

CALIFORNIA COASTAL COMMISSION

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STAFF RECOMMENDATION

ON CONSISTENCY DETERMINATION

Consistency Determination No.	CD-049-08
Staff:	MPD-SF
File Date:	8/22/08
60th Day:	10/21/08
75th Day:	11/5/08
Commission Meeting:	10/15/08

FEDERAL AGENCY: U.S. Navy

PROJECT

LOCATION:

Southern California (SOCAL) Range Complex, a 120,000 square nautical mile (sq. n.mi.) area including Santa Barbara, Santa Catalina, San Nicolas, and San Clemente Islands, and offshore waters (Exhibits 1-3)

PROJECT

DESCRIPTION:

Ongoing and proposed U.S. Navy training and testing activities, and proposed enhancements to the range complex capabilities (Exhibits 4-7 & 9)

SUBSTANTIVE

FILE DOCUMENTS:

[To be contained in an addendum]

Staff Recommendation:

Conditional Concurrence. Motion is on page 30. Conditions are on pages 31-33.

[Staff Note: The staff has not had sufficient time to complete this staff report by the time of the mailing for the October Commission meeting. This staff report focuses on the two primary issues raised by the proposed activities: the use of mid-frequency sonar, and the expansion of the shallow water test range into new areas, including the Tanner and Cortes Banks. The remainder of the issues raised will be addressed in a subsequent addendum to this staff report. The Navy's analysis of all the issues raised is contained in Appendix A, a link to which is at the end of this report, and which the Navy has posted it on its "SOCAL" website at http://www.socalrangecomplexeis.com/Documents/SOCAL_Coastal_Consistency_Determination.pdf. The staff does not anticipate recommending findings of inconsistency with the applicable Coastal Act policies for the remaining issues not addressed in this staff report.]

EXECUTIVE SUMMARY

The U.S. Navy (Navy) has submitted a consistency determination for its training and testing activities in the SOCAL Range Complex, which consists of the four southern Channels Islands, and offshore ocean waters off the islands and off the mainland. The proposal includes a large number of training activities, including existing activities, expansions of existing activities, and several new activities, which the Navy describes as needed to implement its Fleet Response Training Plan and meet its research needs, accommodate mission requirements associated with force structure changes and introduction of new weapons and systems to the Fleet; and implement enhanced range complex capabilities.

The proposal includes such range enhancements and increases in existing training levels as:

- increased numbers of training activities;
- expansion of amphibious landing training exercises, including at San Clemente Island a battalion landing of 1,500+ Marines with weapons and equipment (up to twice per year);
- expanding Naval Surface Warfare training activities in several onshore and offshore areas; and
- installing a shallow water training range (SWTR): a proposed extension into shallow water of the existing instrumented deepwater Anti-Submarine Warfare (ASW) range (known as “SOAR” (Southern California Anti-Submarine Warfare Range). (Note: the Navy uses the term “shallow” in this context to mean water depths of 100 to 400 fathoms (or 600 to 2,400 ft).)

Potential coastal zone resource issues raised by the activities include potential effects on: (a) shorebirds (particularly snowy plovers and least terns found on San Clemente Island); (b) 26 species of seabirds, including federally endangered species (California brown pelican, short-tailed albatross), federally threatened species (marbled murrelet), and one candidate species for listing (Xantus’s murrelet); (c) marine flora (including kelp forests); (d) commercial and recreational fish stocks, and essential fish habitat, (e) 27 species of marine mammals; (f) four species of sea turtles; and (g) abalones (black and white abalone).

The Navy’s list of mitigation measures is attached as Exhibit 12. The mitigation measures for marine mammal and sea turtle protection include: Marine Species Awareness Training material, shipboard surveillance for marine mammals and sea turtles, aerial surveillance where planes or helicopters are part of the activity, passive acoustic monitoring, implementing a buffer zone (700 yard arc-radius around detonation sites for small explosives (up to 20 pounds)), reducing the likelihood of exposing marine mammals or sea turtles to mid-frequency sonar by implementing: (a) a 6 dB reduction if a marine mammal is detected within 1,000 meters of the sonar source; (b) a 10 dB reduction when a marine mammal is detected within 500 meters of the source; and (c) shut off sonar when a marine mammal is detected within 200 meters of the source; avoiding dropping any inert mines on marine

mammals or sea turtles, removing from the marine environment inert mines dropped; pre- and post-exercise surveys, coordinating with the National Marine Fisheries Service (NMFS) in the event of any injury to a marine mammal or sea turtle observed and submitting monitoring reports, and providing the Commission with the monitoring reports the Navy provides to NMFS.

In its review of the previously-submitted Navy consistency determination (CD) for its southern California offshore training exercises (CD-086-06), the Commission previously determined that the Navy's estimated effects thresholds were too high. The Commission's concerns were based on evidence of strandings of beaked whales during military training exercises associated with the use of mid-frequency sonar throughout the world, as well as studies on marine mammals in the wild, which showed a higher sensitivity to noise than studies on laboratory animals. Court decisions to date have supported lower thresholds such as those deemed necessary by the Commission.

In the subject CD and accompanying Environmental Impact Statement (EIS/OEIS), the Navy proposes a Risk Function curve to establish thresholds. With this threshold, the Navy estimates that, prior to application of mitigation measures and safety zones, the "take" (under the Marine Mammal Protection Act (MMPA)) of marine mammals would approximate almost 90,000 animals. The Navy states this number would be significantly reduced through the implementation of its mitigation measures, and further notes that its "after-action" reports (i.e., monitoring of the past two years of sonar use and application of mitigation measures) document lower levels of takes than its estimates anticipated. However, even with the mitigation measures, marine mammals and sea turtles would be exposed to sonar levels shown to cause significant harm. The Navy models indicate that:

Maximum received level (top line) to which a marine mammal would be exposed using the mitigation procedures is 179 dB¹. This occurs just outside the 200 yard shutdown range. The maximum received level just before 6 dB power down at 1000 yards is 175 dB and the maximum dB just before 10 dB power down at 500 yards is 175 dB.

Given that beaked whales have been shown to strand at much lower levels (approximately two orders of magnitude lower) at received levels approximating 150-160 dB (in the 2000 Bahamas stranding), the extreme difficulty in even detecting beaked whales, the fact that during surface ducting conditions the received levels would be higher than modeled by the Navy, the fact that studies relied on by the Navy are based primarily on studies of animals in captivity and not on studies of animals in the wild, and the paucity of data concerning the effects of anthropogenic sound on the vast majority of marine mammals and other species, the Commission believes that, ideally, the upper limit of allowable received levels should be set at more precautionary 154 dB threshold. If that is not feasible, which it appears not to be (at least for shipboard monitoring), then at least a minimum of a 2 km safety zone is warranted. Thus the

¹For received levels, decibels (dB) will be referred to in this report using the underwater reference of "re: 1 $\mu\text{Pa}^2 \cdot \text{s}$." Source levels are commonly referred to as "re: 1 μPa at 1m." The Decibel scale is a logarithmic scale. [footnote added]

Commission believes the conditions on pages 31-33, which include implementation of a lower threshold/larger safety zone, as well as other measures to protect marine mammals and sea turtles, are needed to bring the project into consistency with the marine resource policy of the Coastal Act (Section 30230).

