFA Sonar Conditions:** The State conditionally concurred with the Navy's use of MFA sonar. The Navy disagreed that Hawaii's program contains enforceable policies that permit the State of Hawaii to regulate the Navy's taking of marine mammal species beyond the MMPA and ESA and objected to the conditions the State placed on the Navy's use of MFA sonar. The State's first condition required that the received level of MFA sonar be no higher than 145 dB re 1  $\mu$ Pa within 3 nm seaward from the shore to ensure the least likelihood of a "take" Within the State's coastal zone. The State's second condition required the Navy to follow the conditions prescribed by the U.S. District Court for the District of Hawaii in

litigation regarding the Navy's USWEX. As a basis for imposing these conditions, the State relied upon a Hawaii state statute and regulation regarding endangered and indigenous species. These conditions create a significant conflict with the Navy's obligations under Title 10 of the U.S. Code to provide trained and ready forces. The overly broad position apparently asserted by the State could make it impossible for the Navy to continue to maintain the ships, submarines, and aircraft currently homeported in Hawaii that are equipped with MFA sonar, as acceptance of this condition would prohibit effective training for these units by requiring that all MFA sonar activities covered by the HRC Final EIS/OEIS be conducted no closer than approximately 20 nm from any shoreline.

The State's reliance on these provisions of state law to impose conditions on the Navy's "take" of listed marine mammal species raised the issue of whether section 109(a) of the MMPA preempts these state law provisions to the extent that they relate to marine mammals, and, if such laws are preempted by the MMPA, whether they are enforceable under the Coastal Zone Management Act (CZMA).

After being asked by the Navy, the National Oceanic and Atmospheric Administration (NOAA), the agency responsible for coastal management issues as well as authorizations for the taking of the marine mammal species at issue, determined that enforcement of the Hawaii state laws and regulations is, in this context, preempted by section 109(a) of the MMPA, insofar as these state laws and regulations relate to the taking of marine mammals, and, to the extent any state requirement is preempted by the MMPA, it is not enforceable under the CZMA.

Section 109(a) of the MMPA provides that "[n]o state may enforce . . . any State law or regulation . . . relating to the taking of any species . . . of marine mammal" within the State unless the Secretary of Commerce has transferred management authority for that species to the State. The plain language of this provision is unambiguous and preempts all state statutes and regulations related to the taking of marine mammals. Therefore, as a general matter, unless the Secretary of Commerce has transferred MMPA management authority for marine mammal species to a particular state, any state law that prohibits take of marine mammals constitutes a state law "relating to" the taking of marine mammals and, to that extent, is preempted.

In this instance, the Secretary of Commerce has not transferred MMPA management authority over any marine mammal species to the State of Hawaii. Although NOAA entered into a cooperative agreement with the Hawaii Department of Land and Natural Resources on August 29, 2006, per Section 6 of the ESA, this agreement does not explicitly recognize the state's authority to establish and enforce protections for listed marine mammals; instead the agreement grants only limited authority, primarily providing a vehicle for making federal funding available to Hawaii to conserve listed species. Therefore, enforcement of a Hawaii state law that prohibits take of federally-listed species is

preempted under the MMPA, to the extent it relates to the taking of marine mammals.

A state statute that is preempted by federal law is not enforceable within the meaning of the CZMA. Moreover, the approval of a state program under the CZMA does not negate the preemptive effect of federal law. Therefore, according to NOAA, Hawaii's coastal management program contains no "enforceable policy" that would permit the State to prohibit the taking of marine mammals.

In addition, the Navy believes that Hawaii's imposition of the conditions prescribed by the U.S. District Court for the District of Hawaii in litigation regarding the Navy's USWEX is inappropriate. First, the Court's measures are related to litigation focused on the Navy's reliance on an environmental assessment, an assessment that is superseded by this ROD. Second, Navy is required to comply with all U.S. District Court for the District of Hawaii court-ordered measures and conditions during Undersea Warfare Exercises only, which have been imposed pursuant to preliminary rulings and are subject to being modified or vacated. Third, Hawaii is placing this condition on the Navy "within the HRC," an area that greatly exceeds the breadth of the coastal zone. Fourth, Hawaii cannot determine now whether future court ordered measures would be required to ensure consistency with Hawaii's enforceable policies. Fifth, the Navy's compliance with the current court-ordered coastal exclusion zone would be inconsistent with Hawaii's 145 dB threshold. Finally, Hawaii has not provided the Navy with an explanation as required by 15 C.F.R. § 930.4(a)(1) (conditional concurrences) as to why the District Court conditions are necessary to ensure consistency with specific enforceable policies of the management program.

