

**DEPARTMENT OF DEFENSE**

**Department of the Navy**

**Record of Decision for the Southern California 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, emerging, and future military readiness activities in the Southern California (SOCAL) Range Complex, to San Clemente Island (SCI), as necessary to achieve and sustain Fleet readiness, including Navy training; Department of Defense (DoD) or other federal agency research, development, testing, and evaluation (RDT&E) activities; and investment in range resources and range infrastructure, all in furtherance of the Navy's statutory obligations under Title 10 of the United States Code governing the roles and responsibilities of the Navy.

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**INTRODUCTORY STATEMENT:** Pursuant to section 4331 et seq. of Title 42 of the U.S. Code (section 101 et seq. 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, emerging, and future military readiness activities in the SOCAL Range Complex, to include SCI, as necessary to achieve and sustain Fleet readiness, including Navy training; DoD or other federal agency RDT&E activities; and investment in range resources and range infrastructure, all in furtherance of the Navy's statutory obligations under Title 10 of the U.S. Code governing the roles and responsibilities of the Navy.

The proposed action responded to the Navy's need to maintain baseline operations at current levels; accommodate future increases in operational training tempo in the SOCAL Range Complex as necessary to support the deployment of naval forces; achieve and sustain readiness in ships and squadrons so that the Navy can quickly surge significant combat power in the event of a national crisis or contingency operation and consistent with the Fleet Readiness Training Plan (F RTP [discussed below]); support the acquisition, testing, training, and introduction into the Fleet of advanced platforms and weapons systems; and implement investments to optimize range capabilities required to adequately support required training. The Navy considered applicable executive orders, including an analysis of the environmental effects of its actions outside the U.S. 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*).

Actions analyzed in the Final Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS) are required to enable the Navy to meet its statutory responsibilities under sections 5013 and 5062 of Title 10 of the U.S. 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 are an integral part of this readiness mandate.

The proposed action will be accomplished as set out in Alternative 2, described in the Final EIS/OEIS as the preferred alternative. Implementation of the preferred alternative could begin immediately. Because of the Navy's Title 10 requirements to organize, train, equip, and maintain combat-ready forces, ongoing training and RDT&E activities within the SOCAL Range Complex will continue at current levels in the event that the preferred alternative is not implemented.

## **1. Overview of the Final EIS/OEIS for the SOCAL Range Complex**

**a. Today's Department of the Navy:** The Navy currently consists of about 330,000 active duty and 121,000 reserve Navy personnel who maintain and operate more than 280 ships and submarines and in excess of 3,700 aircraft. Most of these Sailors and their ships, submarines, and aircraft are based at naval stations, naval submarine bases, and naval air stations in the continental United States. The U.S. Marine Corps consists of about 200,000 active duty and 40,000 reserve Marines, which are

similarly based at Marine Corps bases and air stations. It is from these installations and facilities that these Sailors and Marines train and eventually deploy overseas, with missions ranging from combat to humanitarian assistance. As discussed below, preparing these personnel, vessels, and aircraft for deployments overseas in support of U.S. strategic interests consists of several phases. Completion of these phases requires access to range complexes, Operating Areas (OPAREAs), and other training areas where the entire suite of training activities may occur.

One of Navy's critical training requirements to support its mission involves the ability of the Navy to move Strike Groups (a combination of ships, submarines, and aircraft) into areas from which they may carry out sustained operations while simultaneously protecting themselves from many threats, including those posed by submarines and mines. In recent decades, many nations have increased their submarine warfare capabilities in an effort to thwart surface ships and their ability to carry out strike missions. Accordingly, one of the Navy's key training objectives involves holding adversary submarines at risk by maintaining the ability to destroy them, if and when required, at a time and place of the Navy's choosing. Fundamental to this objective is the knowledge at all times of where such submarines are operating and an understanding of their intentions and capabilities as evidenced by their actions.

In addition to training for anti-submarine warfare (ASW), Strike Groups train to defend themselves from air threats and surface threats. Long-range weapons of increasing precision and lethality pose a threat to Strike Group personnel. The threat situation is evolving rapidly which requires flexibility during training cycles to train Strike Groups on how to counter them. Simultaneously, research and development of new weapons and sensors is required prior to deploying them with Strike Groups. These systems may be either defensive or offensive in nature.

Strike Groups, individual ships, submarines, and aircraft, and Navy entities developing new weapons systems require access to air space, water space, subsurface water space, and land ranges and facilities during training and RDT&E. Land ranges provide areas where Strike Groups may focus the strike warfare component of their training assuring that air and land warfare capabilities are integrated. Land based facilities increase safety of training scenarios by providing air fields for strike aircraft during emergencies and provide bases for rescue operations, repairs, and personnel movement. The SOCAL Range Complex provides Strike Groups and DoD a unique combination of water space, air space, and access to land ranges for training and RDT&E, as well as support for Strike Group ships, submarines, and aircraft.

**b. The Range Complex:** In addition to the SOCAL Range Complex, 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 air space (SUA). SUA is defined and charted by the Federal Aviation Administration (FAA) as air space 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 a ready and trained naval force, while satisfying federal legal requirements, each major 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 SOCAL Range Complex 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 SOCAL Range Complex, and upgrading or modernizing range complex capabilities to enhance and sustain training and RDT&E.

The structure of the analysis in the Final EIS/OEIS parallels that of the analysis in the Navy's Final EIS/OEIS for the Hawaii Range Complex (HRC). This structure differs, however, from that used in the Navy's Final EIS/OEIS for the Atlantic Fleet Active Sonar Training (AFAST) Study Area. This difference is discussed below.

The SOCAL Range Complex is the land of SCI, SUA, and surface and subsurface operating areas off the coast of Southern California. It is situated between Dana Point and San Diego, extending more than 600 nautical miles to the southwest into international waters west of the coast of Baja California, Mexico. The components of the SOCAL Range Complex encompass 120,000 square nautical miles, including SUA Warning Area 291 (W-291) and the ocean area beneath it. W-291 is the FAA's designation of the SUA of the SOCAL Range Complex. This SUA extends from the ocean surface to 80,000 feet (24,384 meters) above mean sea level (MSL) and encompasses 113,000 square nautical miles (387,500 square kilometers of air space). The SOCAL surface and subsurface area lies beneath W-291 and extends from the ocean surface to the seafloor. SCI is within this area

and is a major component of the SOCAL Range Complex, providing an extensive suite of range capabilities for use in tactical training. It includes a Shore Bombardment Area (SHOBA), landing beaches, several live fire training areas and ranges (TARs) for small arms, maneuver areas, and other dedicated ranges for the conduct of training. SCI also includes extensive instrumentation and provides opposing force simulation and targets for land-based, sea-based, and air live-fire training as well as an airfield and other infrastructure for training and logistical support. The Southern California ASW Range (SOAR) is located offshore to the west of SCI. This existing underwater tracking range covers 670 square nautical miles. SOAR has the capability to provide three-dimensional underwater tracking of submarines, practice weapons, and targets with a set of 84 acoustic sensors (hydrophones) located on the seafloor. Communications with submarines is possible through use of an underwater telephone capability. SOAR supports various ASW training scenarios that involve air, surface, and subsurface units.

The Navy has been training and operating in the area now defined as the SOCAL Range Complex for over 70 years. The land, air, and water space of the SOCAL Range Complex has provided and continues to provide a safe and realistic training and testing environment for naval forces charged with defense of the nation.

Today, Southern California is home to the U.S. Pacific Fleet's largest concentration of naval forces. One-third of the U.S. Pacific Fleet makes its homeport in San Diego, including over seventy surface combatant ships and submarines; several aviation squadrons; and their officers and crews. Marine Corps Base Camp Pendleton and Marine Corps Air Station Miramar, both in San Diego County, are home to the Marines of I Marine Expeditionary Force (I MEF). These forces, from which is drawn the Marine component of Expeditionary Strike Groups (ESGs), require ready access to the SOCAL Range Complex to conduct required training. The Naval Special Warfare Command at Naval Amphibious Base Coronado also trains special forces on the SOCAL Range Complex including two naval special warfare groups.

**c. Structuring the Analysis in the Final EIS/OEIS of Navy Activities:** The Final EIS/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 air space that support the FRTP. The FRTP describes the Navy's training cycle that requires naval forces to prepare for deployment and to maintain a high level of proficiency and readiness while deployed. In addition, RDT&E provides the Navy the capability of developing new naval systems, including active sonar and Improved Extended Echo Ranging (IEER) sonobuoys, and ensuring their safe

and effective implementation. The FRTP formalizes the traditional Navy building block approach to training which ensures that Strike Groups attain and maintain the required level of combat readiness. Training proceeds on a continuum in the FRTP, advancing through four phases: Maintenance, Basic, Integrated, and Sustainment. The Final EIS/OEIS analyzes the impacts of the individual activities of each unit-level training event or major range event in the SOCAL Range Complex.

**(1) The Importance of Proficiency in Critical ASW and Mine Warfare (MIW) Skills:** The time period leading up to actual hostilities is one of the most difficult and strenuous period for Strike Groups to prepare for during training. During training, Strike Groups must develop a proficiency in reducing the risk to themselves should an adversary submarine engage in an unexpected hostile act. Strike Groups counter this challenge by using active sonar to detect, identify and classify a submarine and its actions to gain an understanding of its intentions. The Strike Group must also maintain contact and ensure that the movements of the Strike Group vessels do not place them in a position where the adversary submarine could harm them. As modern diesel-electric submarines of potential adversaries have become exceedingly quiet and increasingly difficult to detect by passive means, realistic and repetitive ASW training with active sonar is necessary for U.S. forces to be confident and knowledgeable in the Navy's plans, tactics, and procedures to perform and survive in situations leading up to hostilities as well as actual combat.

Similarly, Strike Groups must be able to detect and defeat mine warfare systems that may pose a significant threat to the movement and strike capability of a Strike Group. MIW training requires the use of active sonar systems and mine fields in shallow waters where submarines, ships, and aircraft learn to detect and defeat this threat. Effective training necessary to ensure proficiency in ASW and MIW skills is a vital component of the Final EIS/OEIS.

**(2) Active Sonar Systems:** Today's active sonar systems are generally categorized into three areas: low-, mid-, and high-frequency. Active sonar training as analyzed in the SOCAL Range Complex employs two frequency ranges: mid- and high-frequency. Mid- and high-frequency systems are integrated into Strike Groups as part of the ships, submarines, and aircraft comprising each Strike Group. As discussed below, the analysis of mid-frequency active (MFA) sonar and high-frequency active (HFA) sonar is a critical component of the SOCAL Range Complex

Final EIS/OEIS.<sup>1</sup> To estimate impacts from MFA and HFA sonar, five types of narrowband sonars representative of those used in operations in the SOCAL Range Complex were modeled. The Navy calculated exposure estimates for each sonar according to the manner in which it operates.

**2. Procedural History:** The Notice of Intent was published in the *Federal Register* (71 Fed. Reg. 76639) on December 21, 2006. 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. Three public scoping meetings were held in California between January 29-31, 2007; in San Pedro, Oceanside, and Coronado.