The Commission also believes that the Navy's proposal to expand its shallow water training and instrumentation into the Tanner and Cortes Banks area would be inconsistent not only with Section 30230 (which requires special protection for areas of special biological significance), but also with the alternatives and mitigation tests of Section 30233(a) (i.e., the fill of open coastal waters policy) of the Coastal Act, to the extent this expansion would increase Navy sonar use in these areas during the warm water season (May to November), when large concentrations of blue and fin whales are present and foraging.

To bring the activities into consistency with Sections 30230 and 30233 of the Coastal Act, the Commission is conditionally concurring with this consistency determination. If the Navy agrees to these conditions, the Navy would be agreeing to:

implement safety zones extending from the source of the sonar out to the distance where the sonar has attenuated to 154 dB (received level (RL), expressed in decibels (dB) (re $1 \mu\text{Pa}^2 \cdot \text{s}$)), such that marine mammals would not be exposed to > 154 dB RL; OR if the 154 dB level can not be feasibly achieved, shut down sonar if a marine mammal is detected within 2 km of the sonar dome; OR provide the Commission with sufficient information about the sonar intensities and attenuation rates, and the maximum capabilities of its monitoring, to enable the Commission to determine that the Navy will protect a safety zone as close as is possible to the 154 dB zone;

include two dedicated NOAA-trained observers at all times during use of mid-frequency sonar, provide adequate, NMFS approved training for the monitors, submit "after-action" reports to NMFS assessing the mitigation measures and recommending how to improve them, and monitor and report to NMFS any strandings occurring during or shortly after the exercises;

eliminate the proposal to expand shallow water training and instrumentation in the Tanner and Cortes Banks; OR agree to not conduct any activities in these banks using mid-frequency sonar at levels exceeding 154 dB (source level) from May to November, the period of regularly surveyed high concentrations of foraging blue and fin whales in this area;

employ Passive Acoustic Monitoring and use it to enforce the safety zones;

perform aerial monitoring;

avoid, where possible, effects on gray whales, the Channel Islands National Marine Sanctuary, and areas with known high concentrations of marine mammals (e.g., seasonally (May-November), the Tanner and Cortes Banks), and complex, steep seabed topography (except on the Navy's instrumented range off San Clemente Island);

implement additional measures for night and low visibility conditions, during Surface Ducting Conditions, and for Choke-point or simulated Choke-point exercises;

to the degree possible, retrieve inert mine shapes dropped;

as agreed to previously, submit all monitoring results provided to NMFS (unless classified) to the Commission staff; and

implement pre-exercise aerial monitoring one hour before sonar use.

Only as conditioned would the proposed activities be consistent with the applicable marine resource and fill of open coastal waters policies (Sections 30230 and 30233) of the Coastal Act. As provided in 15 CFR § 930.4(b), in the event the Navy does not agree with the Commission's conditions of concurrence, then all parties shall treat this conditional concurrence as an objection.

STAFF SUMMARY AND RECOMMENDATION

I. STAFF SUMMARY:

A. Project Description. The Navy has submitted a consistency determination for its training exercises in its Southern California (SOCAL) Range Complex. The Range Complex (Exhibit 1) is an approximately 120,000 square nautical mile (sq. n.mi.) area which includes the southern four Channel Islands (Santa Barbara, Santa Catalina, San Nicolas, and San Clemente Islands). The northern boundary of the range is a line just north of Santa Barbara, Santa Catalina, and San Nicolas Islands, the eastern boundary is the Orange/San Diego County shorelines, and the southern and western boundaries extend hundreds of miles south of the U.S./Mexican Border (offshore Baja California) and more than 600 miles southwest of the U.S. Mexican Border.

The proposal includes a large number of training activities, including existing activities, expansions of existing activities, and several new activities. The Navy states:

The Navy proposes to implement actions within the SOCAL Range Complex to:

- *Increase training and RDT&E² activities from current levels as necessary to support the FRTP;*
- *Accommodate mission requirements associated with force structure changes and introduction of new weapons and systems to the Fleet; and*
- *Implement enhanced range complex capabilities.*

2 Note: A list of the Navy's acronyms can be found in Exhibit 8.

The Navy elaborates:

The proposed activities would result in selectively focused but critical increases in training, and range enhancements to address test and training resource shortfalls, as necessary to ensure that SOCAL Range Complex supports Navy and Marine Corps training and readiness objectives.

Actions to support current, emerging, and future training and RDT&E activities in the SOCAL Range Complex, including implementation of range enhancements, include:

- Increasing numbers of training activities of the types currently being conducted in the SOCAL Range Complex.*
- Expanding the size and scope of amphibious landing training exercises in the SOCAL OPAREAs and at SCI to include a battalion landing of 1,500+ Marines with weapons and equipment (to be conducted as many as two times per year).*
- Expanding the size and scope of NSW training activities in TARs, SWATs, and nearshore waters of SCI.*
- Installing a shallow water training range (SWTR), a proposed extension into shallow water³ of the existing instrumented deepwater ASW range (known as “SOAR”).*
- Conducting activities on the SWTR.*
- Increasing Commercial Air Services support for Fleet Opposition Forces (OPFOR) and Electronic Warfare (EW) Threat Training.*
- Constructing a Shallow Water Mine Field at depths of 40 to 420 ft (76-128 m) in offshore and nearshore areas near SCI.*
- Conducting activities on the Shallow Water Minefield.*
- Conducting Mine Neutralization Exercises.*
- Supporting training for new systems and platforms, specifically, LCS, MV-22 Osprey aircraft, the EA-18G Growler aircraft, the SH-60R/S Seahawk Multi-mission Helicopter, the P-8 Multi-mission Maritime Aircraft, the Landing Platform-Dock [LPD] 17 amphibious assault ship, the DDG 1000 [Zumwalt Class] destroyer, and an additional aircraft carrier, USS CARL VINSON, proposed for homeporting in San Diego.*

³ In the context of naval operations, specifically submarine operations, the term “shallow water” is a relative term, denoting depths of 100 to 400 fathoms (or 600 to 2,400 ft), which are considered “shallow” compared to the depth of the ocean.

Differentiating between existing, expanded, and new activities, the Navy states:

Proposed Activities: Increase Operational Training and Accommodate Force Structure Changes

The proposed activities are designed to meet Navy and Department of Defense current and near-term operational training requirements. Under the proposed activities, in addition to accommodating training activities currently conducted, SOCAL Range Complex would support an increase in training activities, including Major Range Events and force structure changes associated with introduction of new weapons systems, vessels, and aircraft into the Fleet. Under the proposed activities, baseline-training activities would be increased. Two new types of training events would be conducted, namely, a battalion-sized amphibious landing and additional amphibious training events at SCI, and mine neutralization exercises in the SOCAL OPAREAs. In addition, training and activities associated with force-structure changes would be implemented for the MV-22 Osprey, the EA-18G Growler, the SH-60R/S Seahawk Multi-Mission Helicopter, the P-8 Maritime Multi-mission Aircraft, the LPD 17 amphibious assault ship, and the DDG 1000 [Zumwalt Class] destroyer. Force structure changes associated with new weapons systems would include MCM systems. Force Structure changes also would include training associated with the proposed homeporting of the aircraft carrier USS CARL VINSON at NBC.⁴

Describing the proposed new activities, the Navy states:

Proposed New Operations

The proposed activities includes [sic] two types of training events that are not presently conducted in SOCAL Range Complex – large scale amphibious landings at SCI and Mine Neutralization Exercises (specifically, those involving OAMCM). Under the proposed activities, these types of training would be conducted, as discussed below. The proposed activities also would increase the scope and intensity of currently conducted training (described above in Section 1.2). Table 1-7 [below] identifies the proposed increases in such training events.