**b. Navy Activities at the Island of Kaula:** The State indicated that the Navy should develop a monitoring plan per the State's concurrence with a 1999 Navy coastal consistency determination. The Navy is preparing a monitoring plan and will provide it to the State. The Navy conducts inert bombing and aerial gunnery in a small, discrete area (about 8 percent) of the island. The bird populations are so robust on the Island of Kaula that it is extremely risky to fly close to the island due to hazards presented by bird strikes. Based on the low impact of Navy's activities, the short temporal use of the Island of Kaula (less than 10 percent of the year for major exercises, see HRC EIS/OEIS 4-312), it is Navy's position that the proposed activities at Kaula will be consistent to the maximum extent practicable with Hawaii's enforceable policies.

**c. Directed Energy Facility and Operations:** In the State's letter of May 22, 2008, it objected to the proposed Directed Energy Facility at PMRF; however, it acknowledged the Navy's commitment that "[s]hould the Airborne Laser program decide to perform testing

at PMRF, separate environmental documentation would be required to analyze potential impacts." As stated in its response of June 20, 2008, the Navy committed to consult with the State prior to conducting this activity.

**d. The Kingfisher Underwater Training Area:** The Navy disagrees with the Office of Planning's conditional concurrence regarding the Kingfisher Underwater Training Area for several reasons. First, the Kingfisher underwater training area does not meet the State's definition of marine activities: "Marine activities" means ocean thermal energy conversion (OTEC); mariculture; and other energy or water research, scientific, and educational activities in, on, or under state marine waters, which are exclusive, non-transient in nature, and which occupy a discrete area of state marine waters."

Also, the leasing procedures apply to persons. Federal agencies fall under a stand-alone definition of "agency" under State law. Leases may not be issued to private persons pursuant to State law in areas designated as important for national defense purposes: "The board shall not lease state marine waters when existing programs of the department, such as the marine life conservation district program, shoreline fisheries management area program, or the natural area reserve program will suffer adverse impacts as a consequence of the proposed activities; provided that no lease shall be awarded within state marine waters designated as being necessary for national defense purposes, as determined by the department in consultation with the appropriate federal agencies."

In short, State law does not require the Navy to lease submerged lands for its proposed underwater training area, in fact, that law permits national defense uses.

**e. Portable Undersea Tracking Range.** The Office of Planning concurred with the Navy's planned activities relating to the Portable Undersea Tracking Range.

**f. SINKEXs.** Because SINKEXs occur a minimum distance of 50 nm from land and involve an environmentally remediated ship hull, there are no indirect or direct coastal effects associated with this activity. Even so, the Navy intends to comply with the representations made in the Final EIS/OEIS, including the analysis of Essential Fish Habitat.

**g. Cumulative Effects Monitoring:** The State consistency concurrence included the condition that the Navy's proposed Integrated Comprehensive Monitoring Program (ICMP) for cumulative effects of MFA sonar within the HRC be completed and submitted to the State by May 22, 2009. By letter of June 20, 2008, the Navy concurred.

**h. Other Activities:** The State concurred with the Navy's consistency determination for the conduct of Navy training



activities at Pohakuloa Training Area (PTA). In addition, the State provided a general consistency concurrence for all other HRC activities.

**RESPONSES TO COMMENTS ON THE FINAL EIS/OEIS:** The Navy reviewed and considered all comments that were received during the 30-day comment period following the issuance of the Notice of Availability of the Final EIS. The comments summarized here represent the major substantive ones that: (1) were not previously addressed in the Final EIS/OEIS based on comments received on the Draft EIS/OEIS or the Supplement to the Draft EIS/OEIS; (2) addressed a change in the Final EIS/OEIS from the Draft EIS/OEIS or the Supplement to the Draft EIS/OEIS; and (3) were received by June 9, 2008. A total of 47 comment letters or emails were received on the Final EIS/OEIS. These included 43 that were similar or identical to comments received on the Draft EIS/OEIS or the Supplement to the Draft EIS/OEIS, and therefore were previously considered and addressed in the Final EIS/OEIS. The majority of the comments received (approximately 82 percent) related to land use issues and the Navy's compliance with the CZMA, the Navy's impact on marine mammals, and finally, the on-going and planned future activities in the HRC. The remainder of the comments related to airspace, alternatives considered under NEPA, cultural resources, hazardous waste, cumulative impacts, and mitigation measures implemented by the Navy to minimize the environmental impacts caused by its activities.