The Notice of Availability of the Draft EIS/OEIS was published in the *Federal Register* on April 4, 2008 (73 Fed. Reg. 18527). The Navy's Notice of Public Hearings was published in the *Federal Register* (73 Fed. Reg. 18522) on April 4, 2008. Public hearings were conducted in Oceanside, Coronado, and Long Beach, between April 29 and May 1, 2008. A total of 46 individuals, agencies, and organizations submitted 284 comments on the Draft EIS/OEIS.

The Notice of Availability of the Final EIS/OEIS was published in the *Federal Register* on December 5, 2008 (73 Fed. Reg. 74171). Notices in newspapers published in California 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 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.socalrangecomplexeis.com/>.

**BACKGROUND AND ISSUES:** The upgrade and modernization of the SOCAL Range Complex 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 December 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

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<sup>1</sup> The Navy's Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) sonar was developed and is deployed separately from the Strike Group because of physical limits on its mobility and the limited number of available units. The Navy has analyzed SURTASS LFA sonar in a Final and Supplemental EISs/OEISs and its operation is covered by associated environmental documentation.

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 SOCAL Range Complex while ensuring compliance with applicable environmental laws, regulations, and executive orders.

**1. NEPA -- Atlantic and Pacific Fleet Considerations:**

**a. Analysis Structure:** The Navy's approach to developing alternatives in the U.S. Atlantic Fleet's AFAST Final EIS/OEIS varies from that discussed in the SOCAL Range Complex Final EIS/OEIS. The AFAST Final EIS/OEIS considers alternatives based on environmental conditions (e.g., marine mammal occurrence and densities, and topographic, geographic, and bathymetric conditions) which are different from those encountered in the Pacific Fleet Study Areas. Because of the absence of contiguous location of U.S. Pacific Fleet range complexes (e.g., the HRC, the Mariana Islands Range Complex [MIRC], the SOCAL Range Complex, and the Northwest Training Range Complex), a Strike Group training exercise in the Pacific is generally confined to a single range complex. Furthermore, the study areas are very dissimilar in size. The Southern California Range Complex Study Area consists of about 120,000 square nautical miles compared with an AFAST Study Area of about two million square nautical miles.

The AFAST Study Area also has a much larger shallow-water region available because of the wide continental shelf. The U.S. Pacific Fleet Study Areas, in sharp contrast, have very narrow continental shelves, which limit the available shallow-water areas. When coupled with limited air routes into and out of land ranges, Pacific Fleet training is geographically constrained to specific complexes, such as the Southern California Range Complex. The majority of U.S. Atlantic Fleet active sonar activities may overlap on multiple range complexes and the open ocean adjacent to those contiguous range complexes compared to the non-contiguous range complexes on the Pacific Coast. While the Atlantic Fleet also has shore-based support facility requirements for training, they are not concentrated in one geographic area, which provides greater potential for operational flexibility than in the U.S. Pacific Fleet Study Areas. The U.S. Pacific Fleet, in contrast, has range complexes centered on geographically fixed instrumented ranges and high-value, land-based training ranges (e.g., SCI), which limits its overall training flexibility.

Unlike the AFAST Study Area, SOAR provides the U.S. Pacific Fleet with an existing deep-water instrumented training range. Furthermore, current SOAR activities are included in the baseline activities for the SOCAL Range Complex. When the Navy formally identified the requirement for a Shallow Water Training Range (SWTR) on the West Coast, it identified several criteria necessary for the range. Two of these criteria were that the SWTR should be located near a current deep-water range to support related training and maximize training efficiency, and that the range should allow seamless tracking of exercise participants moving between existing deep water range and the SWTR. The new SWTR areas proposed on the West Coast meet these criteria, and as discussed in the Final EIS/OEIS, effectively represent an extension of SOAR as opposed to the establishment of an entirely new instrumented range.

**b. Relationship with the Emergency Alternative Arrangements for Compliance with the Procedural Requirements of NEPA for the U.S. Pacific Fleet's 2007-2009 Composite Training Unit Exercise (COMPTUEX)/Joint Task Force Exercise (JTFEX) Series:** On January 15, 2008, The Secretary of the Navy adopted alternative arrangements for the procedural requirements of NEPA for the U.S. Pacific Fleet's 2007-2009 COMPTUEX/JTFEX series approved by the CEQ on January 15, 2008 (73 Fed. Reg. 4189, January 24, 2008). The Navy's request for, CEQ's approval of, and the Navy's adoption of these alternative arrangements were based upon a preliminary determination by a U.S. Federal District Court judge that the Navy was not in compliance with NEPA in that the Environmental Assessment (EA) it had prepared was inadequate. While the Navy does not concede that it was required to prepare an EIS to analyze the potential environmental effects associated with the 2007-2009 exercise series, the Final EIS/OEIS satisfies any such procedural requirement in that it sets forth the Navy's analysis of future COMPTUEX and JTFEX activities conducted in the SOCAL Range Complex.

**PURPOSE AND NEED:** Given the strategic importance of the SOCAL Range Complex to the readiness of naval forces and the unique training environment provided by the SOCAL Range Complex, the Navy proposes to achieve and maintain Fleet readiness using the SOCAL Range Complex to support and conduct current, emerging, and future training and RDT&E operations, while enhancing training resources through investment on the ranges. Implementation of the proposed action is needed to enable the Navy to meet its statutory responsibility 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 naval systems are an integral part of this readiness mandate.

**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, and Alternative 2. Alternatives 1 and 2 include the No-Action Alternative in their descriptions. Alternative 2 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 four alternatives from further consideration: (1) alternative locations for training conducted in the SOCAL Range Complex; (2) reduction or elimination of training in the SOCAL Range Complex; (3) temporal or geographic constraints on use of the SOCAL Range Complex; and (4) computer simulation in lieu of live training (including active sonar). The Navy eliminated these alternatives based on careful consideration, concluding that these alternatives were unreasonable because none would meet the Navy's purpose and need for the proposed action.

The SOCAL Range Complex 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 southern California, ignores the specific value of the SOCAL Range Complex as defined by its proximity to other land range complexes in the southwestern U.S., its unique instrumented range capabilities, proximity to San Diego-based forces, and its training terrain (bathymetry, topography, and weather) that maximizes the realism of training while enhancing operational safety.

A reduction in current training levels or a complete elimination of training within the SOCAL Range Complex would not support the Navy's ability to meet its requirements under Title 10 of the U.S. Code as discussed above. Such a reduction or elimination would jeopardize the ability of the commands and forces which rely upon training in the SOCAL Range Complex to be ready and qualified for deployment or to conduct other critically important training. These commands include all west coast and Hawaii-based Carrier Strike Groups (CSGs) and ESGs, special warfare, aviation, surface, and submarine forces.

The SOCAL Range Complex provides relatively few constraints on training, which is critical to development of realistic, varied and flexible training scenarios. The SOCAL Range Complex provides a unique training environment necessary for mission-essential training. Training opportunities provided by its size, bathymetry and subsurface features are vital to effective submarine and ASW training. W-291 likewise is integral to the Range Complex, providing the extended airspace needed for modern naval training operations. SCI is a cornerstone feature of the SOCAL Range Complex that provides target areas for live and inert ordnance (including the ability to evaluate accuracy and weapon effectiveness), beaches, ranges, and other training areas used in conjunction with special use airspace to provide an integrated training capability. The geographic convergence of these several features provides the ideal venue for multidimensional training. Limitations on access to any component of the range complex would threaten the ability of the Navy to integrate its training across all warfare areas. For this reason, alternatives that would impose geographic constraints on training within the SOCAL Range Complex would not meet the purpose and need of the proposal, and therefore were eliminated from further study and analysis.

Any alternative that would impose seasonal or temporal restrictions on training within the SOCAL Range Complex would likewise not be acceptable. Training is governed by the Navy's FRTP. The FRTP sets the deployment training cycle for Strike Groups, which are trained and prepared for deployments providing a global naval presence, and must also be ready to rapidly deploy or "surge" on short notice in response to contingencies. Seasonal or other temporal restrictions on use of any component of the Range Complex would inhibit the ability of the Navy to execute the FRTP. For this reason, alternatives that impose temporal constraints on training would not meet the purpose and need of the proposal, and therefore were eliminated from further study and analysis.

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 SOCAL Range Complex provides realistic training in the most relevant environments replicating the operational stresses of warfare. Current simulation technology cannot adequately replicate the multi-dimensional training (i.e., training for simultaneous air, surface and subsurface threats)

necessary to adequately prepare the nation's naval forces for combat. Furthermore, simulation does not provide for adequate 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 the Navy at risk during combat.

**2. No-Action Alternative:** 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 SOCAL Range Complex annually, and includes over 12,000 events and activities. Training, including major exercises such as COMPTUEX and JTFEX, 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 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 training activities associated with several new ships and aircraft, as quantified in the Final EIS/OEIS (Table 2-9).

**4. Alternative 2, the Preferred Alternative:** 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, and upgrades to range complex capabilities to enhance and sustain training and RDT&E, as quantified in the Final EIS/OEIS (Table 2-10).

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

**a. Training Events:** Training events within the SOCAL Range Complex range from unit-level training (training with one or more ships, submarines, and aircraft) through integrated and sustainment training including major exercises such as COMPTUEX and JTFEX. 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 SOCAL Range Complex throughout the year, based on training schedules and emergent training requirements.

(1) **Unit-Level Activities:** Unit-level training (see Final EIS/OEIS, Table 2-7) and coordinated unit-level training include activities in the mission areas of anti-air warfare, ASW (to include the use of MFA and HFA sonar, EER/IEER sonobuoys, and torpedoes), anti-surface warfare, amphibious warfare, electronic combat, MIW, naval special warfare, strike warfare, and other activities including explosive ordnance disposal, U.S. Coast Guard activities, and airfield operations at SCI.

(2) **COMPTUEX:** The COMPTUEX is an Integration Phase, at-sea, major range event. For the CSG, this exercise integrates the aircraft carrier and carrier air wing with surface and submarine units in a challenging operational environment. For the ESG, this exercise integrates amphibious ships with their associated air wing, surface ships, submarines, and Marine Expeditionary Unit (MEU). Live-fire operations that may take place during COMPTUEX include long-range air strikes, Naval Surface Fire Support, and surface-to-air, surface-to-surface, and air-to-surface missile exercises. The MEU also conducts realistic training based on anticipated operational requirements and to further develop the required coordination between Navy and Marine Corps forces. Special Operations training may also be integrated with the exercise scenario. The COMPTUEX is typically 21 days in length. The exercise is conducted in accordance with a schedule of events, which may include two 1-day, scenario-driven, "mini" battle problems, culminating with a scenario-driven 3-day final battle problem. COMPTUEX occurs three to four times per year.

(3) **JTFEX:** The JTFEX is a dynamic and complex major range event that is the culminating exercise in the Sustainment Phase training for the CSGs and ESGs. A JTFEX evaluates a Strike Group's capabilities in all warfare areas through a series of complex scenario-driven events. For an ESG, the exercise incorporates an Amphibious Ready Group (ARG) Certification Exercise for the amphibious ships and may include a Special Operations Capable Certification for the MEU. For a CSG, the exercise normally requires that a Strike Group demonstrate the ability to conduct air strikes throughout all phases of a scenario ranging from the period during which the potential for hostilities exist through actual combat operations involving all warfare areas. When schedules align, the JTFEX may be conducted concurrently for an ESG and CSG. JTFEX emphasizes mission planning and effective execution by all primary and support warfare commanders, including command and control, surveillance, intelligence, logistics support, and the integration of tactical fires. A JTFEX normally consists of about 10 days at sea and is the final at-sea exercise for the CSG or ESG prior to deployment. Depending on CSG and ESG schedules, JTFEXs normally occur about three to four times per year.