⁴ This CD addresses only training activities associated with the homeporting of a third aircraft carrier at NB Coronado; separate environmental analysis is being conducted with regard to potential impacts of facilities, personnel, and support activities that might be associated with the homeporting proposal.

Table 1-7: Baseline and Proposed Activities

Navy Warfare Area	No.	Operation Type	Location of Activity	Baseline	Proposed activities
Anti-Air Warfare	1	Aircraft Combat Maneuvers	W-291 (PAPA Areas)	3,608	3,970
	2	Air Defense Exercise	W-291	502	550
	3	Surface-to-Air Missile Exercise	W-291	1	6
	4	Surface-to-Air Gunnery Exercise	W-291	262	350
	5	Air-to-Air Missile Exercise	W-291	13	13
Anti-Submarine Warfare	6	Antisubmarine Warfare Tracking Exercise – Helicopter	SOCAL OPAREAs	544	1,690
	7	Antisubmarine Warfare Torpedo Exercise – Helicopter	SOAR/SCIUR	187	245
	8	Antisubmarine Warfare Tracking Exercise – Maritime Patrol Aircraft	SOCAL OPAREAs	25	29
	9	Antisubmarine Warfare Torpedo Exercise Maritime Patrol Aircraft	SOA/SOCAL OPAREAs	15	17
Anti-Submarine Warfare (cont.)	10	Antisubmarine Warfare EER / IEER sonobuoy employment	SOCAL OPAREAs	2	3
	11	Antisubmarine Warfare Tracking Exercise - Surface	SOCAL OPAREAs	847	900
	12	Antisubmarine Warfare Torpedo Exercise - Surface	SOAR/SCIUR	21	25
	13	Antisubmarine Warfare Tracking Exercise – Submarine	SOCAL OPAREAs	34	40
	14	Antisubmarine Warfare Torpedo Exercise –	W-291	18	22

		Submarine			
Anti-Surface Warfare	15	Visit Board Search and Seizure	W-291, OPAREA 3803, SOAR	56	90
	16	Anti-Surface Missile Exercise	SOAR, MIR, SHOBA	47	50
	17	Air-to-Surface Bombing Exercise	SOAR, MIR, SHOBA	32	40
	18	Air-to-Surface Gunnery Exercise	W-291	47	60
	19	Surface-to-Surface Gunnery Exercise	W-291, SHOBA	315	350
	20	Sink Exercise	W-291	1	2
Amphibious Warfare	21	Naval Surface Fire Support	SHOBA	47	52
	22	Expeditionary Fires Exercise	SCI, SHOBA, FSAs	6	8
	23	Expeditionary Assault – Battalion Landing	Eel Cove, Northwest Harbor, West Cove, Wilson Cove, Horse Beach, AVCM	0	2
	24	Stinger Firing Exercise	SHOBA	0	4
Amphibious Warfare (cont.)	25	Amphibious Landings and Raids (on SCI)	SCI (West Cove, Impact Areas, Horse Beach Cove, NW Harbor)	7	66
	26	Amphibious Operations – CPAAA	CPAAA	2,205	2,276
Electronic Combat	27	Electronic Combat Operations	SOCAL OPAREAs	748	775
Mine Warfare	28	Mine Countermeasures	Kingfisher, ARPA	44	48

	29	Mine Neutralization	SCI (Pyramid Cove, Northwest Harbor, Kingfisher, MTR-1, MTR-2), ARPA	0	732
	30	Mine Laying	MTRs, Pyramid Cove	17	18
Naval Special Warfare	31	NSW Land Demolition	SCI (Impact Areas, SWAT 1, SWAT 2, TARs).	354	674
	32	Underwater Demolition-Single Charge	SCI nearshore (NW Harbor TAR 2 and 3, Horse Beach Cove, SWATs) SOAR, FLETA HOT	72	85
	33	Underwater Demolition-Multiple Charges	NW Harbor, SWAT 2	14	18
Naval Special Warfare (cont.)	34	Small Arms Training	SCI, FLETA HOT	171	205
	35	Land Navigation	SCI	99	118
	36	NSW UAV Operations	SCI, W-291	72	1176
	37	Insertion/Extraction	SCI, SOCAL OPAREAs, W-291	5	15
	38	NSW Boat Operations	SCI, SOCAL OPAREAs, SHOBA, FSAs	287	320

	39	SEAL Platoon Operations	SCI / SHOBA, FLETA HOT	340	668
	40	NSW Direct Action	SCI, SOCAL OPAREAs	156	190
Strike	41	Bombing Exercise (Land)	SHOBA, MIR	176	216
	42	Combat Search & Rescue	SCI	7	8
Explosive Ordnance Disposal	43	Explosive Ordnance Disposal SCI	SCI	4	10
U.S. Coast Guard	44	Coast Guard Operations	SOCAL OPAREAs, W-291	1,022	1,022
Air Operations-Other	45	NALF Airfield Activities	SCI (NALF)	26,376	33,000
RDT & E	46	Ship Torpedo Tests	SOAR, SCIUR, OPAREA 3803	22	20
	47	Unmanned Underwater Vehicles	NOTS Pier Area, SOAR	10	15
	48	Sonobuoy QA/QC Testing	SCIUR	117	120
	49	Ocean Engineering	NOTS Pier Area	242	242
RDT & E (cont.)	50	Marine Mammal Mine Shape Location/Research	MTR 1 and 2, NOTS Pier, SCIUR, SOAR,	5	30
	51	Missile Flight Tests	SCI, SOCAL OPAREAs, W-291	5	20
	52	NUWC Underwater Acoustics Testing	SCIUR	44	139

Major Range Events	NA	Major exercises	SOCAL Range Complex Point Mugu Sea Range (ASW)	Comprised of multiple range events, identified above	Comprised of multiple Range events, identified above
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Elaborating further on the proposed new activities, the Navy states:

Large Amphibious Landings at SCI

The Navy and Marine Corps have identified a requirement to conduct large-scale amphibious landing exercises at SCI. (Presently, large-scale amphibious landings are not conducted at SCI. Marine Corps training on SCI is limited to individual and small unit training, primarily in naval gunfire support tasks, reconnaissance and raids, and small-unit over-the-beach operations). Specifically, the proposed activities would significantly expand the size and scope of amphibious training exercises at SCI to include a battalion-sized landing of approximately 1,500 Marines with weapons and equipment. Under the proposed activities, this exercise would be conducted no more than two times per year.