**1. Criticism of the Two Risk Function Curves:** The Navy received several comments on the Final EIS/OEIS critical of the risk function curves specified by NMFS. Such comments from various environmental organizations referenced a critique by Dr. David Bain of the risk function criteria specified by NMFS.<sup>7</sup> Dr. Bain's critique is directed towards the risk function methodology for evaluating behavioral effects which was set forth in the Supplement to the Draft EIS/OEIS. Therefore, Dr. Bain's critique should have been submitted during the 45-day comment period on the Supplement to the Draft EIS/OEIS, which concluded on April 7, 2008.

Although these types of comments are untimely, an agency retains sole discretion to determine whether to consider the comments in its substantive decision. In exercising this discretion, the Navy has considered comments criticizing the risk function and Dr. Bain's referenced critique. The Navy's analysis of Dr. Bain's critique and other comments regarding the risk function is set forth below.

In reviewing whether the parameters employed were based upon the best available science, the implications in the uncertainty in

---

<sup>7</sup> Dr. Bain's unpublished paper is titled, "Critique of the Risk Assessment Model Employed to Calculate Takes in the Hawaii Range Complex Supplemental Draft Environmental Impact Statement".

the values, and biases and limitations in the risk function criteria, Dr. Bain asserted that data were incorrectly interpreted by NMFS when calculating parameter values, resulting in a model that underestimates takes. Of primary importance to Dr. Bain was the point that the risk function curves specified by NMFS do not account for a wide range of frequencies from a variety of sources (e.g., motor boats, seismic survey activities, banging on a pipe). In fact, all of Dr. Bain's comments concerning "data sets not considered" by NMFS relate to sound sources that are either higher or lower in frequency than MFA sonar, are contextually different (such as those presented in whale watch vessel disturbances or oil industry activities), or are relatively continuous in nature as compared to intermittent sonar pings. These sounds from data sets not considered have no relation to the frequency or duration of a typical Navy MFA sonar as described in the Final EIS/OEIS.

As discussed above and in the Final EIS/OEIS, NMFS selected data sets that were relevant to MFA sonar sources and selected parameters accordingly. In order to satisfy Dr. Bain's concern that a risk function must be inherently precautionary, NMFS could have selected data sets and developed parameters derived from a wide variety of sources across the entire spectrum of sound frequencies in addition to or as substitutes for those that best represent the Navy's MFA sonar. The net result, however, would have been a risk function that captures a host of behavioral responses beyond those that are biologically significant as contemplated by the definition of Level B harassment under the MMPA applicable to military readiness activities. Dr. Bain's specific criticisms and the Navy's responses are provided below.

**a. Response to Comments on the Final EIS/OEIS Relating to Scientific Methodology:**

***(1) Comment 1: Data were incorrectly interpreted in developing the Risk Function. Errors included failure to recognize the difference between the mathematical basement value and the biological basement value "where the likelihood of observed and predicted takes becomes non-negligible."***

**Response:** Given the results of the modeling and the low marine mammal densities in HRC, having a lower basement value would not result in any significant number of additional takes. This was demonstrated in the Final EIS/OEIS (Table 4.1.2.4.9.7-1; page 4-90) showing that less than 1 percent of the predicted number of takes resulted from exposures below 140 dB. Accordingly, while lowering the basement value from 120 dB to something "far lower than 110 dB" would change the risk function curve, it is not likely to result in any appreciable increase in the number of takes. In addition, lowering the basement value below the present 120 dB would, during the approximate six month period during the year when humpback whales are present, involve modeling for impacts occurring

below the naturally occurring ambient background noise present in the HRC due mainly to humpback whale vocalizations as discussed in the Final EIS/OEIS (page 4-73). The commenter further suggests that the criteria used to establish the risk function parameters should reflect the biological basement where any reaction is detectable. The MMPA did not intend to regulate any and all marine mammal behavioral reactions as suggested by the comment. Congress's intent is reflected in the 2003 amendments to the MMPA which re-defined harassment as applied to military readiness activities: "(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)." Therefore, Congress, by amending the MMPA, specifically did not intend to regulate any and all behavioral reactions as the comment suggests. NMFS, as the regulator, specified the data sets and parameters for use in the risk function analysis.