**b. RDT&E Activities:** The preferred alternative provides for increases in RDT&E activities relating to ship torpedo tests, unmanned underwater vehicles, sonobuoy testing, ocean engineering, marine mammal mine shape location research, missile flight tests, underwater acoustics testing, and other diverse tests.

**c. Planned Enhancements:** The Navy will enhance the SOCAL Range Complex by increasing Commercial Air Services as simulated targets and opposition forces during military training activities, expanding shallow water minefield training in existing ranges, conduct training on a new shallow water minefield, and install and conduct ASW training on the SWTR extension to SOAR.

**ENVIRONMENTAL IMPACTS:** The Navy analyzed the potential impacts of the proposed action in terms of sixteen resource areas: geology and soils, air quality, hazardous materials and wastes, water resources, acoustic environment (airborne), marine plants and invertebrates, fish, sea turtles, marine mammals, seabirds, terrestrial biological resources, cultural resources, traffic, socioeconomic, environmental justice and protection of children, and public safety. The potential for environmental impacts was analyzed and documented in the Final EIS/OEIS. 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, RDT&E activities, and range enhancements.

**1. Geology and Soils:** Potential geology and soils impacts from training and RDT&E activities on SCI have been analyzed and no significant short or long-term impacts are expected. A recent erosion study of SCI found that, on a watershed-wide basis, erosion rates were not, in general, substantially influenced by the current level of Navy activity. The increases in land training and testing activities proposed under Alternative 1 and 2 could incrementally increase rates of soil erosion in portions of those watersheds where training ranges or impact areas are located. In areas of heavy use for training, visible increases in soil disturbance and soil erosion may be observed over small areas. Mitigation measures on SCI include Navy studies on sedimentation and erosion associated with watersheds, and biannual sweeps and cleanup after exercises.

**2. 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. Any increases in emissions of air pollutants are not anticipated to

result in exceedances of the air quality standards. No change in regional air quality is anticipated. Mitigation measures include maintaining Navy and Marine Corps vessels, aircraft, ground vehicles and other equipment in accordance with applicable Navy and Marine Corps requirements.

**3. Hazardous Materials and Wastes:** 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 wastes. Anticipated amounts of hazardous wastes are well within the capacity of the Navy's hazardous waste management system. The anticipated amounts also are well within the existing capacities of hazardous waste transporters and treatment and disposal facilities. Mitigation measures include compliance with Navy instructions to ensure that hazardous materials and hazardous wastes are stored and handled appropriately.

**4. Water Resources:** Potential water resources impacts from training and RDT&E activities have been analyzed and no significant short or long-term impacts to marine, surface or groundwater quality are expected. Compliance with Standard Operating Procedures (SOPs) and policies will continue to minimize impacts. Training activities on SCI have minimal impact on beach and inland areas, largely due to management practices such as explosive ordnance disposal (EOD) sweeps to remove unexploded ordnance. Emissions from exercises do not significantly affect water resources. No new mitigation measures have been identified.

**5. Acoustic Environment (Airborne):** Potential impacts from sound in water are addressed below as they may affect the specific biological resources of marine plants and invertebrates, fish, sea turtles, and marine mammals. Other potential airborne noise impacts from training and RDT&E activities have been analyzed, and no short or long-term impacts are expected. Noise from training and RDT&E activities in the SOCAL Range Complex would be dispersed and intermittent. In addition, the activities that generate significant airborne noise typically occur in remote locations, isolated from the general public.

**6. Marine Plants and Invertebrates:** Potential impacts from training and RDT&E activities on marine plants and invertebrates have been analyzed, and no long-term impacts are expected. No long-term changes to species abundance or diversity, or loss or degradation of sensitive habitats, is expected. There will be no impacts to threatened and endangered species. While construction of a shallow water minefield and SWTR may result in localized

impacts to marine biological resources, these impacts will be temporary and would result in no long-term impacts to sensitive habitats or species.

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

**a. 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 SOCAL Range Complex 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.

**b. 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.

**c. Essential Fish Habitat:** Potential impacts on designated Essential Fish Habitat (EFH) from training and RDT&E activities have been analyzed. The analysis concluded that adverse effects to EFH would occur; however, those effects would be minimal and temporary based on established mitigation measures. Through consultation, the National Marine Fisheries Service (NMFS) has concurred that, with the inclusion of the mitigation measures, EFH impacts are adequately addressed and further mitigation measure recommendations are not required. Mitigation measures include: avoiding the placement of undersea equipment (cables, hydrophones, mine shapes) on hard-bottom habitat; establishing buffer zones around kelp beds for ordnance use; to the extent practicable, the quick recovery of mine shapes used during training; and implementation of a long-term, near-shore (from SCI) monitoring program.

**8. 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. There are four species of sea turtles that occur off the coast of California: loggerhead (*Caretta caretta*), eastern Pacific green (*Chelonia agassizi*), olive ridley (*Lepidochelys olivacea*), and leatherback (*Dermodochelys coriacea*). All are currently listed as either endangered or threatened under the Endangered Species Act (ESA). None of the four species is known to nest on Southern California beaches. The occurrence of these four species of sea turtles is highly seasonable and variable by location within the SOCAL Range Complex. Their occurrence and the Navy's activities in SOCAL result in a low probability that a direct or indirect effect would occur in relation to these species.

**a. 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, MFA and HFA activities are not likely to affect loggerhead, eastern Pacific green, olive ridley, or leatherback sea turtles.

**b. 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 loggerhead, eastern Pacific green, olive ridley, or leatherback sea turtles. Mitigation measures require that all MIW and Mine Countermeasure 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 Countermeasure 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 sea turtle. Should such a sea turtle be present within the

surveillance area, the exercise shall be paused until the sea turtle voluntarily leaves the area. Mitigation measures addressing EER/IEER sonobuoys as previously described for marine mammals would also be implemented for sea turtles.

**c. 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.

**d. 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 Sinking Exercise (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 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; for a sinking exercise establishing an exclusion zone with a radius of 1.5 nautical miles 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 live fire if a protected species is observed diving within the exclusion zone until either the sea turtle is re-sighted outside the exclusion zone or 30 minutes have elapsed.

In accordance with ESA requirements, the Navy has undertaken Section 7 consultation with NMFS for the proposed and ongoing activities in the SOCAL Range Complex that may affect listed sea turtles. NMFS issued a Biological Opinion on January 14, 2009. In that Biological Opinion, NMFS concluded that the Navy's proposed activities are not likely to jeopardize the continued existence of the listed sea turtles in the SOCAL Range Complex.

**9. Marine Mammals:** Among the most controversial training activities analyzed in the Final EIS/OEIS include the use of MFA and HFA 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.

**a. 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 SOCAL Range Complex 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 Environmental Assessment/Overseas Environmental Assessment (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), Composite Training Unit Exercise (COMPTUEX) / Joint Task Force Exercise (JTFEX) EA/OEA (U.S. Department of the Navy, 2007c), and the HRC Final EIS/OEIS (U.S. Department of the Navy, 2008). The approach to estimating potential behavioral effects of ASW training within the SOCAL Range Complex on marine mammals, meanwhile, was adopted as a result of comments and recommendations received on these previous documents, as well as comments on the SOCAL Range Complex Draft EIS/OEIS.

**(1) 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, respectively, of physiological effects that equate to the onset of injury (Level A harassment under the Marine Mammal Protection Act [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. Unlike cetaceans, the TTS and PTS thresholds used for exposure modeling for pinnipeds vary by species. Otariids have thresholds of 206 dB re 1  $\mu\text{Pa}^2\text{-s}$  for TTS and 226 dB re 1  $\mu\text{Pa}^2\text{-s}$  for PTS. Northern elephant seals have thresholds of 204 dB re 1  $\mu\text{Pa}^2\text{-s}$  for TTS and 224 dB re 1  $\mu\text{Pa}^2\text{-s}$  for PTS. Harbor seals have thresholds of 183 dB re 1  $\mu\text{Pa}^2\text{-s}$  for TTS and 203 dB re 1  $\mu\text{Pa}^2\text{-s}$  for PTS.

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 criticism 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" (Space and Warfare Naval Systems Center (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.

**(2) 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.

**(A) History of Assessing Potential Harassment from Behavioral Effects:** The Final EIS/OEIS summarized the Navy's and NMFS' efforts to identify the appropriate criteria for

assessing non-injurious behavioral effects on marine mammals of exposure to MFA and HFA sonar. The MMPA 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.

**(B) Development of the Two Risk Function Curves:**

In the HRC Draft EIS/OEIS (U.S. Department of the Navy, 2007e), 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>2</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 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 SURTASS LFA sonar (U.S. Department of the Navy, 2001c). This function is appropriate for application in a

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<sup>2</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."

number of contexts, including instances where there are limited data (Feller, 1968). This method is identified as "the risk function" in this document.

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 applied the acoustic risk function in the HRC Final EIS/OEIS (U.S. Department of the Navy, 2008) in its assessment of the potential behavioral effects of MFA and HFA sonar on marine mammals, and 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 3.9.7.4.6 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 functions derived for MFA sources will apply to HFA sources.

**(3) Critique of the Two Risk Function Curves as Presented in the HRC Final EIS/OEIS:** As discussed above, the risk functions used in the Final EIS/OEIS to assess non-injurious temporary behavioral effects to marine mammals were first set forth in the Navy's Final EIS/OEIS for the HRC. The Navy received several comments on the HRC Final EIS/OEIS critical of the risk function curves specified by NMFS. In reviewing whether the parameters employed were based upon the best available science, the implications in the uncertainty in the values, and biases and limitations in the risk function criteria, such critique asserted that data were incorrectly interpreted by NMFS when calculating parameter values, resulting in a model that underestimates takes. Of primary importance to these commenters 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 the critique 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 and gas exploration 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 the concern reflected in 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 mid-frequency active 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 as applicable to military readiness activities. Given the results of the modeling and the marine mammal densities in the SOCAL Study Area, having a lower basement value would not result in any significant number of additional takes. This is demonstrated in Tables 3.9-6 and 3.9-7 of the Final EIS/OEIS which shows 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 received level would involve modeling for impacts occurring below the naturally occurring ambient background noise present in the SOCAL Study Area.

Such critique suggests that the criteria used to establish the risk function parameters should reflect the biological basement value where any reaction from any source is detectable. The MMPA, particularly as it applies to military readiness activities and certain federally-funded scientific research activities, does not intend to regulate any and all marine mammal behavioral reactions as suggested by the comment.

Various comments recommending that the B parameter and the data used should be revised given that, ". . . 120 dB re 1 $\mu$ Pa has broadly been found as the value at which 50 percent of individuals respond to noise . . .;" that ". . . 50 percent of migrating whales changed course to remain outside the 120 dB re 1 $\mu$ Pa 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 1 $\mu$ Pa" are factually inaccurate. All of these comments provided a single citation to Malme et al. (1983, 1984) for the repeated assertion that 50 percent of marine mammals will react to 120 db re 1 $\mu$ Pa. 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.