The landing force, is proposed to be 1,500 personnel, organized into a Marine Air Ground Task Force, consists of a battalion-sized ground combat element, an aviation combat element, and logistics and command forces. The forces would land by air using helicopters or MV-22 tilt-rotor airplanes and cross beaches from the sea using various landing craft and amphibious vehicles (Landing Craft Air Cushion, Amphibious Assault Vehicle, Expeditionary Fighting Vehicle, and Landing Craft Utility). In this exercise, forces would land at the VC-3 airfield, West Cove, Wilson Cove, Northwest Harbor, or Horse Beach (see Figure 1-12). The exercise force would execute live-fire and maneuver operations in accordance with exercise scenarios developed to meet the commander’s training mission. Proposed amphibious training would include amphibious vehicle assault, reconnaissance, helicopter assault, combat engineer training, and armored vehicle operations. A battalion exercise would require identification and development of additional training areas on SCI capable of supporting maneuver by infantry, armored vehicles, and trucks. Training areas proposed to support this scale of exercise are identified in Table 1-8, and depicted in Figure 1-14.

Mine Neutralization Exercises

Mine neutralization exercises would involve training using Organic Airborne Mine Countermeasures (OAMCM) systems employed by helicopters in simulated threat minefields with the goal of clearing a safe channel through the minefield for the passage of friendly ships. Once a mine shape is located, mine neutralization is

simulated. Helicopters engaged in MCM training would be configured with one or more of the following systems:

- *AN/AQS-20 Mine Hunting System. The AQS-20 is an active high resolution, side-looking, multibeam sonar system used for mine hunting of deeper mine threats along the ocean bottom. It is towed by a helicopter. A small diameter electromechanical cable is used to tow the rapidly-deployable system that provides real-time sonar images to operators in the helicopter.*
- *AN/AES-1 Airborne Laser Mine Detection System (ALMDS). ALMDS is a helicopter-mounted system that uses Light Detection and Ranging (LIDAR) blue-green laser technology to detect, classify, and localize floating and near-surface moored mines in shallow water.*
- *AN/ALQ-220 Organic Airborne Surface Influence Sweep (OASIS). OASIS is a helicopter-deployed, towed-body, 10 ft long and 20 inches in diameter, that is self-contained, allowing for the emulation of magnetic and acoustic signatures of the ships.*
- *Airborne Mine Neutralization System (AMNS). AMNS is a helicopter-deployed underwater vehicle that searches for, locates, and destroys mines. This self-propelled, unmanned, wire-guided munition with homing capability is expended during the mine destruction process.*
- *AN/AS-2 Rapid Airborne Mine Clearance System (RAMICS). RAMICS is a helicopter-borne weapon system that fires a 30-mm projectile from a gun or cannon to neutralize surface and near-surface mines. It uses LIDAR technology to detect mines.*

Mine neutralization exercises also would involve shipboard MCM systems, including the Remote Minehunting System (RMS). The RMS is an unmanned, semi-submersible vehicle that tows a variable-depth sensor to detect, localize, classify, and identify mines. The RMS includes a shipboard launch and recovery system.

Mine neutralization exercises also would involve submarine-deployed MCM systems, the Long-term Mine Reconnaissance System (LMRS). The LMRS employs a self-propelled underwater vehicle equipped with forward-looking search sonar and side-looking classification sonar. The forward-looking sonar is used to detect underwater objects, while the side-looking sonar provides information used to classify any detected objects.

Under the proposed activities, mine neutralization training events would be conducted at the locations shown in Table 1-7. Under the proposed activities, the Navy also would

establish a new Shallow Water Minefield near Tanner Bank, which also would support mine neutralization training. The proposed Shallow Water Minefield is described in Section 1.3.1.3.

Shallow Water Minefield

As a result of the risk to Navy vessels from moored mines, Congress has required the Navy to develop a MCM master plan, and sought assurance from the Secretary of Defense and the Chairman of the Joint Chiefs of Staff that the plan would be adequately funded and meet military requirements. Consequently, the Navy has a need to expand its use of the two existing shallow water minefields in support of MCM training, and develop two additional training minefields in SOCAL. Currently, the Navy conducts Small Object Avoidance training in two existing ranges: the Kingfisher Range off SCI and the ARPA Training Minefield off La Jolla. Small Object Avoidance operations have three objectives: (1) mine detection and avoidance; (2) navigation and reporting; and (3) in the future, more advanced, safe multiple avoidance training by finding a “safe route” through the minefield. Military personnel use onboard sonar to search for, detect, and avoid mine-like shapes; in the future, remote off-board systems will be used (see RMS discussion below).

Currently, the Navy utilizes two areas for unit level Small Object Avoidance training: the Kingfisher range off San Clemente Island and the ARPA Training Minefield off La Jolla. Used since 1996, the Kingfisher Range is a one by two nautical mile area northwest of Eel Point, approximately one nautical mile off shore. There are more than a dozen “mine-like” shapes moored to the ocean bottom by cables and coming within 50 feet of the surface. U.S. ship participants consist of CGs, DDs, DDGs, and FFGs equipped with AN/SQS-53 and AN/SQS-56 active sonar. In the future, Kingfisher would support MH-60S training using AN/AQS-20 dipping sonar.

The ARPA off La Jolla has historically been used for shallow water submarine and UUV Small Object Avoidance and MCM training, and is the desired location for expanding mine avoidance and MCM training. ARPA supports the shallow water minefield submarine MCM training requirement for a depth of 250-420 feet, and a sandy bottom and flat contour in an area relatively free from high swells and waves. Mine shapes are approximately 500-700 yards apart and 30-35 inches in size, and consist of a mix of recoverable/replaceable bottom shapes (~10 cylinders weighed down with cement) and moored shapes (~15 shapes, no bottom drilling required for mooring). Shapes typically need maintenance or cleaning every two years.

Use of the shallow water minefield would be expanded from its current use by submarines and UUV to include surface ships and helicopters. Ships, submarines, UUVs, and aircraft would continue to operate a mix of mid to high frequency navigation/mine detecting sonar systems that are either platform based or remotely operated. Once located, mine neutralization of permanent shapes by explosive shaped-

charge, ordnance or removal would be by simulation only. Typical submarine usage would vary between 5-10 training operations per year, lasting up to 8 hours per day for a two day event. Training would occur at both basic and advanced levels and in accordance with the tactical Weapons Certification Program. Surface vessel Organic Mine Countermeasures training usage would utilize the new RMS. The RMS is an unmanned, semi-submersible vehicle that will be deployed from both the DDG-51 Class and the LCS.

The Navy proposes to establish an offshore shallow water minefield on Tanner Banks. The training area would be approximately 2 by 3 nm in size. Mines would be placed on the ocean floor, with a total of 15 mine shapes in three rows of five. This offshore field would be utilized by surface ships deploying the RMS to detect, classify and localize underwater mines. The RMS is launched and recovered by the host ship using a davit system. After deployment, the host DDG will stand off while the RMS enters the target zone to perform reconnaissance for bottom-laid mines. An area search is conducted following an operator-programmed search pattern. The RMS searches using low-power (<85dB) acoustic sonar, towed by the UUV itself. Upon detecting a mine, the unit will localize and photograph the object for classification, and then continue on its programmed search. RF communications between the RMS and host ship provide for data telemetry. When the search portion of the mission is completed, the RMS will proceed to a programmed location for recovery. A typical RMS training mission will last for approximately 8 hrs.