**(2) Comment 2: Data were incorrectly interpreted in developing the Risk Function. Errors included presenting a Risk Function K value having a 100 percent probability of a take as value resulting in 50 percent probability.**

**Response:** NMFS, as a cooperating agency and in its role as the MMPA regulator, reviewed all available applicable data and determined there were specific data from three data sets that should be used to develop the criteria. NMFS then applied the risk function to predict exposures that resulted in exposures that NMFS may classify as harassment. (This is described in the Final EIS/OEIS at pages 4-77 to 4-78). NMFS developed two risk curves based on the Feller adaptive risk function, one for odontocetes and pinnipeds and one for mysticetes, with input parameters of B=120dB, K=45, 99 percent point = 195 dB, 50 percent point = 165 dB. Only data sets with continuous, low frequency sound sources (drilling, aircraft or machinery) provided a K value that would have approached a 100 percent probability of a response but these are not applicable to MFA sonar.

**(3) Comment 3: Using data from captive marine mammals is problematic.**

**Response:** This was specifically addressed in the Final EIS/OEIS (page 4-85) and considered as part of this decision-making process. Additional data sets from wild animals were incorporated into development of the risk function parameters specifically to address this concern and these were presented in

Section 4.1.2.4.9.4 of the Final EIS/OEIS. Additionally, as discussed in Domjan 1998, and as cited in the Final EIS/OEIS, animals in captivity can be more or less sensitive than those found in the wild. It does not follow, therefore, that the risk function modeling underestimates takes.

**(4) Comment 4: The model underestimates takes because of uncertainty arising from "inter-specific variation" or from, "broad confidence intervals."**

**Response:** The risk function methodology assumes variations in responses within the species and was chosen specifically to account for uncertainties and the limitations in available data. NMFS considered all available data sets and, as discussed above, made a determination as to the best data currently available. While the data sets have limitations, they constitute the best available science.

**(5) Comment 5: The model has limitations. It does not account for "social factors", and is likely to underestimate takes.**

**Response:** The commenter was concerned that if one animal is "taken" and leaves an area then the whole pod would likely follow. As explained in Appendix J to the Final EIS/OEIS, the model does not operate on the basis of an individual animal but quantifies the exposures NMFS may classify as takes based on the summation of fractional marine mammal densities. Because the model does not consider the many mitigation measures that the Navy utilizes when it is using MFA sonar, to include MFA sonar power down and power off requirements should mammals be spotted within certain distances of the ship, if anything, it overestimates the amount of takes. This is discussed further in Comment 7 below.

**(6) Comment 6: Takes occur at greater distances than predicted by the model resulting in greater duration of exposure, more often, and greater cumulative effects. Corrections need to be made for bias, and greater correction for species with less data.**

**Response:** Modeling accounts for exposures NMFS may classify as takes at distances up to 125 kilometers as described in the Final EIS/OEIS (Appendix J, Table J-50). As discussed in Appendix J of the Final EIS/OEIS, the HRC OPAREA contains a total of 32 distinct environmental provinces with specific sound propagation characteristics. These represent the various combinations of nine bathymetry provinces, three Sound Velocity Profile provinces, and six high frequency bottom loss classes. Based on these different provinces, the Navy identified nine different representative sonar modeling areas to fully encompass sound attenuation within the HRC. Within these provinces, sound

attenuated down to 120 dB at distances out to about 125 kilometers (Appendix J, Table J-50). Using these sound propagation characteristics, the risk function modeling for the HRC resulted in less than 1 percent of the exposures that NMFS may classify as a take occurring between 120 dB and 140 dB (Appendix J, Figure J-25). Risk function data sets and the parameters, such as the basemnt values, were chosen to account for uncertainties and for species for which there was less or no data regarding hearing thresholds. The area encompassed by this sound propagation, as determined by NMFS for exposures that may constitute harassment, avoids a bias toward underestimation because the risk function parameters were designed with this in mind.