Regarding critique that the model underestimates takes because of uncertainty arising from "inter-specific variation" or from "broad confidence intervals," 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. Critique that the model has limitations in that it does not account for social factors, and is likely to underestimate takes, reflects a concern that if one animal is "taken" and leaves an area then the whole pod would likely follow. As explained in Appendix F 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 mid-frequency active sonar, to include mid-frequency active 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.

Lastly, regarding critique that there are additional datasets, including datasets not considered by NMFS and the Navy, that should have been considered and not having done so resulted in the model underestimating takes, the various data sources suggested by the commenters involve contexts that are neither applicable to the proposed action nor the sound exposures resulting from those actions. For instance, Lusseau et al. (2006) involved 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 SOCAL Study Area. 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 mid-frequency active sonar. Finally, reactions to airguns used in seismic research or other activities associated with the oil industry are also not applicable to mid-frequency active sonar, since the sound or noise source, its frequency, source level, and manner of use is fundamentally different.

**(4) 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 2. The Navy estimates 123,781 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, 10,897 exposures represent temporary, non-injurious physiological effects resulting from the onset of TTS) in the animals from exposure to MFA and HFA sonar, and the remaining 112,884 exposures represent temporary, non-injurious behavioral effects. The Navy estimates that 19 marine mammals would be exposed to sound levels that could cause PTS. Regarding use of MFA and HFA sonar under the selected alternative, Navy is seeking authorization from NMFS for 123,781 annual MMPA Level B incidental harassment takes and 19 annual MMPA Level A takes.

While the Navy's modeling of MFA and HFA sonar estimated 19 Level A takes tied to the onset of PTS, no MFA sonar exposures are expected to result in any marine mammal mortalities. It is

highly unlikely that a marine mammal would experience any long-term effects because the large SOCAL Range Complex training areas makes individual marine mammals' repeated or prolonged exposures to high-level sonar signals unlikely. The number of exposures that exceed the PTS threshold and result in Level A harassment from sonar is 19 for six species, one blue whale, one gray whale, one long-beaked common dolphin: one striped dolphin; six short-beaked common dolphins; and nine Pacific harbor seals. However, these estimates do not take into consideration of either the mitigation measures or the likely avoidance behaviors of some of the animals exposed. Under the MMPA rulemaking NMFS recognized that many marine mammals would deliberately avoid exposing themselves to the received levels necessary to induce injury (i.e., approaching to within approximately 10 meters [10.9 yards] of the source) by moving away from or at least modifying their path to avoid a close approach. Additionally, in the unlikely event that an animal approaches the sonar vessel at a close distance, NMFS believes that the mitigation measures (i.e., shutdown/powerdown zones for MFA sonar and HFA sonar) further ensure that animals would not be exposed to injurious levels of sound. As discussed below, the Navy utilizes both aerial (when available) and passive acoustic monitoring (during all ASW exercises) in addition to watchstanders on vessels to detect marine mammals for mitigation implementation and indicated that they are capable of effectively monitoring a 1000-meter (1,093-yard) safety zone at night using night vision goggles, infrared cameras, and passive acoustic monitoring. When these two points are considered, NMFS does not believe that any marine mammals will incur PTS from exposure to MFA sonar and HFA sonar.

Therefore, long-term effects on individuals, populations or stocks are unlikely. However, to allow for scientific uncertainty regarding the strandings of beaked whales, including the causal effects, the Navy will request authorization for take, by mortality, of the beaked whale species present in the SOCAL Range Complex notwithstanding the decades-long history of these same training and RDT&E activities with the same basic equipment having never been associated with a marine mammal stranding event in the range complex. As a conservative approach, the Navy has requested a take by mortality for ten beaked whales of the *Ziphiidae* family to include any combination of Baird's beaked whales, Cuvier's beaked whales, and *Mesoplodon* species. In addition to the Navy's request for an incidental take authorization under the MMPA for the proposed action, the Navy completed consultation with NMFS under Section 7 of the ESA. NMFS issued a Biological Opinion on January 14, 2009. In that Biological Opinion, NMFS concluded that the Navy's proposed activities are not likely to jeopardize the continued existence of the listed marine mammals in the SOCAL Range Complex.

**(5) Mitigation Measures:** The Navy will implement the mitigation measures required as described in Chapter 5 of the Final EIS/OEIS, the MMPA incidental take authorization, and the ESA Biological Opinion. As discussed below in the section addressing compliance with environmental laws, NMFS has provided for an adaptive management regime under the MMPA and ESA authorizations for these activities. Should any mitigation measure(s) be modified through this adaptive management process, the Navy will apply the modified measure(s) consistent with the requirements in the relevant annual MMPA Letters of Authorization (LOAs) and/or ESA Incidental Take Statements.

Consistent with the requirements of Section 101(5)(A) of the MMPA, NMFS and the Navy have explored ways of effecting the least practicable adverse impact on marine mammals. During this process, NMFS' "least practicable adverse impact" determination included consideration of personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity as required by the Fiscal Year 2004 National Defense Authorization Act (FY04 NDAA). Mitigations that effect the least practical adverse impact are discussed in Chapter 5 of the Final EIS/OEIS, and in NMFS' MMPA and ESA authorizations. These mitigation measures 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 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 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 the above power-downs 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. During its MMPA rulemaking process, NMFS also concluded that night vision goggles shall be available for ships and air crews as appropriate. NMFS also determined that the mitigations described in the FEIS/OEIS for IEER will be applicable for AEER system when it becomes operational. Mitigation measures analyzed by the Navy and analyzed by NMFS during the MMPA rulemaking process were analyzed by NMFS in its analysis of effects on endangered species.

**(6) Alternative or Additional Mitigation Measures Considered but Eliminated:** 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 eliminated from further analysis 16 categories of potential alternative or additional mitigation measures. Mitigations imposed in January 2008 by the U.S. District Court for the Central District of California, under a preliminary injunction specific to the U.S. Pacific Fleet's 2007-2009 COMPTUEX/JTFEX series were captured in this analysis. This analysis included an assessment of the likely effectiveness of the measures in avoiding harm to marine mammals, consideration of personnel safety, practicality of implementation, and the impact on the effectiveness on the military readiness activity to support the requirements of the FY04 NDAA.

**(A) Augmenting Navy Lookouts on Navy Vessels Providing Surveillance of ASW or Other Training Events with Non-Navy Personnel:** 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.

**(B) 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 SOCAL Range Complex (consisting of approximately 120,000 nm<sup>2</sup> [411,600 km<sup>2</sup>]), 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.

**(C) 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 SOCAL Range Complex 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 SOCAL. When available, it must be factored with other considerations including safety, practicality of implementation which would include access to land ranges and facilities, and impact on the military readiness activity.

Marine mammal species in the SOCAL Range Complex are composed of year-round residents, seasonal residents, and transitory migrants. Migrants include the gray whales (accompanied by calves on northbound migration routes) which can travel at speeds up to 3 nautical miles per hour between winter breeding grounds in Mexico and summer feeding grounds along the northwest Pacific coast and Alaska (Mate and Urban-Ramirez, 2003). Individual gray whale presence in the SOCAL Range Complex would, therefore, likely be on the order of hours to a day while in transit. Year-round and seasonal resident marine mammals may utilize waters within the SOCAL Range Complex for both reproduction and feeding. However, there are no known permanent spots within the SOCAL Range Complex that are specifically or exclusively important for the reproduction or feeding of any particular species versus other locations within SOCAL. Variability of marine mammal presence in relatively small ocean sub-areas within the SOCAL Range Complex, such as the Tanner and Cortes Banks, is often strongly correlated with daily, weekly, seasonal and even decadal changes in prey availability with prey availability being driven by changes in both local and basin-wide oceanographic conditions. Any specific area of high marine mammal density at a given time may have low marine mammal density the following day, week, or year depending on the biological and physical factors affecting prey distribution. Some marine mammals may congregate at local foraging hotspots, but the locations of these hotspots are not spatially fixed and change with time. Blue and fin whales, for example, search for food over a large area due to the dietary needs of such large animals. Based on satellite tagging conducted by academic and Navy funded researchers within the SOCAL Range Complex, blue and fin whales, for example, have been shown to move 10 to 50 nautical miles per day, and greater distances over several weeks.

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. Limiting training activities to fewer than 12 months of the year would not only concentrate all annual training and testing activities into a shorter 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.

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 SOCAL Range Complex ignores the fact that there is a variety of complex bathymetry in the range complex. Many of these areas of complex bathymetry and seamounts are in the very locations where Navy must train, 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 SOCAL (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.

Therefore, given the generally wide distribution of marine mammals within the SOCAL Rang Complex , the narrow footprint of actual ASW training activities relative to large ocean expanses, and application of mitigation measures during training events, time or area restrictions in the SOCAL Range Complex (including in the Tanner and Cortes Banks) would likely have limited or no value.

**(D) Avoiding MFA and HFA Sonar Use within 12 Nautical Miles from Shore or, in the Alternative, 15.5 miles (25 kilometers) from the 200-meter Isobath:** During a recent major exercise in Hawaii (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.

**(E) 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.

**(F) 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 active sonar and positioning of additional lookouts for heightened vigilance to avoid collision. 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 vessel and crew.

**(G) 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 SOCAL 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 active sonar would be able to detect, effective training is compromised.

While the two-year national defense exemption from the legal requirements of the MMPA for certain military readiness activities employing MFA sonar issued by the Deputy Secretary of Defense on January 23, 2007, required the Navy to consider in planning major exercises the historical presence in a training area of significant surface ducting as part of an aggregate of conditions associated with beaked whale strandings, these conditions do not exist in the aggregate in the SOCAL Range Complex. Normal safety zone requirements always apply.

**(H) Scaling Down Training to Meet Core Aims:** As with each Navy range complex, the primary mission of the SOCAL Range Complex 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.

These modern smart weapons, however, 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 (among U.S. military services) and coalition (among countries) 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 SOCAL Range Complex.

**(I) Limiting the Active Sonar Event Locations:** Areas where events are scheduled to occur are carefully chosen to provide for the safety and to allow for the realistic development of the training scenario. When multiple participants are involved, this includes the ability of the participants to develop, maintain, and demonstrate proficiency in all areas of warfare simultaneously. Limiting the training event to a few areas would have an adverse impact on 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.

**(J) Passive Acoustic Detection and Location of marine mammals:** As noted above, the Navy will use 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.

**(K) 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 carry out its attack. 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. In reviews of mitigation measures performed by the oil and gas industry for seismic surveys<sup>3</sup>, there is no evidence that ramp-up mitigation procedures achieve the desired effect of causing marine mammals to leave the area. Instead, it is well proven that many species of dolphins ride the bow-waves of vessels, including those employing MFA sonar, which indicates that some species of marine mammals do not flee, but rather purposely seek to approach moving ships regardless of whether MFA sonar is on or off.

**(L) Implementing Vessel Speed Reduction:** Vessels engaged in training operate at a 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. While in transit, Navy vessels will be alert at all times, use extreme caution, and proceed at a safe speed so that the vessels

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<sup>3</sup> Compton, R., L. Goodwin, R. Handy, and V. Abbott. 2008. A critical examination of worldwide guidelines for minimizing the disturbance to marine mammals during seismic surveys. *Marine Policy* 32:255-262.

can take proper and effective action to avoid a collision with any marine animal and can be stopped within a distance appropriate to the prevailing circumstances and conditions.