The Navy also proposes to establish a shallow water minefield off the southern end of SCI to support MIW training requirements in shallow water. MIW training MH-60S helicopters and M-Class ships. MH-60S helicopters include an OAMCM package that requires a shallow water range (40-150') for deploying recoverable shapes and live ordnance usage. Two of the five MCM systems would be deployed in this shallow water minefield: ALMDS for detecting and RAMICS for neutralizing submerged and moored mines: ALMDS is capable of detecting, locating and classifying floating and shallow water mines. RAMICS provides helicopters with the capability of neutralizing bottom-moored and close-tethered mines. For the MH-60S, shallow water minefield operations are anticipated to reach 680 training operations per year, typically lasting less than 4-hours per operation.

Once installed, the mine shapes would remain in place; however, if in the future the Navy no longer has a requirement for MCM training or no longer uses the Shallow Water Minefield for training, then the Navy will comply with applicable federal environmental planning and regulatory requirements pertaining to the disposition of these facilities.

West Coast Shallow Water Training Range

In 1999, the Navy formally identified the requirement for a SWTR on the west coast of the U.S. This requirement, validated in an Operational Requirements Document (DoN 1999), identifies criteria for the SWTR. These criteria include:

- Shallow water depth criteria;*
- Located within existing OPAREA and beneath SUA;*
- Capability to interface with air and surface tracking systems to permit multi-dimensional training;*
- Availability of range infrastructure, logistics support, and exercise control services;*
- Located near a current deep-water range to support related training and maximize training efficiency*
- Seamless tracking of exercise participants moving between existing deep water range and SWTR; and*
- Proximity to Fleet homeports and air stations to facilitate access by training units and management of personnel tempo.*

Multiple site options for establishing the SWTR were considered, including sites in the Hawaii Range Complex and Northwest Training Range Complex. The Navy determined that SOCAL OPAREAs, near SCI and the existing SOAR range, is the most suitable location for the SWTR (see Figure 1-15). This location provides the necessary shallow water training environment, is readily accessible to Fleet units in San Diego, maximizes use of existing training support structure, including communications infrastructure and logistics support services, and otherwise maximizes training and support efficiencies.

The SWTR component of the proposed activities would provide underwater instrumentation for two additional areas of the current SOAR, one 250-nm² (463-km²) area to the west of the already instrumented (deep water) section, in the area of Tanner/Cortes Banks, and one 250-nm² (463-km²) area between the deep water section and the southern section of SCI (Figure 1-15). If installed in these areas, the SWTR would increase the use of these areas for ASW training with MFAS.

The proposed instrumentation would consist of undersea cables and sensor nodes, similar to instrumentation currently in place in SOAR. The new areas would form an integral SWTR capability for SOAR. The combination of deep water and shallow water instrumentation would support a seamless tracking interface from deep to shallow water, which is an essential element of effective ASW training. The instrumented area would be connected to shore via multiple trunk cables.

The SWTR instrumentation would be an undersea cables system integrated with hydrophone and underwater telephone sensors, called nodes, connected to each other and then connected by up to 8 trunk cable(s) to a land-based facility where the collected range data are used to evaluate the performance of participants in shallow water (120 ft - 600 ft deep) training exercises. The basic proposed features of the instrumentation and construction follow.

The transducer nodes are capable of both transmitting and receiving acoustic signals from ships operating within the instrumented areas of SOAR (a transducer is an instrument that converts one form of energy into another [in this case, underwater sound into an electrical signal or vice-versa]). Some nodes are configured to support only receiving signals, some can both transmit and receive, and others are transmit-only versions. The acoustic signals that are sent from the exercise participants (e.g. submarines, torpedoes, ships) to the receive-capable range nodes allow the position of the participants to be determined and stored electronically for both real-time and future evaluation. The transmit-capable nodes allow communication from the range to ships or other devices that are being tracked. More specifically:

The SWTR extension would consist of no more than 500 sensor nodes spread on the ocean floor over 500 nm². The distance between nodes would vary between 0.5 nm and 3 nm, depending on water depth. Sensor nodes would be similar in construction to existing SOAR instrumentation. The sensor nodes are small spherical shapes <6 inches in diameter. The sensors would be either suspended up to 15 ft (4.5 m) in the water column or laid flat on the sea floor. An additional protective device would surround or overlay a sensor node located in shallow water in areas of commercial fishing activity. These protective devices would be 3-4 ft (1 m) round or rectangular with a shallow height. The final physical characteristics of the sensor nodes would be determined based upon local geographic conditions, and would accommodate man-made threats such as fishing activity. Sensor nodes would be connected to each other by standard submarine telecommunications cables with diameters less than 1 inch. Approximately 900 nm of interconnecting cables would be deployed.

Sensor nodes would be connected by cables to rectangular underwater junction boxes located at diver-accessible water depths; junction box dimensions would be 10-15 ft (3-4.5 m) on a side. The junction boxes would connect to a shore-based facility by trunk cables (submarine cables up to 2 inches in diameter with additional data capacity). Trunk cables eliminate the need for numerous interconnect cables running to the shore. Up to eight trunk cables would be used, with a combined length of 375 nm. Trunk cables would be protected in shore areas by directionally drilled horizontal pipes running beneath the surface of the shoreline.

- *The cables would be deployed using a ship up to 300 ft (91 m) long. Trunk cables would be routed through deep water as much as is possible. Trunk cables deployed in shallow water may need to be buried. Burial equipment would cut (hard bottom) or plow (soft sediment) a furrow 4 inches (10 cm) wide by up to 36 inches deep. Burial equipment (tracked vehicle or towed plow) would be deployed from a ship. The trunk cable, which passes through the sea-shore area, would terminate at the Navy's existing cable termination facility at West Cove. From there, information gathered on the SWTR would be transmitted via an existing microwave data link to the Navy's Range Operations Center on Naval Air Station North Island. The adjacent SOAR has a single junction box located outside the nearshore area, and places the trunk cable in a horizontally directionally drilled bore that terminates on shore. The size of the SWTR may require up to 8 junction boxes and 8 trunk cables. Multiple horizontal bores are in the SOAR. Every effort would be made to use any excess bore capacity available in the SOAR.*

- *The in-water instrumentation system would be structured to achieve a long operating life, with a goal of 20 years and with a minimum of maintenance and repair throughout the life-cycle. This is desirable due to the high cost of at-sea repairs on transducer nodes and cables; the long lead-time to plan, permit, fund and conduct such repairs (6-18 months); and the loss of range capability while awaiting completion. The long operational life would be achieved by using high-quality components, proven designs, and multiple levels of redundancy in the system design. This includes back-up capacity for key electronic components and fault tolerance to the loss of individual sensors, or even an entire sensor string. The use of materials capable of withstanding long-term exposure to high water pressure and salt water-induced corrosion is also important. Periodic inspection and maintenance in accessible areas also extends system life.*

Southern California Offshore Range would submit cable area coordinates to the National Geospatial Intelligence Agency and request that the combined SWTR/SOAR area be noted on charts within the appropriate warning area. This area would be noted in the U.S. Coast Pilot as a Military Operating Area, as are other areas on the West Coast. The Navy will promulgate a Notice to Mariners (NOTMAR) or a Notice to Airmen (NOTAM) within 72 hours of the training activities, as appropriate.