**(7) Comment 7: The greater range at which takes would occur requires more careful consideration of habitat-specific risks and fundamentally different approaches to mitigation.**

**Response:** Section 6.2.1 of the Final EIS/OEIS evaluates alternative or additional mitigations, specifically, as they relate to potential mitigation approaches. The examples of the fundamentally different approaches noted in the comment were addressed in this section of the Final EIS/OEIS. In addition, NMFS has identified general goals of mitigation measures. These goals include avoidance of death or injury, a reduction in the number of marine mammals exposed to received levels when these are expected to result in takes, a reduction in the number of times marine mammals are exposed when these are expected to result in takes, a reduction in the intensity of exposures that are expected to result in takes, and a reduction in adverse effects to marine mammal habitat.

As discussed below, NMFS and Navy have identified mitigation measures that are practicable and reasonably effective. For example, the safety zones reduce the likelihood of physiological harm, the number of marine mammals exposed, and the intensity of those exposures. The Navy has determined that mitigation measures will likely prevent animals from being exposed to the loudest sonar sounds or explosive effects that could potentially result in TTS or PTS and more intense behavioral reactions (Final EIS/OEIS, Section 4.1.2.4, page 4-149). Mitigation measures that are practicable involve those that reduce direct physiological effects within the TTS and PTS thresholds. The Navy has selected an alternative which maintains a current level of sonar use within the HRC.

**(8) Comment 8: In addition, the Navy should prepare a Supplement to the HRC Final EIS/OEIS.**

**Response:** The Navy has considered comments criticizing the risk function and Dr. Bain's referenced critique, and has determined that they present no significant new information

relevant to environmental concerns and bearing on the proposed action or its impacts [40 CFR 1502.9(c) (1) (ii)], nor do they present any information that has not previously been considered or that would lead the Navy to find that a Supplement to the FEIS/OEIS is warranted.

**(9) Comment 9:** *Various comments recommend the B parameter and the data used should be revised given that, ". . . 120 dB re 1uPa has broadly been found as the value at which 50 percent of individuals respond to noise . . ." Elsewhere (in reference to response studies), Dr. Bain states that ". . . many looked at changes in migration routes and found that 50 percent of migrating whales changed course to remain outside the 120 dB re 1uPa contour (citing to Malme et al. 1983, 1984);" and that ". . . mysticetes exposed to a variety of sounds associated with the oil industry, typically 50 percent exhibited responses at 120 dB re 1uPa."*

**Response:** These comments are factually inaccurate. The single citation provided for the repeated assertion that 50 percent of marine mammals will react to 120 db re 1uPa is Malme et al. (1983, 1984). Malme et al. (1983, 1984) in fact indicated that for migrating whales, a 50-percent probability of response occurred at 170 dB for a continuous, low frequency sound source that is very different from MFA sonar.

**(10) Comment 10:** *Under the headings "Introduction", "Unconditional Effects", and "Conditional Effects", various comments allege that there is the potential for some Level B exposures (TTS or risk function) to potentially result in injury and that the Navy's analysis, therefore, underestimates the number of Level A injurious takes that may occur.*

**Response:** This issue was recognized and discussed in the Final EIS/OEIS (Section 4.1.2.4.4, pages 4-54 to 4-55). In prior rulemakings, NMFS established that exposures resulting in Level A and B harassment cannot be considered to overlap, otherwise the regulatory distinction between the two criteria would be lost and the required quantification of takes would be ambiguous. To facilitate the regulatory process, the Final EIS/OEIS maintained a clear and distinct division between Level A and Level B Harassment as required by NMFS.

**(11) Comment 11:** *Various comments state, "Population level effects of Level A on populations are relatively easy to assess, as individuals that are killed are obviously removed from the population, and those that are injured are more likely to die whenever the population is next exposed to stress."*

**Response:** The Navy agrees with the comment and notes that the recently documented increase in the number of endangered humpback whales in the HRC, where decades of MFA sonar training and RDT&E activities have occurred, strongly suggests that there is an absence of Level A effects from those activities.