**(M) 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 at underwater instrumented ranges 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.

**(N) 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 1,000 yards and 500 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, a 2,187-yard (2-kilometer) shutdown zone contains 121 times the area of the Navy's current 200-yard shutdown zone. This restriction would increase the number of times that ships 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 would lose awareness of the tactical situation through the constant stopping and starting of MFA sonar leading to significant exercise event disruption. Increased shutdowns would allow a submarine to take advantage of the lapses of active sonar, and position itself for an attack.

**(O) 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 transits in the SOCAL Range Complex. 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-electric 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 SOCAL 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 five factors. The Northwest Providence channel is 100 nm long and between 25-30 nm wide. In contrast, the channels between the Channel Islands 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. Conducting ASW training events while transiting in the SOCAL Range Complex does not present the same conditions as those that resulted in the Bahamas mass stranding event (see Section 1.1.3.1 of Appendix F). Most importantly, there is no limited egress for marine mammals for events that occur in the SOCAL Range Complex.

**(P) 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, some 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.

**(7) Reporting, Monitoring, and Stranding Response:**

The Navy will implement the reporting and monitoring requirements of the MMPA Final Rule and the ESA Biological Opinion, and any additional such requirements in the annual MMPA LOAs and ESA Incidental take Statements. Reports required by the MMPA Final Rule and ESA Biological Opinion include an Annual SOCAL Monitoring Plan Report, an Annual SOCAL Exercise Report, Sonar Exercise Notification, SOCAL Comprehensive 5-Year Report, and a Comprehensive National ASW Report.

The Navy will also implement an Integrated Comprehensive Monitoring Plan in 2009. This planning and adaptive management tool shall include a method for prioritizing monitoring projects, a method for annually reviewing with NMFS, monitoring results, Navy R&D, and current science, and a detailed description of the Monitoring Workshop to be convened in 2011.

As a part of NMFS' MMPA rulemaking process, NMFS and the Navy developed a marine species monitoring plan, the SOCAL Monitoring Plan and Marine Mammal Stranding Response Protocol. The Monitoring Plan contains the framework for research on the distribution of key marine mammal species in the SOCAL Range Complex; analyzes behavioral responses, or the lack of such responses, of marine mammals to MFA sonar and explosives; and assesses the effectiveness of the Navy's suite of mitigation measures. The Monitoring Plan will utilize vessel, aerial and shore-based surveys, animal tagging, and passive acoustics to accomplish these goals. Integration with ongoing academic studies being conducted in SOCAL and Navy funded range complex marine mammal monitoring will be sought through collaborative research agreements. 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.

As mentioned previously, the MMPA regulations governing the take of marine mammals incidental to Navy activities in the SOCAL Range Complex includes an adaptive management component. The use of adaptive management will give NMFS the ability to consider new data from different sources to determine (in coordination with the Navy) on an annual basis if mitigation or monitoring measures should be modified or added (or deleted) if new data suggests that such modifications are appropriate (or are not appropriate) for subsequent annual MMPA LOAs. Possible sources of data results from the Navy's monitoring from the previous year (including other locations, findings of a Workshop that the Navy will convene in 2011 to analyze monitoring results to date, review current science, and recommend modifications, as appropriate to the monitoring protocols to increase monitoring effectiveness, the compiled results of Navy funded research and development (R&D) studies, results from stranding investigations (including those that may involve strandings within and outside the SOCAL Range Complex and those involving the coincident MFAS/HFAS of explosives training or not involving their coincident use), results the Long Term Prospective Study (a longitudinal observational study of marine mammal strandings to systematically observe for and record the types of pathologies and diseases and investigate the relationship with potential causal factors (e.g., active sonar, seismic, weather, etc.), and results from general marine mammal and sound research.

Mitigation measures could be modified or added (or deleted) if new data suggests that such modifications would have (or do not have) a reasonable likelihood of accomplishing the goals of mitigation laid out in NMFS' MMPA Final Rule and if the measures are practicable. NMFS would also coordinate with the Navy to modify or add to (or delete) the existing monitoring requirements if the new data suggest that the addition of (or deletion of) a particular measure would more effectively accomplish the goals of monitoring laid out in the Final Rule. The reporting requirements associated with the Final Rule are designed to provide NMFS with monitoring data from the previous year to allow NMFS to consider the data and issue annual MMPA LOAs. NMFS and the Navy will meet annually (prior to LOA issuance, except in the year of the Monitoring Workshop) to discuss the monitoring reports, Navy R&D developments, and current science and whether mitigation or monitoring modifications are appropriate.

An adaptive management component will be included in the annual MMPA LOAs and may be included in the annual ESA Incidental Take Statements. The use of adaptive management will give NMFS the ability to consider new data from different sources to determine, in coordination with the Navy, on an annual basis if mitigation or monitoring measures should be modified or added (or deleted) if the new data suggests that such modifications are appropriate (or are not appropriate) for subsequent annual MMPA LOAs and ESA Incidental Take Statements.

**b. Activities Utilizing Underwater Detonations:** Using the criteria specified by NMFS and the application of the Navy's post-modeling analysis, the Navy estimates that there may be 1,499 annual exposures resulting in behavioral harassment from underwater detonations that occur as a result of a live fire event. In addition, the modeling indicates 1,128 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 2,627. Modeling indicates 34 exposures from underwater detonations that could cause slight injury, resulting in Level A harassment and 11 that could cause mortality. However, these estimates do not consider mitigation measures. Because of the surveillance conducted prior to and during the exercises, the associated exclusion zones (see mitigation section), and the distance within which the animal would have to be from the explosive, NMFS' MMPA rulemaking do not conclude that any animals will be exposed to levels of sound or pressure from explosives that will result in injury or death.

The weapons used in most live fire events 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.

Navy and NMFS identified mitigation measures that vary depending on the training operation and potential impacts. Mitigations generally include a buffer zone around the target, ensuring that intended impact is not within a designated buffer zone around known or observed floating weeds, kelp and algal mats, and lookout requirements. These events range from addressing underwater detonations vary from activity 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.

SINKEX 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 1.5 nautical mile radius 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; and preparing an after action report.

**c. Ship Strikes:** The ability of a ship to avoid a collision depends on a variety of factors, including environmental conditions, ship design, size, and manning. The majority of ships participating in SOCAL Range Complex 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.

**10. Seabirds:** Potential impacts to seabirds from training and RDT&E activities have been analyzed, and no significant short or long-term impacts are expected. Based on the analysis of the spatial area available, the limited available data on sea bird populations, professional opinions of subject matter experts who study seabirds in Southern California, and discussions with military operational professionals, it is likely that effects to protected and migratory sea birds would be minimal. The sheer size of the SOCAL Range Complex, as well as the temporal and

spatial variability of operations superimposed on temporal and seasonal distributions of sea bird species, poses a minimal potential effect on seabird populations.

Mitigation includes continuing ongoing Navy procedures to reduce or eliminate bird strike hazards; and during underwater demolition activities, ensuring that sequential underwater detonations be conducted either less than 10 seconds apart or greater than 30 minutes apart to avoid impact to birds attracted by fish kill.

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 (USF&WS, 2007a; U.S. Department of the Navy, 2007a).

**11. Terrestrial Biological Resources:** Potential terrestrial biological resource impacts from training and RDT&E activities have been analyzed, and no significant short or long-term impacts are expected.

The only land area within the SOCAL Range Complex on which training operations occur is SCI.<sup>4</sup> Given SCI's unique location and geography, it supports a wide range of training operations, including, but not limited to amphibious warfare, electronic combat, naval special warfare, strike warfare, explosive ordnance disposal, air operations, RDT&E, and all major exercises. Training on SCI occurs within specified training areas including basic training sites, training area ranges, infantry operations areas, assault vehicle maneuver areas, artillery firing points, artillery maneuver points, an assault maneuver road, and shore bombardment areas.

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<sup>4</sup> Although San Nicolas, Santa Barbara and Santa Catalina Islands are within the SOCAL Range Complex boundary, the only land area within the SOCAL Range Complex on which the activities described in the Final EIS/OEIS occur is SCI.

SCI is the southernmost of the 8 California Channel Islands and among the farthest offshore, 50 nautical miles southwest of Long Beach, California, and 68 nautical miles west of San Diego, California. Because of its history and isolation, the island supports a variety of plant and animal species found nowhere else in the world as well as plants and animals found elsewhere only on one or more of the other California Channel Islands. Because of its location and climate, SCI supports 5 federally listed terrestrial animal species and 6 federally listed plant species, as well as about 30 additional plant species that are recognized as sensitive and are found only on SCI, or on SCI and one or more of the other California Channel Islands. Navy actions to remove nonnative grazing animals (successfully completed in the early 1990s), as well as a variety of additional monitoring and management activities directed by the Navy have resulted in recovery of habitat quality over much of the island and resulted in increases in the populations of many of the listed plant and wildlife species, most notably the San Clemente loggerhead shrike.

Many of the more than 40 training operations evaluated would occur in the same geographical locations on SCI as they are currently conducted, and some would take place simultaneously at different locations. The Final EIS/OEIS analytical approach for biological resources involved evaluating the degree to which the proposed action can have an impact on vegetation, wildlife, threatened or endangered species, and sensitive habitat on SCI. 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.

Based on consultation with the USF&WS on a programmatic Biological Assessment, the Navy will implement numerous specific measures to avoid, minimize, or compensate for adverse impacts on biological resources including threatened, endangered, and sensitive species and their habitats. The measures are summarized below.

**a. Summary of Mitigation Measures:** Included in the November 17, 2008, Biological Opinion the following mitigation measures will be implemented:

(1) **Summary of General Conservation Measures**

(A) **Invasive Exotic Plant Species:** The Navy will continue invasive exotic plant species control on an island-wide scale.

(B) **Feral Species:** The Navy will continue feral cat and rat control and monitoring efforts as long as they are demonstrated to support listed species recovery and population maintenance. To reduce human-induced increases in the feral cat and rat populations, the Navy will ensure that personnel do not feed cats and that all trash, food waste, and training refuse are disposed of properly in animal proof containers.

(C) **Natural Resources Management:** The Navy will continue implementation of the SCI Integrated Natural Resources Management Plan (INRMP) prepared pursuant to the Sikes Act Improvement Act of 1997, 16 U.S.C. § 670a et seq., to include ongoing monitoring and management of listed plant species on SCI, and review - and, if necessary, revision - per Navy directives addressing management of natural resources.

(D) **Environmental Conservation:** The Navy shall continue to disseminate environmental conservation measures to SCI users. Conservation measures will be distributed to island military and civilian staff in accordance with Commander's guidelines.

(E) **Wildfire:** The Navy will conduct any necessary explosive ordnance disposal in or near federally listed species habitat in a manner that minimizes the potential for wildfire without compromising personnel safety.

(F) **Range Access:** The Navy will coordinate range access to achieve optimal flexibility between training operations and natural resource management activities, according to range use instructions and with priority given to military training.

(G) **Ordnance Targets:** The Navy will locate heavy ordnance targets within Impact Areas I and II, away from sensitive resources to the extent feasible while meeting training needs.