If in the future the Navy no longer has a requirement for ASW training or no longer uses the SWTR for training, then the Navy will comply with applicable federal environmental planning and regulatory requirements pertaining to the disposition of these facilities.

Finally, in response to the Commission staff request as to the degree to which the expanded SOAR instrumentation would assist in passive acoustic efforts, the Navy stated (Navy email, Sept. 18, 2008):

The Navy will continue to work on a program that will enhance its ability to use passive hydrophones on the SOAR Instrumented Range to detect and track marine mammals on those portions of the range where the passive hydrophones are in place. To ensure that these efforts remain focused, the Navy will develop an implementation plan and schedule to expand the technical capability of existing hydrophones to detect marine mammals by April 4, 2008. The implementation plan should provide for completion of prototype classifiers for Cuvier's and Blaineville's beaked whales and visual verification of other small odontocetes detected by passive hydrophones by April 15, 2009. As part of the SOCAL EIS, the Navy is evaluating a proposal to extend the range areas monitored by passive hydrophones. If Navy decides to extend the area covered by passive hydrophones as part of its ROD for the SOCAL EIS, the Navy will determine a timetable for acquisition and installation of additional hydrophones by March 30, 2009. - from Federal Register / Vol. 73, No. 16 / Thursday, January 24, 2008 / Notices

As noted above, a link to the Navy's consistency determination can be found at the end of this document. Both the Navy's consistency determination and the Navy's EIS/OEIS for the Range Complex can be found at the Navy's website:

<http://www.socalrangecomplexeis.com/Documents.aspx>.

B. Effects on Coastal Resources. After describing the complete range of activities, the Navy assesses the degree to which it believes each activity would affect the coastal zone. In total, the Navy's project description includes approximately 53 types of Navy at-sea and San Clemente Island (SCI) training and test activities in the 10 major warfare areas that occur in the SOCAL Range Complex. The Navy describes which of these activities would occur within or outside the coastal zone, and which activities the Navy believes can be considered to affect the coastal zone. The Navy states:

PROPOSED ACTIVITY ELEMENTS AFFECTING THE COASTAL ZONE

Proposed activities must be evaluated for consistency with enforceable State of California (State) CZ policies if they have reasonably foreseeable effects on CZ uses or resources. Thus, elements of the proposed activities must first be examined to determine whether they have reasonably foreseeable effects before determining whether those effects, if any, are consistent with the State's enforceable policies. This effects analysis is presented below. Those proposed activities elements that have reasonably foreseeable effects on CZ uses or resources are addressed in the consistency determination in Section 3. CZ resources include both resources permanently located in the CZ (e.g., benthic organisms) and mobile resources (e.g., dolphins and seals) that typically move into and out of the CZ as part of a natural cycle. Actions that affect a resource while it is outside of the CZ such that effects are felt later in the CZ are considered to be reasonably foreseeable effects on coastal resources. Actions that temporarily affect a resource while it is outside of the CZ (e.g.,

temporary behavioral effects on a marine mammal that National Marine Fisheries Services (NMFS) may classify as harassment) such that the effects on the resource are not felt within the CZ, are not considered to be reasonably foreseeable effects on coastal resources. See Preamble to December 8, 2000 CZMA Federal Consistency Regulations Final Rule, Federal Register Volume 65, Number 237, page 77130

Thirty-three of the 53 activities included as elements of the proposed activities could take place in the CZ. The Shallow Water Minefield would be located in the CZ and a portion of the Shallow Water Training Range (SWTR) Expansion would be located in the CZ. Table 1-10 lists training and test activities in the CZ and Table 1-7 lists the ranges or OPAREAs where they occur. The foreseeable effects of proposed activities in the CZ are described below by major warfare area.

The Navy then provides an activity-by-activity analysis on pages 2-2 through 2-20 of its consistency determination (Exhibit 11). The Navy concludes:

SUMMARY OF PROPOSED ACTIVITIES IN THE COASTAL ZONE

Twenty-nine of the 53 activities included in the proposed activities could have reasonably foreseeable effects on CZ resources or uses, along with the installation of the SWTR. In addition, the installation of the Shallow Water Minefield could affect CZ uses depending upon where it is located. The potential effects on CZ uses and resources of these activities are summarized below in Table 2-1. These effects will be evaluated for consistency with CCA enforceable policies in Section 3.

Table 2-1: Proposed Activity Elements with a Reasonably Foreseeable Effect on the CZ

ELEMENT		DISCUSSION
Training		
AAW	Surface-to-Air Missile Exercise (3)	When BQM-74 targets are used, a portion of the CZ off SCI must be under the exclusive control of the Navy for target launch and recovery.
ASW*	Helicopter TRACKEX/TORPEX (6,7)	Activities would emit acoustical energy (sonar) in areas outside of the CZ; these emissions could propagate into the CZ at attenuated levels. In addition, these activities would emit acoustical energy in portions of the CZ surrounding SCI.
	MPA TRACKEX/TORPEX (8,9)	
	Surface Ship TRACKEX/TORPEX (11,12)	
	Submarine TRACKEX/TORPEX (13,14)	
	Extended Echo Ranging (EER) Operations (Integrated ASW Course II) (10)	Sound and overpressure from underwater detonations could affect CZ resources. Small portions of the SOCAL OPAREAs would be closed to non-participants for public safety.
ASUW*	Air-to-Surface Missile Exercise (16)	Ordnance could affect mobile marine resources on the surface of the ocean and in the water column. Activities require the offshore portions of SHOBA to be closed to the public for public safety.
	Air-to-Surface Bombex (17)	Ordnance could affect mobile marine resources on the surface of the ocean and in the water column.
	Air-to-Surface Gunnery Exercise (18)	Ordnance could affect mobile marine resources at or near the surface of the ocean.
	Surface-to-Surface Gunnery Exercise (19)	Ordnance could affect marine resources at or near the surface of the ocean. Activities require the offshore portions of SHOBA to be closed to the public for public safety.
AMW*	Naval Surface Fire Support (21)	Activities require the offshore portions of SHOBA to be closed to the public for public safety.
	Expeditionary Fires Exercise (22)	Activities require the offshore portions of SHOBA to be closed to the public for public safety. Also, activities would include landing of amphibious vessels on selected SCI beaches.
	Battalion Landing (23)	Activity disturbs sand and sediments in the surf zone of sandy beaches, requires exclusive Navy control over portions of the CZ around CSI.
	USMC Stinger Firing Exercise (24)	Activities require the offshore portions of SHOBA to be closed to the public for public safety.
	Amphibious Landings and Raids (25)	Activity disturbs sand and sediments in the surf zone of sandy Beaches, and requires exclusive Navy control over portions of the CZ around SCI.
MIW*	Mine Countermeasures (28)	Activity could expose CZ resources (marine mammals) to active sonar, and requires exclusive Navy control over portions of the CZ.