**(12) Comment 12:** *These comments argue that there are additional datasets, including datasets not considered by NMFS and the Navy that should have been considered. Not having done so resulted in the model underestimating takes.*

**Response:** The data sources these comments present as requiring such consideration involve contexts that are neither applicable to the proposed actions nor the sound exposures resulting from those actions. For instance, the comments' citation to Lasseau et al. involve disturbance to a small pod of dolphins exposed to 8,500 whale-watching opportunities annually. This is nothing like the type or frequency of action that is proposed by the Navy for the HRC. In a similar manner, the example from noise used in drive fisheries is not applicable to Navy training. Navy training involving the use of active sonar typically occurs in situations where the ships are located miles apart, the sound is intermittent, and the training does not involve surrounding the marine mammals at close proximity. Furthermore, suggestions that effects from acoustic harassment devices and acoustic deterrent devices, which are relatively continuous, high frequency sound sources (unlike MFA sonar) and are specifically designed to exclude marine mammals from habitat, are also fundamentally different from the use of MFA sonar. Finally, reactions to airguns used in seismic research or other activities associated with the oil industry are also not applicable to MFA sonar, since the sound or noise source, its frequency, source level, and manner of use is fundamentally different.

**(13) Comment 13:** *The comments present a notional set of values in tabular form to be considered as sensitivity analysis in evaluation of the risk function parameters and datasets.*

**Response:** The values suggested as parameters, the results of which are presented in the above mentioned tables, are not reasonable given that environmental conditions in the HRC have ambient noise (i.e., naturally occurring background noise) levels at or above those suggested by the comments as behavioral harassment "B" basement values. The use of these results for examination of potential uncertainty and bias in the risk function as presented in the Final EIS/OEIS is, therefore, not informative or applicable in the HRC context.

**(14) Harbor porpoise considerations:** These same comments also reflect a misunderstanding of how the criterion specific to harbor porpoises is applied in other documents under preparation by the Navy and available for public review and comment (e.g., the Atlantic Fleet Active Sonar Training [AFAST] Draft EIS/OEIS<sup>8</sup>). The HRC Final EIS/OEIS does not discuss the harbor porpoise because the species is not present in the HRC. This omission led the commentators to conclude mistakenly that the risk function for odontocetes specified by NMFS and used by the Navy in its analysis of MFA sonar activities within the HRC was applied incorrectly to or failed to account for harbor porpoises. In fact, recognizing the particular sensitivity of this species, NMFS has specified the use of a separate step function using a received level of 120 dB. Application of this step function in the Navy's analysis of MFA sonar activities within the HRC is unnecessary due to the absence of the species.

**2. Other Comments:** There were a several comments that were either considered substantive and were not previously raised in comments on the Draft EIS/OEIS or the Supplement to the Draft EIS/OEIS. Such comments relating to the scientific methodology used to assess effects on marine mammals were addressed above. The remaining comments are as follows:

**a. National Park Service (NPS):**

**(1) Comment 1: NPS cited to a lack of a cumulative effects discussion of overflights of national park service controlled areas in Hawaii and the potential noise and biological resources effects on them.**

**Response:** The overflight activities associated with the proposed actions occur in existing FAA approved corridors at existing approved altitudes. No new flight corridors or new altitudes are proposed in the Final EIS/OEIS. There is no proposed action that would add flight routes over NPS areas. Therefore, there would be no additional or cumulative effects on the resources or areas.

**(2) Comment 2: The commenter asked if the elimination of computer simulator training cited in the Executive Summary would increase the level and frequency of current flight training activities.**

**Response:** There is no proposed action for elimination of computer simulator training for flight operations

---

<sup>8</sup> The Navy is using the risk function curves specified by NMFS in each EIS/OEIS it is preparing which analyzes MFA and HFA sonar.



that would increase current flight training activities. Flight simulator training remains an important part in training the Navy's aviators.

**(3) Comment 3: NPS asked whether the number of flights using special use airspace and Military Training Routes (MTRs) near national park areas and the related noise analyses were incorporated into the Final EIS/OEIS.**

**Response:** The noise analysis in the Final EIS/OEIS did incorporate the number of flights and MTRs. Section 4.6 of the Final EIS/OEIS incorporated the noise analyses for proposed overflights for areas of the Island of Hawaii and included the national park areas where applicable. The flight corridors discussed in the EIS are existing FAA approved corridors and designated altitudes. No new flight corridors or new altitudes are proposed in the Final EIS/OEIS.