(H) **Non-Native Predators:** The Navy will conduct monitoring and control activities for non-native predators (e.g., feral cats and rats) outside the impact area boundaries.

**(2) Proposed Measures to Minimize Impacts of Activities within Prescribed Areas Where Training Will Occur:**

(A) **Surveys and Monitoring:** The Navy will survey for federally listed and sensitive plant species within specified training areas. The Navy will conduct periodic monitoring of the specified training areas as part of vegetation/habitat and sensitive species survey updates for the INRMP.

(B) **Soil Erosion:** The Navy will develop a plan that will address soil erosion associated with planned military activities in specified training areas and finalize the plan based on field review with soil erosion experts and military personnel, such that training areas minimize inclusion of steep slopes and drainage heads. The erosion control plan will lay out the Navy's approach to assessing and reducing soil erosion in the specified training areas as well as routes used to access these training areas. The plan will include an adaptive management approach.

(C) **Pre-Training Briefing:** The Navy will brief military units on maneuver area boundaries prior to conducting training in the specified training areas.

(D) **Assault Vehicles:** The Navy will conduct assault vehicle travel or maneuvering only within the boundaries of the specified training areas.

(E) **Adjacent Habitats:** The Navy will develop and implement a project to monitor for erosion, dust generation, and deposition of dust in adjacent habitats.

(F) **Invasive Plants:** The Navy will implement measures to reduce the potential for transport of invasive plants to SCI.

(G) **Speed Limits:** The Navy will enforce the existing 35-mph speed limit, post signs, continue awareness programs, mow roadside vegetation, and monitor roadways for kills of protected or conservation agreement species including San

Clemente loggerhead shrike, San Clemente sage sparrow, and island fox.

(H) **Tracked Vehicles:** The Navy will direct tracked and wheeled vehicles to use the existing route for ingress and egress to/from the beach at West Cove.

(I) **Wetlands:** The Navy will identify an ingress/egress and travel route that avoids impacts to wetlands and minimizes impacts to coastal dune scrub at specified training areas.

(3) ***Proposed Measures Specific to Training Areas and Ranges:*** The Navy will develop and implement a five-year monitoring plan with annual surveys for federally-listed plant species when they are known to occur within or adjacent to TARs outside of Impact Areas I and II.

(4) ***Proposed Measures Specific to Basic Training Sites:*** Construction of structures will not involve grading and will be conducted outside the sage sparrow breeding season. The footprint of the construction areas will be marked to avoid habitat areas in coordination with the SCI natural resources program. Anti-perch devices will be installed on the structures.

(5) ***Summary of Species-Specific Measures***

(A) **San Clemente sage sparrow:** The Navy will continue surveys and population analysis, develop and implement a monitoring plan to assess the incidental take of San Clemente sage sparrow within and adjacent to specified training area ranges, address issues associated with habitat and sage sparrow survivorship as part of the INRMP update process, report incidental takes of sage sparrows and/or loss of its habitat, and minimize incidental take of sage sparrows consistent with military readiness requirements.

(B) **San Clemente loggerhead shrike:** The Navy will continue the currently successful program of habitat restoration, predator management, monitoring, captive breeding, and re-introduction to benefit the San Clemente loggerhead shrike until such time that recovery objectives are identified and achieved. As part of this effort, the Navy will ensure adequate access to specified areas, report any incidental take of San Clemente loggerhead shrike.

(C) **Island night lizard:** The Navy will continue population monitoring and habitat evaluations at 3-year intervals while the USF&WS evaluates the delisting petition currently before it and the Navy will submit an annual report that summarizes whether any dead or injured island night lizards were found or observed on SCI.

(D) **California brown pelican:** The Navy will ensure that California brown pelicans are not in proximity to over-blast pressure prior to underwater demolition activities. The Navy shall report any observed incidental take annually and submit a yearly report that summarizes whether any dead or injured brown pelicans were found or observed on SCI or in the nearshore waters surrounding the island.

(E) **Western snowy plover:** The Navy will continue annual breeding and non-breeding season surveys for the western snowy plover at West Cove and Northwest Harbor, explore the feasibility of using remote sensing technology to monitor western snowy plover use of Pyramid Beach and China Beach monitor West Cove Beach after amphibious vehicle use to determine whether plovers continue to use beaches after training events and to determine whether plovers have been injured or killed as a result of these activities. The Navy shall report any incidental take observed during population monitoring and habitat evaluations and submit a yearly report that summarizes western snowy plover use of monitored beaches on SCI and any incidental take that is observed.

(F) **Santa Cruz Island rock-cress:** The Navy will investigate feasibility of establishing additional colonies in suitable habitat farther away from the infantry operating area and artillery firing point.

(G) **San Clemente Island bush mallow:** The Navy will control invasive exotic plant species in a specified training area, implement management measures to improve the status of the San Clemente Island bush mallow, and use remote sensing to the extent feasible to monitor the portion of the bush mallow population within Horse Beach Canyon. The Navy will incorporate this monitoring strategy into the INRMP.

**12. 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. Cultural resources on SCI include archeological

resources and historic architectural resources. Current and proposed training and testing would have no effect on cultural resources on most areas of SCI. The Navy entered into a Programmatic Agreement (PA) pursuant to National Historic Preservation Act (NHPA) regulations with the California State Historic Preservation Office, the Advisory Council on Historic Preservation, as well as 16 other regional consulting parties.

The PA governs the Navy's compliance with Section 106 of the NHPA for SCI. The PA stipulates qualifications of personnel, development of an Integrated Cultural Resources Management Plan (ICRMP), determination of an Area of Potential Effects, evaluation of resources to ensure that authorizations for ground-disturbing activities include appropriate measures to protect archaeological resources, emergency procedures, and annual reporting. The PA further establishes that seventy years of naval gunfire and aerial bombing use in Impact Areas 1 and 2 within SHOBA has left high concentrations of explosive hazards and unexploded ordnance that creates adverse health and safety risks to personnel. In response, Navy policy prohibits access into these impact areas for most uses, including historic preservation management activities. Under the PA, this prohibition on direct historic preservation management activities within the SHOBA Impact Areas has been determined to require an alternative approach for addressing the Navy's Section 106 compliance responsibilities in these areas, which will be developed in preparation of the SCI ICRMP. The PA defines dispersed pedestrian troop movements as having no adverse effect on archaeological resources and contains detailed procedures for marking archaeological sites on SCI with signs to help prevent inadvertent disturbance. The PA also contains detailed instructions for the reviews of construction, repair, maintenance, and modifications of facilities, and on training requests on SCI, to ensure that impacts are similarly minimized.

**13. Traffic:** Potential transportation impacts from training and RDT&E activities have been analyzed, and no significant short or long-term impacts are expected. Vehicle traffic within the SOCAL Range Complex occurs only on SCI. Because SCI is a military-owned island with no connection to a road network in a regional context, only air and marine traffic in and around the SOCAL Range complex was analyzed. No new air or sea space operating areas are proposed, and the proposed use of existing areas is expected to continue to be compatible with air and marine traffic, as it has for more than 50 years. No new mitigation measures have been identified.

**14. Socioeconomics:** Potential socioeconomic impacts from training and RDT&E activities have been analyzed, and no significant short or long-term impacts are expected. To help

manage competing demands and maintain public access in the SOCAL OPAREAs, the Navy conducts its offshore operations in a manner that minimizes restrictions to commercial fisherman. Temporary range clearance procedures for safety purposes have minimal and short-term adversely effects on economic or recreational activities such as fishing, shipping, tourism, diving, boating, and surfing. The Navy has performed military operations within this region in the past and has only temporarily limited fishing or recreational uses in the SOCAL OPAREAs. When range clearance is required it is posted on the Navy's official SCI public website ([www.scisland.org](http://www.scisland.org)), and the public is notified via a notice to mariners. These measures provide mariners advance notification of Navy use areas, which allow non-participants to select an alternate destination without appreciable affect to their activities. Upon completion of training, the range would be reopened and fishermen would be able to return to fish in the previously closed area. No new mitigation measures have been identified.

**15. Environmental Justice and Protection of Children:**

Potential environmental justice impacts from training and RDT&E activities have been analyzed, and no significant short or long-term impacts are expected. Environmental justice and protection of children is only of concern on SCI; however, the only residents on SCI are temporary military and contractor personnel. The small number of potentially affected individuals, their temporary residential status, and their direct or indirect employment by the Federal government make it unlikely they would be considered low-income or otherwise disproportionately susceptible to adverse socioeconomic or environmental impacts.

**16. Public 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 continued compliance with established and published safety procedures for military activities; requirement to obtain a "green range" prior to launching any weapon, which indicates that all safety criteria have been satisfied, and that the weapons and target recovery conditions and recovery helicopters and boats are ready to be employed; preparation of a missile exercise letter of instruction prior to any missile firing exercise; and compliance of procedures to protect individuals from hazards associated with lasers and electromagnetic radiation. Mitigation measures also include reducing the potential that shipping is located within the hazard range of the longest-range weapon being fired for that event.

**17. Cumulative Impacts:** The Final EIS/OEIS analyzed cumulative impacts of the Proposed Action in combination with

other past, present, and reasonably foreseeable future actions taking place in the project area, regardless of the agency or person undertaking these actions. The Final EIS/OEIS analyzed cumulative impacts associated with implementation of Navy-sponsored activities and other non-Navy activities in the region. The cumulative project list for SCI includes 25 projects ranging from minor construction to major infrastructure type projects, as well as various military training projects. Other activities include fishing, commercial and recreational marine traffic, oil extraction, liquid natural gas terminal proposals, ocean pollution, coastal development, scientific research, commercial and general aviation, and air quality factors. Potential cumulative impacts resulting from other relevant projects (such as those listed above) combined with the Proposed Action addressed in this EIS/OEIS were determined to be less than significant.

## **COMPLIANCE WITH ENVIRONMENTAL LAW**

### **1. MMPA**

In support of the proposed action, on April 10, 2008, the Navy applied for an authorization pursuant to Section 101(a)(5)(A) of the MMPA. On May 20, 2008, the Navy updated its request with revised information concerning acoustic modeling results. 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. On October 14, 2008, NMFS published a Proposed Rule in the Federal Register (73 Fed. Reg. 60386, October 14, 2008). NMFS considered and addressed comments received during the public comment period on the Proposed Rule. NMFS issued the MMPA Final Rule on January 14, 2009, effective upon immediately upon filing with the Office of the Federal Register (74 Fed. Reg. 3882, January 21, 2009).

### **2. ESA**

**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, Guadalupe fur seal, green sea turtle, leatherback sea turtle, loggerhead sea turtle, Pacific ridley sea turtle, and

white abalone, 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 January 14, 2009, a 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 SOCAL Range Complex 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' jurisdiction. Critical habitat that has been designated for listed species is outside of the area of the proposed activities and would not be affected by those activities.

**b. USF&WS:** The Navy conducted consultation in accordance with section 7 of the ESA with the USF&WS for species under its jurisdiction. USF&WS issued a Biological Opinion and Incidental Take Statement on November 17, 2008. The opinion concluded that the Navy's ongoing and proposed activities are not likely to jeopardize the continued existence of the threatened and endangered species under USF&WS' jurisdiction.