	Mine Neutralization (29)	Activity would require exclusive Navy control of Castle Rock, Eel Point, China Point, or Pyramid Head.
	Mine Laying Exercise (30)	Activities require temporary exclusion of commercial and recreational users from Castle Rock, Eel Point, China Point, or Pyramid Head for public safety.
NSW*	Underwater Demolition (32)	This activity could directly harm or disorient marine plants and animals near the point of detonation, and would require exclusive Navy control of portions of the CZ around SCI for safety.
	Large Underwater Demolition (33)	This activity could directly harm or disorient marine plants and animals near the point of detonation, and would require exclusive Navy control of portions of the CZ around SCI for safety.
	Marksmanship - Small Arms Training (34)	Activities require that the public be cleared from that portion of the range Surface Danger Zone that extends over the ocean.
	NSW UAV Operations (36)	Activities require exclusive Navy control of portions of the CZ around SCI for safety.
STW*	BOMBEX - Land (41)	Activities require the offshore portions of SHOBA to be closed to the public for public safety.
Research, Development, Test, and Evaluation		
RDT&E	Ship Torpedo Tests (46)	Activities may require that a portion of the CZ around SCI be closed temporarily for public safety
	Missile Flight Tests (51)	Activities may require marine portions of SHOBA to be closed temporarily for public safety.
Installation of Range Enhancements		
Shallow Water Minefield	Activity would temporarily exclude the public from small areas of the ocean.	
Shallow Water Training Range	Activity would temporarily exclude the public from small areas of the ocean.	
NOTES: ASW - Anti-Submarine Warfare; ASUW - Anti-Surface Warfare; AMW - Amphibious Warfare; MIW - Mine Interdiction Warfare; NSW - Naval Special Warfare; STW - Strike Warfare; RDT&E - Research, Development, Test, and Evaluation.		

In terms of which potentially affected marine species the Navy believes qualify as coastal zone species, the Navy asserts that the Commission’s jurisdiction is limited to a small number of marine mammal species. The Navy further argues that, for such species, coastal zone effects occur only in situations where a marine mammal is perceived as experiencing biological effects while located within the coastal zone, or where such effects are occurring outside the coastal zone, the marine mammal continues to experience the biological effects when returning to the coastal zone (which consists of the ocean areas surrounding the four southern Channel Islands, out to the 3 mile limit of state waters). For example, the Navy dismisses effects to 24 out of 27 cetacean species as not being coastal zone effects because the cetaceans “are not found in the CZ [coastal zone] on a regular or cyclical basis.” The Navy states (CD, p. 3-23 to 3-24):

Of the 27 species of cetaceans expected to be present in the SOCAL Range Complex areas, only one (bottlenose dolphin) is expected to be regularly present in the CZ (see Table 3-6). Another two species (gray whale, long-beaked common dolphin) are expected to be present in the CZ occasionally, either seasonally for the gray whale, or periodically during foraging or regular movement for long-beaked common dolphin.

After a review of published scientific literature, it was determined that the other 24 cetaceans within Southern California water are more typically open ocean species not normally found in or near the CZ (Forney et al. 1995, Forney and Barlow 1998, Carretta et al. 2000, Soldevilla et al. 2006, Barlow and Forney 2007). Many of these species also have seasonal occurrence within the offshore waters of SOCAL and may not be present during certain times of the year (Forney and Barlow 1998, Barlow and Forney 2007). Because these species are not found in the CZ on a regular or cyclical basis, they are not coastal resources and will not be considered further in this analysis [See 40 C.F.R. § 930.11(b)]. No ESA-listed cetaceans are expected to be present in or near the CZ within the area of the proposed activities.

The Commission disagrees with the Navy over both which activities affect the coastal zone, as well as which species are coastal zone species. As the Commission noted in reviewing the previous Navy consistency determination for its southern California training activities:

However the Commission takes a broader view than the Navy as to which activities may affect the coastal zone. Many of the species ... potentially affected by the proposed training activities spend some portions of their life cycles within coastal waters (e.g., birds that fly in and out of the coastal zone and marine species that swim in and out of the coastal zone)(see Exhibit 7 [of CD-086-06], NOAA letter to CCC, March 10, 1995).

The Commission finds that species need only be present in the coastal zone on a regular or cyclical bases, to constitute a coastal zone species, not that a species needs to spend most of its time in the coastal zone. The Commission further finds that, based on the express terms of the CZMA, adverse impacts to any such coastal zone species, even when those impacts occur outside the coastal zone, constitute coastal zone impacts, without any further analysis, such as under the ambiguous test proposed by the Navy regarding where the effects are “felt.” (See 16 U.S.C. 1456(c)(1)(A) (applying to any federal agency activity “within or outside the coastal zone that affects any . . . natural resource of the coastal zone”).) Moreover, in litigation challenging similar Navy activities, including those addressed in the prior CD, which the Navy conducted notwithstanding an effective objection by this Commission, the federal district court not only made a preliminary determination that the plaintiffs were likely to be able to show that the Navy had violated the Coastal Zone Management Act (CZMA), but the Court also specifically addressed whether and when the sonar activities outside the coastal zone constituted effects on the coastal zone; the District Court held:

The Navy Defendants argue that they were not required to analyze or discuss the proposed use of MFA sonar in the CD they submitted to the CCC because the MFA sonar use would not affect any coastal resources. For the reasons that Defendants' determination that the SOCAL exercises would not have a significant impact on the environment was arbitrary and capricious, as discussed above, the Court finds that the Navy Defendants' determination that the use of MFA sonar in the SOCAL range would not affect any of California's coastal resources was similarly arbitrary and capricious and in violation of the APA.

*The Navy Defendants have raised a number of additional arguments in support of their decision under the CZMA, none of which the Court finds persuasive. First, they contend that because the exercises will take place at least five nautical miles from shore, and often at least twelve nautical miles from shore, and because California's coastal zone extends only three nautical miles from shore, that there will be no impact on coastal resources. However, as discussed above, **MFA sonar can affect marine mammals, designated as coastal resources by statute, from miles away.** (See, e.g., Parsons Decl. ¶ 17 (noting that "these military exercises may ensonify coastal waters, even though exercises may be conducted outside the coastal zone.") Moreover, **consistency review is triggered regardless of where the harm occurs if it affects coastal resources, which include marine mammals that are periodically within the coastal zone.** 16 U.S.C. § 1456(c)(1)(A) ("Each Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs.") (emphasis added); California v. Norton, 311 F.3d 1162, 1172 (9th Cir. 2002) (requiring consistency review of offshore oil leases where seismic surveys outside the coastal zone may permanently injure marine mammals); Jefferson Decl. ¶ 6 ("Most of the species regularly found in the exercise area may be expected to occur there within 3 nautical miles of shore, either exclusively as in the case of the coastal bottlenose dolphin or as part of their range."). [Emphasis added]*

Second, the Navy Defendants argue that temporary harassment of marine mammals is insufficient to constitute an "activity . . . that affects" a natural resource because it does not cause injury. Even if this were true, Defendants' own EA predicts the use of MFA sonar during the SOCAL exercises will cause 466 instances of permanent injury to beaked and ziphiid whales.