**b. Other Commenters:**

**(1) Comment 1: The commenter asserted that the Navy did not adequately look at alternatives to what it is doing, which is required under the law, stating that NEPA demands that the Navy "rigorously explore and objectively evaluate all reasonable alternatives." The commenter believed that mere proclamations of national security are insufficient, and it was necessary for the Navy to establish that MFA and HFA sonar actually meet the needs of the Navy.**

**Response:** The Navy is required to evaluate reasonable alternatives to accomplish its mission (40 CFR 1502.14). The Navy did so in Chapter 2 by analyzing four alternatives in the Final EIS/OEIS. In Section 2.2.1.1, the Navy considered reducing or eliminating training in the HRC, which includes the use of active sonar. This alternative was eliminated because it does not meet the purpose and need of the proposed action. As described in Section 1.3.2 of the Final EIS/OEIS, the Navy is required to maintain combat-ready naval forces and protect its personnel. Naval Strike Groups must demonstrate the ability to integrate as many as eight functional warfare areas simultaneously. One of these critical areas includes antisubmarine warfare. Based on current technology, active sonar is the most effective means of detecting submarines and mines at distances from Navy ships where the threat they pose can be neutralized or avoided. The Navy currently employs low frequency, mid frequency and high frequency active sonar systems as critical sensors to identify and defeat these subsurface threats. Navy would be unable to accomplish these requirements without the use of active sonar.

**(2) Comment 2:** *The Navy did not adequately address cumulative effects over time. There are non-auditory noise impacts, the impacts of masking or cumulative and synergistic effects of several noise sources and long-term impacts on marine mammals. Any of these issues could result in not only individual marine mammals being affected but populations of them being adversely affected.*

**Response:** Chapter 5 of the Final EIS/OEIS (pages 5-18 to 5-45) addressed the issues of non-auditory noise impacts, the impacts of masking or cumulative and synergistic effects of several noise sources and long-term impacts on marine mammals raised in this comment.

**(3) Comment 3:** *The Navy's argument that there will be no Level A harm to marine mammals below 215 dB is not supported by the best available scientific evidence on received levels of sonar which can result in the death of whales and dolphins. The commenter cited to an incident in the Bahamas in 2000 and another incident in the Mediterranean Sea prior to the Bahamas mass-stranding.*

**Response:** As discussed in the Final EIS/OEIS and above, NMFS, exercising its judgment as the regulator, identified the best available science. The two instances described by the commenter occurred in a bathymetric context that is much different than that found in Hawaii. In the Bahamas, the Navy was training where there was a confluence of five factors. As discussed above, those five factors do not exist in the aggregate in Hawaii. It is also worth noting that these mitigation measures were not in existence at the time of the Bahamas mass-stranding. Lastly, as described in the Final EIS/OEIS (page 4-54 to 4-55), Level A and Level B Harassment cannot overlap; therefore, the Navy only considered direct physiological harm as Level A Harassment consistent with NMFS's regulatory interpretation.

**CONCLUSIONS:** In determining whether and how to enhance the capabilities of the HRC, the following factors were considered: the Congressional mandates in U.S.C. Title 10, Section 5062; existing assets and capabilities of the HRC; the Navy and DoD and other federal agencies' operational, testing, and training requirements; environmental impact; costs associated with construction of facilities, the training and maintenance of ships and aircraft, and training of personnel; and comments received during the EIS/OEIS process.

After carefully weighing all of these factors and analyzing the data presented in the Final EIS/OEIS, I have determined that the Preferred Alternative best meets the requirements for the Navy training and DoD's or other federal agencies' RDT&E activities.

The Preferred Alternative would best avoid increases in potential effects to marine mammals above baseline levels of MFA and HFA sonar hours associated with ASW training in the HRC, while still allowing the Navy and other federal agencies to meet future non-ASW training and RDT&E mission objectives. In addition to the specific mitigation measures identified in this ROD, the Department of Navy will continue to review its operational procedures and coordinate with other federal, state, and local entities as necessary to determine if any additional mitigation measures are necessary, feasible and practicable.

JUN 26 2008

---

Date



---

BJ Penn

Assistant Secretary  
of the Navy  
(Installations and Environment)