**3. CZMA:** 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 California's Coastal Management Program (CCMP). The Navy's coastal consistency determination of August 21, 2008, was based on analysis contained in the April 2008 Draft EIS/OEIS. The staff to the California Coastal Commission (CCC) prepared a report recommending the State conditionally concur with the Navy's coastal consistency determination. The Navy appeared at a CCC public meeting on October 15, 2008, presenting information in further support of its coastal consistency determination. On October 20, 2008, the State advised the Navy via letter of its concurrence with the Navy's coastal consistency determination subject to the Navy's adoption of nine conditions, eight of which addressed the Navy's proposed use of active sonar. The Navy in a letter dated November 20, 2008, requested CCC to enter into discussions to resolve differences over the State's conditional concurrence. During a teleconference on December 4, 2008, the Navy and the CCC Executive Director and staff were unable to resolve differences concerning the State's conditional concurrence. The Navy responded to CCC by letter on January 16, 2009, addressing the State's conditions and asserting the Navy's intent to proceed with the proposed activities. The Navy advised the State that it disagreed that the CCMP contains enforceable policies that permit the State of California to regulate the taking of marine mammals and objected to the conditions the State placed on the Navy's use of MFA sonar. A summary of the State's conditional concurrence of October 20, 2008, and the Navy's response of January 16, 2009, is set forth below.

**a. MFA Sonar Conditions:** The State's first condition required the Navy to adopt a safety zone (i.e., "marine mammal preclusion zones") with associated monitoring, reporting, and shut down requirements to ensure that the received level of sonar be no greater than 154 dB re 1  $\mu$ Pa to ensure the least likelihood of a "take" of a marine mammal, regardless of the marine mammal's location relative to the state's coastal zone. The State's second condition required the Navy to eliminate the proposed expansion of ASW training and instrumentation in the Tanner and Cortes Banks. The State's third condition required the Navy to the maximum extent feasible locate and schedule training outside the gray whale migration season, where the sonar employed in the training activities would otherwise be near enough to known or observed gray whale migration paths to expose gray whales in such paths to sonar levels above 154 dB re 1  $\mu$ Pa, and if conducting exercises during the migration season, to avoid known gray whale migration corridors. The State's fourth condition required the Navy to the maximum extent feasible avoid training using MFA sonar in areas within the National Marine Sanctuaries off California's coast, the Catalina Basin, the Tanner and Cortes Banks from May to November, and adjacent to seamounts and coastal areas with complex, steep seabed topography, excepting Navy's instrumented range off SCI. The State's fifth condition required the Navy to operate MFA sonar under reduced power whenever the entire safety zone cannot be effectively monitored due to nighttime, high sea state, fog or other factors. The State's sixth condition required the Navy to power down by 6 dB during significant surface ducting conditions from the maximum level that would otherwise be allowed by these conditions. The State's seventh condition required the Navy to implement a series of measures during chokepoint exercises, to include prior notification, approval, coordination, and monitoring requirements. The State's eighth condition required the Navy to conduct aerial monitoring prior to commencement of MFA sonar use, except as required by the conditions on chokepoint exercises. The State's final condition required the Navy to agree that the State's "federal consistency authorization" was limited to a five-year period.

**b. The Navy's Response**

(1) **Conflict with Title 10:** 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 to conduct effective training units homeported on the West Coast of the United States.

(2) **Consistent to the Maximum Extent Practicable:** The conditions that the State seeks to impose as part of a "federal

consistency authorization" not recognized by the CZMA are not necessary to render the Navy's activities fully consistent with the relevant CCMP policy. The CCMP policy at issue only requires that marine resources be maintained, enhanced and, where feasible, restored. Exposure of individual marine mammals to MFA sonar will not impede the State's ability to meet this goal, particularly in light of the mitigations the Navy will employ pursuant to the MMPA and ESA authorizations issued by NMFS for the proposed SOCAL Range Complex activities. This CCMP policy further requires that uses of the marine environment be conducted in a manner that will "maintain healthy populations of all species of marine organisms . . . for long-term commercial, recreational, scientific, and educational purposes." While exposure to MFA sonar potentially may cause behavioral effects to some individual marine mammals of certain species; these effects would not have any consequence to the populations at large, and will have no impact on the long-term enjoyment of these species by the commercial, recreational, educational, and scientific communities. Therefore, the Navy's action is fully consistent to the maximum extent practicable with the enforceable policies of the CCMP.

**(3) Federal Pre-emption:** The nine conditions address the take of federally-listed marine mammal species and as such raise the issue of preemption by federal law. As discussed in an opinion provided to the Navy by the General Counsel for NOAA, which the Navy in turn provided to the State, 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. NOAA has consistently interpreted enforceable policies as those state policies not preempted by federal law.<sup>5</sup>

As discussed in the Navy's consistency determination, the Navy has closely coordinated with NMFS regarding its compliance with the MMPA and ESA. The Navy has committed to implementation of the mitigation, monitoring and reporting measures required under the ESA Biological Opinion and associated Incidental Take Statement and MMPA incidental take authorization for the SOCAL Range Complex.

The policies of the CCMP, as applied to the Navy's activities described in the consistency determination, are preempted by Section 109(a) of the MMPA, because the State's conditions are

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<sup>5</sup> See NOAA Office of Ocean and Coastal Resource Management, CZMA Federal Consistency Overview, at 6 (Aug. 10, 2007), available at, <http://coastalmanagement.noaa.gov/consistency/resources.html>; NOAA Office of Ocean and Coastal Resource Management, Program Change Guidance, Section II(D), at 8 (July 1996), available at, [http://coastalmanagement.noaa.gov/consistency/FC\\_policy\\_guidance.html](http://coastalmanagement.noaa.gov/consistency/FC_policy_guidance.html).

intended to prevent the taking of marine mammals, and to the extent any condition 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. Therefore, as there has been no such transfer of management authority for marine mammal species by NOAA to the State of California, any California state law to the extent that it relates to the taking of marine mammals is preempted by the MMPA, and is unenforceable under the CZMA.

**RESPONSES TO COMMENTS ON THE FINAL EIS/OEIS:** The Notice of Availability of the SOCAL Final EIS/OEIS was published in the *Federal Register*, in various newspapers, and on the SOCAL Range Complex Final EIS/OEIS website. Release of the SOCAL Range Complex Final EIS/OEIS was accompanied by a 24-day wait period, as approved by the Environmental Protection Agency (EPA) for compelling reasons national policy (73 Fed. Reg. 74170, December 5, 2008).

The Navy reviewed and considered three letters containing comments that were received during the waiting period following the issuance of the Notice of Availability of the Final EIS/OEIS<sup>6</sup>. Comments received in two of those letters summarized below represent the major substantive comments that were not previously addressed in the Final EIS/OEIS based on comments received on the Draft EIS/OEIS, or addressed a change in the Final EIS/OEIS from the Draft EIS/OEIS, or received by December 29, 2008.

## **1. EPA Region 9**

**a. Comment 1: The range of alternatives continues to be limited and does not comport with the intent of the alternatives analysis requirement of NEPA.**

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<sup>6</sup> Although the Navy has not received written comments regarding effects of global warming and ocean acidification, Navy recognizes the unique questions presented by these issues nationally and internationally. With regard to global warming, current models do not allow us to quantitatively link the proposed action and localized impacts. Ocean acidification involves the potential for sound in the water to travel greater distances thereby increasing the amount of energy to which marine mammals may be exposed, but may also increase the range at which some species of marine mammals may be able to communicate. Navy's quantitative analysis of acoustic sources effecting marine mammals is based on the best available science. As an example, for sonar, modeling involved analysis of areas based on potential activities and transmission loss. See Appendix F of the Final EIS/OEIS for greater detail.

**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 three alternatives in the Final EIS/OEIS. In Section 2.2.2.2, the Navy considered reducing or eliminating training in the SOCAL Range Complex, 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 1.1 of the Final EIS/OEIS, and above, the Navy is required to maintain combat-ready naval forces.

**b. Comment 2: No consideration of geographic or seasonal exclusions was included, despite the Navy's acknowledgement that there is some variability in where the Navy major exercises may occur within the SOCAL Range Complex. EPA recommends the evaluation of additional alternatives and suggested the inclusion of an alternative with additional mitigation measures such as seasonal and geographical exclusions from biologically important areas. EPA recommends that the Navy plan its training to avoid times and areas known to contain high concentrations of marine mammals, such as local foraging hotspots, whale migration routes, and in the Channel Islands National Marine Sanctuary.**

**Response:** In Section 2.2.2 of the Final EIS/OEIS, the Navy considered four additional alternatives (Alternative Range Complex Locations, Reduced Training and RDT&E, Temporal or Geographic Constraints on Use of the SOCAL Range Complex, and Simulated Training; however, they were eliminated from further consideration because they did not meet the purpose and need for the proposed action. Also, Article 5, Section 2 of the Channel Islands National Marine Sanctuary (CINMS) Final Designation Document states that DoD activities listed in the regulations are not prohibited if they are essential for national defense or because of emergency and that such activities shall be consistent with the regulations to the maximum extent practicable (45 Fed. Reg. 65200, October 2, 1980).

NOAA has recently finalized a revision to the CINMS regulations (74 Fed. Reg. 3215-3262, January 16, 2009) to state that all activities currently (i.e., at the time of designation in 1980) carried out by DoD within the Sanctuary are essential for the national defense and, therefore, not subject to the prohibitions contained within the other Sanctuary regulations. As part of this modification, the list of exempt military activities occurring within the Sanctuary was updated to include present military activities as identified in NOAA's Final EIS for these regulations. In addition, the rule adds language consistent with the National Marine Sanctuaries Act (NMSA), stating that mitigation and restoration or replacement of Sanctuary resources and qualities is required when DoD activity results in their

injury, destruction, or loss. All DoD activities are required to be carried out in a manner that avoids to the maximum extent practicable any adverse impacts on Sanctuary resources and qualities. The rule also adds one exception pertaining to vessels of the Armed Forces to the two discharge/deposit regulations. Namely, an exception is made for discharges allowed under section 312(n) of the Federal Water Pollution Control Act. Section 312(n), which was enacted in 1996, provides for uniform national standards for discharges, other than sewage, incidental to normal operation of vessels of the Armed Forces. Activities under Alternative 2 are consistent with those described in the CINMS Final Designation Document as updated in NOAA's Final EIS and are not being changed or modified in a way that would require consultation.

**c. Comment 3: EPA recommends that the Navy consider selection of the No-Action Alternative.**

**Response:** Under the No-Action Alternative, the Navy determined that while this alternative would generally satisfy Fleet training requirements, it does not propose increases in operations and therefore does not accommodate training associated with surge requirements of the FRTP. In addition, the No-Action Alternative does not meet the purpose and need because it does not propose to establish new range capabilities.

**d. Comment 4: The ROD should identify the No-Action Alternative as the environmentally preferable alternative.**

**Response:** The Navy has identified in this Record of Decision the No-Action Alternative as the environmentally preferable alternative, per 40 CFR § 1505.2(b).

**e. Comment 5: Although the Navy acknowledges that anthropogenic noise in the ocean has increased over the last 50 years, the FEIS does not appear to consider the cumulative impact of increased ambient noise in the ocean.**

**Response:** The Navy agrees that anthropogenic noise has increased and may cause responses in marine mammals. However, as stated in the Final EIS/OEIS, comprehension of the type and magnitude of any behavioral or physiological responses resulting from man-made sound, and how these responses may contribute to harm, is rudimentary at best.

Increases in ambient noise levels might have the potential to mask an animal's ability to detect objects, such as fishing gear, and thus increase their susceptibility to bycatch. MFA sonar transmission, however, involves a very small portion of the frequency spectrum and falls between the central hearing range of the (generally) low-frequency specializing baleen whales and the (generally) high-frequency specializing odontocetes. In addition, the active portion of MFA and HFA sonar is intermittent, brief, and individual units engaged in the exercise are separated by large distances. When compared against naturally occurring and other man-made sources of noise in the oceans, the sonar pings during ASW events are only a brief and intermittent portion of the total acoustic noise. Within an ASW event where sonar is used, the sonar system produces sound in the water only a small fraction of the time ASW is being conducted or, typically on the order of a single 1-second ping every 30 seconds. As a result, MFA and HFA sonar use during Navy training activities will not contribute to an increase in baseline anthropogenic ambient noise levels to any significant degree.

As described in the Final EIS/OEIS (section 4.3.2.4), sound emitted from large vessels is the principal source of noise in the ocean today, primarily due to the properties of sound emitted by civilian cargo vessels. Mechanical noise on Navy ships, especially those engaged in ASW, is very quiet in comparison to civilian vessels of similar or larger size. Most Navy ships are built to reduce radiated noise so as to assist with the ship's passive ASW and make the ship harder for submarines to detect. This general feature is also enhanced by the use of additional quieting technologies (i.e., gas turbine propulsion) as a means of limiting passive detection by opposing submarines.

During training exercises, MFA and HFA sonar will add to regional sound levels, but the cumulative effects of potential short-term and intermittent acoustic exposure to marine mammals are not well known. Disturbance from ship traffic and noise from ships and aircraft may stress animals, weakening their immune systems, and making them more vulnerable to parasites and diseases that normally would not be fatal. Any minimal incremental contribution to cumulative impacts on marine mammals from possible temporary harassment incidents associated with military readiness training within SOCAL would not likely be significant. The mitigation measures identified in Chapter 5 would be implemented to further minimize any potential adverse effects on marine mammals.

**f. Comment 6: With the Navy's analysis of 112,884 behaviorally harassed marine mammals, 10,897 marine mammals that will experience temporary hearing loss, and 19 marine mammals that will experience permanent hearing loss, the basis for**

**concluding no mortalities is unclear, considering the important role hearing plays in communication navigation and foraging.**

**Response:** The Navy considered the potential for behavioral or physiological effects to contribute to greater injury or death. The majority of exposures modeled for SOCAL would be below 170 dB sound pressure level. The harassment numbers provided in the Final EIS/OEIS and repeated in the comment do not consider the beneficial effects of mitigation measures taken during every sonar exercise. Mitigation measures reduce the likelihood of exposures to sound levels that would cause significant behavioral disruption (the higher levels of 7-9 in Figure 3.9-13 of the Final EIS/OEIS), TTS or PTS. Both the NMFS and the Navy agree that no marine mammal exposures (including behavioral harassment, temporary threshold shift, and permanent threshold shift) would result in serious injury or mortality to any individual, or would adversely affect the species or stock through effects on annual rates of recruitment or survival.

**g. Comment 7: The Navy has not identified efforts to minimize MFA sonar use in ASW training, and instead, proposes to increase it by 12 percent over the amount currently used in the SOCAL Range Complex, one of the most productive ocean systems in the world.**

**Response:** The Navy has trained in SOCAL for more than 70 years. The Navy is required to evaluate reasonable alternatives to accomplish its mission (40 CFR § 1502.14). The Navy did so in Chapter 2 of the Final EIS/OEIS by analyzing three alternatives in addition to the No-Action Alternative. In Section 2.2.2.2 of the Final EIS/OEIS, the Navy considered reducing or eliminating training in the SOCAL Range Complex, to include the use of active sonar. This alternative was eliminated because it does not meet the purpose and need of the proposed action. In Section 2.2.2.4 of the Final EIS/OEIS, the Navy considered simulation to replace actual sonar training. Although the Navy uses simulation whenever possible, this alternative was also eliminated because current simulation technology does not permit ASW training with the degree of fidelity required to maintain proficiency. As described in Section 1.1 of the Final EIS/OEIS, the Navy is required to maintain combat-ready naval forces. Naval Strike Groups must demonstrate the ability to integrate as many as eight functional warfare areas simultaneously. One of these critical areas includes ASW. 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.

**h. Comment 8: The mitigation measures are limited and depend on visual observations, despite the FEIS disclosure that deep-diving marine mammals such as beaked whales have a low probability of detection.**

**Response:** Navy lookouts undergo extensive training to include on-the job instruction under supervision of an experienced lookout followed by completion of Personnel Qualification Standard Program. Navy lookouts use both hand held and "Big Eye" (20X110) binoculars. Aerial platforms also undertake visual monitoring prior to commencement of ASW operations. In addition to visual monitoring, passive acoustic systems are used by all platforms to monitor for marine mammal vocalizations. Navy ships also monitor their surroundings using all appropriate sensors at night and with night vision goggles as appropriate for activities conducted at night. The Navy believes visual spotting provides effective avoidance of marine mammals, and is effective as mitigation, in conjunction with other proposed mitigation measures.

The Navy's current mitigation measures reflect the use of the best available scientific data balanced with the National Marine Fisheries Service (NMFS) approach and the requirements of the Navy to train. There is no suggestion that mitigation measures are 100% effective, but are meant to mitigate impacts while still being able to conduct critical training activities.

**i. Comment 9: The Navy declined to identify mitigation measures for impacts to water quality from expenditures of ordnance and other training materials into the ocean. EPA requested the Navy identify what practices or procedures would be implemented to minimize the release of hazardous materials into the ocean from ordnance and other training materials.**

**Response:** The Navy did not identify additional measures beyond existing practices to mitigate impacts of expended training materials on water quality because the Navy determined that those impacts would be insignificant. Mitigation measures typically are identified for significant adverse impacts of the Proposed Action rather than for insignificant impacts or for pre-existing (e.g., baseline) conditions.

The Navy determined that the effects of the Proposed Action on ocean water quality would be insignificant in large part because the quantities of potentially hazardous constituents actually released into the water column would be very small, and these individually insignificant releases would be dispersed both geographically and temporally. As the calculations included in

the text of the Final EIS/OEIS (Section 3.4.3) demonstrate, the concentrations of these constituents in ocean waters would typically be well below concentrations known to cause harm. Furthermore, these releases would elevate the ambient seawater concentrations of potentially hazardous constituents above their normal range only within a very small volume of seawater and only for a very short period, substantially limiting the numbers of organisms exposed to such elevated concentrations.

The majority of the expended training materials would settle to the ocean floor with little or no chemical interaction with the water column. Once on the ocean floor, corrosion processes and burial by accumulating sediment would sharply limit the release of potentially hazardous constituents of the training materials into the water column or surrounding sediments. These processes have been well described in the Final EIS/OEIS and require no further elaboration here.

The Final EIS/OEIS also described the stewardship measures taken in the past by the Navy to limit the effects of its training activities on ocean water and sediment quality. To a large extent, live rounds containing energetic materials have been replaced with inert rounds, substantially limiting releases of energetic substances and their combustion byproducts into the ocean environment. Many modern training items (e.g., torpedoes, targets) are recoverable. Through re-design, the quantities of hazardous constituents in expendable training materials have been substantially reduced over time. Electronic training devices allow the "virtual" release of ordnance against simulated targets, completely eliminating the need to expend training materials in or over the ocean for some types of activities and some phases of training. Scheduling, monitoring, and control of training exercises have been substantially upgraded, with the result that required levels of personal and unit proficiency are achieved much more efficiently than in the past, indirectly reducing the quantities of expended training materials necessary for training.

**j. Comment 10: Because of the cumulative impacts to ocean water quality, good stewardship can no longer assume that the size of the ocean will dilute and disperse all pollutants to safe levels, especially considering that metals such as copper and lead bioaccumulate in marine organisms.**

**Response:** As described in the SOCAL Final EIS/OEIS, the Navy believes that most of the potentially hazardous constituents of expended training materials are not released in, or do not long remain in, a biologically available form. Thus their potential to contribute to bioaccumulation in marine

organisms is greatly limited. While the potential to further minimize releases of potentially hazardous constituents during Navy training on the SOCAL Range Complex is low, the Navy overall has substantially reduced its releases of potentially hazardous substances in compliance with governmental regulations and its own stewardship initiatives. The Navy will continue to identify stewardship opportunities to further reduce its effects on ocean water quality.

**k. Comment 11: The EPA recommends ambient monitoring of range areas to validate conclusions that impacts would not violate water quality standards. The training practices should be carried out in compliance with requirements of the Clean Water Act, which prohibits the discharge of pollutants into waters of the United States without a National Pollutant Discharge Elimination System (NPDES) Permit.**

**Response:** The Navy believes that ambient monitoring of range areas for potential water quality impacts during training exercises would be impractical and ineffective because Navy's analysis does not indicate that the Navy's activities are altering water quality. As explained in the SOCAL Final EIS/OEIS, the individually small quantities of water-soluble substances released into the water column by an expended training item would be detectable within a very limited volume of ocean for a very short period, before being dispersed by mixing and currents. To collect samples or monitor conditions, personnel or sampling equipment would need to be immediately present at the exact point of impact, which is usually not known in advance and which would put such personnel or equipment at substantial risk. Alternatively, a fixed network of monitoring stations would be impractical given the vast expanses of ocean within which the training activities take place and the large-scale mixing and movement of ocean waters.

**l. Comment 12: EPA recommends the Navy commit to EIS reassessment for supplementation coincident with each NMFS permit cycle. Given the admitted weakness in the risk function, future studies could yield results with the potential to significantly bear on the impact assessment methodology and conclusions.**

**Response:** NEPA does not have a statutory or regulatory timeline for updating EISs. Courts have generally established a "rule of reason" and have not required supplementation every time new information has come to light. Navy will not be bound to a time line either longer or shorter than the NMFS regulatory cycle, but will comply with NEPA, its implementing regulations, CEQ guidance, and court opinions in determining whether it should supplement the Final EIS/OEIS.

**2. Citizens Opposing Active Sonar Threats (COAST):** The following response is to a comment that was not previously addressed.

**Comment:** The response given by the Navy in the Final EIS/OEIS for a COAST comment (numbered 18 in the Final EIS/OEIS) does not address the comment.

**Response:** The Navy response to the comment in question incorrectly referred the reader to "See response to COAST-14." The correct reference should have been to the Navy's response to COAST-13, which does address the comment.

**CONCLUSIONS:** In determining whether and how to enhance the capabilities of the SOCAL Range Complex, the following factors were considered: the Congressional mandates in Title 10 of the U.S. Code; existing assets and capabilities of the SOCAL Range Complex; the Navy and DoD's 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 RDT&E activities. In addition to the specific mitigation measures identified in this ROD, the 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.

1/21/09  
Date

  
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BJ Penn  
Assistant Secretary  
of the Navy  
(Installations and Environment)