Third, the Navy Defendants insist that a consistency determination need not discuss an activity unless it will have a measurable impact on the "populations of marine mammals," and that, because there "have been no systematic declines in any marine mammal populations during the decades of MFA sonar use by the Navy," it was justified in not discussing its proposed use of MFA sonar. The Court has already addressed Defendants' "lack of documented population decline" argument in its discussion of Plaintiffs' NEPA claims, and it has even

less force here where the burden rests on the Navy Defendants to demonstrate compliance. In addition, as the Ninth Circuit established in California v. Norton, federal activities “that may permanently injure marine mammals” affect coastal resources and require a consistency determination; an impact on entire populations is not required. 311 F.3d at 1172 n.5. Moreover, Plaintiffs have presented evidence that the use of MFA sonar can detrimentally impact entire populations of species, given its potential to disrupt feeding and mating as well as damaging marine mammals’ primary sense. (Parsons Decl. ¶¶ 7-9 (concluding that “there is significant potential for population-level effects from individual JTFEX and COMPTUEX exercises” and that even displacement from noninjurious, relatively low energy level sonic harassment “could have populationlevel effects, particularly if the displacement coincides with seasonal breeding or foraging.”).

Finally, the Navy Defendants argue that the mitigation measures the CCC required the Navy to employ during the SOCAL exercises in order to comply with the CCMP are not, in fact, required in order for the Navy to comply with the CCMP. They argue that the mitigation measures the Navy and NMFS have developed are sufficient “to maintain healthy populations of marine mammals in SOCAL.” (Opp’n 23:14-15.) Defendants’ proposed mitigation measures are woefully inadequate and ineffectual, as discussed above, and Defendants have failed to establish that the CCC’s proposed mitigation measures are either unnecessary or not required under the CCMP. Accordingly, the Court finds that Plaintiffs have demonstrated a probability of succeeding on the merits of their claims under the CZMA.⁵

C. Previous Commission Action. On January 10, 2007, the Commission conditionally concurred with the Navy’s consistency determination for offshore and onshore military exercise used to train the U.S. Pacific Fleet in southern California (CD-086-06). The consistency determination applied to a number of Navy training exercises included in the subject consistency determination, including “COMPTUEX,” standing for Composite Training Unit Exercises, and “JTFEX,” standing for Joint Task Force Exercises. The Commission’s conditions, which primarily focused on the need for additional protection for marine mammals from Navy active sonar, would (if the Navy agreed to them) have resulted in the Navy agreeing to:

implement safety zones extending from the source of the sonar out to the distance where the sonar has attenuated to 154 dB (received level (RL), expressed in decibels (re $1 \mu\text{Pa}^2 \cdot \text{s}$)), such that marine mammals would not be exposed to > 154 dB RL, OR if the 154 dB level

⁵ “Order Denying Defendants’ Motion to Dismiss or Stay and Granting in part and Denying in part Plaintiffs’ Motion for a Preliminary Injunction,” Natural Resources Defense Council v. Winter, C.D. Cal., 8:07-cv-00335-FMC-FMOx (August 6, 2007) at 15-17.

could not be feasibly achieved, shut down sonar if a marine mammal is detected within 2 km of the sonar dome, as the Navy has currently agreed to for its SURTASS LFA sonar operations, OR provide the Commission with sufficient information about the sonar intensities and attenuation rates, and the maximum capabilities of its monitoring, to enable the Commission to determine that the Navy will protect a safety zone as close as is possible to the 154 dB zone;

include two dedicated NOAA-trained observers at all times during use of mid-frequency sonar, provide adequate, NMFS approved training for the monitors, submit “after-action” reports to NMFS assessing the mitigation measures and recommending how to improve them, and monitor and report to NMFS any strandings occurring during or shortly after the exercises;

employ Passive Acoustic Monitoring and use it to enforce the safety zones;

perform aerial monitoring;

avoid, where possible, effect on gray whales, the Channel Islands National Marine Sanctuary, and areas with known high concentrations of marine mammals, and complex, steep seabed topography (except on the Navy’s instrumented range off San Clemente Island);

implement additional measures for night and low visibility conditions, during Surface Ducting Conditions, and for Choke-point exercises;

to the degree possible, retrieve inert mine shapes dropped;

as agreed to previously, submit all monitoring results provided to NMFS (unless classified) to the Commission staff; and

implement pre-exercise monitoring one-half hour before sonar use.

The Navy’s submittal was for a two year period, ending in December 2008 (with the expectation that further Navy training exercises would continue on subsequent to that date, after completion of the EIS and the subject consistency determination). Because the Navy did not agree to comply with these conditions, all parties were required to treat the Commission’s action as an objection under the federal consistency procedures. (See 15 C.F.R. § 930.4(b).) The Navy informed the Commission it intended to proceed without agreeing to the conditions, and, in March of 2007, the Commission filed a lawsuit in federal court, challenging the Navy’s activities as inconsistent with the CCMP and in violation of the CZMA. The Natural Resources Defense Council (“NRDC”) also filed a lawsuit against the Navy on that same day, arguing inconsistency with both the National Environmental Policy Act (“NEPA”) and the CZMA, among other statutes.

D. Court, Council on Environmental Quality, and Presidential Actions. In a seven-month period from late 2007 to early 2008, the courts issued more than half-a-dozen orders, mostly related to NRDC's motion for a preliminary injunction ("PI"). In the end, the result was the issuance of a PI requiring that the Navy comply with a set of mitigation measures. The following discussion summarizes the measures imposed by the courts. While the courts did not find that adoption of these specific measures was required by the CZMA or by NEPA, the courts nevertheless found that plaintiffs demonstrated a strong likelihood of success on the merits of their CZMA and NEPA claims, and established to a near certainty that irreparable harm to the environment would occur. Following the recitation of these measures is an excerpt from the Commission's brief to the U.S. Supreme Court describing the actions and chronology in this matter (which is currently pending before the Supreme Court).

The initial District Court decision on the PI motion prohibited the Navy from conducting exercises using the type of sonar at issue off the coast of Southern California during the fourteen exercises to be conducted from 2007 to 2009. On appeal, the Ninth Circuit agreed that the plaintiffs had demonstrated a strong likelihood of success on the merits of their NEPA and CZMA claims. However, it remanded the case seeking a more tailored injunction that would allow the Navy operations to proceed if conducted pursuant to a set of measures providing adequate safeguards for the protection of the environment, and the District Court issued such a tailored injunction, requiring the Navy to, among other things:

- (1) suspend use of MFA sonar when a marine mammal is detected within 2,200 yards of the sonar source;
- (2) reduce the MFA sonar level by 6 decibels when surface-ducting conditions are detected;
- (3) exclude MFA sonar from within 12 nautical miles of the California coastline;
- (4) enhance efforts at monitoring for marine mammals, including the use of aircraft for at least 60 minutes before exercises begin;
- (5) monitor for marine mammals for 10 minutes before helicopters employ active dipping sonar; and
- (6) exclude MFA sonar from the Catalina Basin between Santa Catalina and San Clemente Islands.

After hearing further Navy arguments the District Court modified the injunction to:

- (1) clarify that the 6 dB power-down only applies during "significant" surface-ducting conditions;
- (2) limit dedicated aerial surveys to one hour before sonar is used (rather than throughout the exercise); and
- (3) allow an exception to the safety zone for bowriding dolphins.

The Navy then sought and received an exemption from the President (under the CZMA) and an emergency authorization from the Council on Environmental Quality ("CEQ") for alternative NEPA arrangements. On the basis of those executive actions, the Navy then

sought to have the injunction vacated as “moot.” The District Court rejected this request, concluding that CEQ’s action was invalid (as well as expressing concerns about the constitutionality of the Presidential exemption), and thus leaving the injunction in place. The Navy appealed to the Ninth Circuit, taking issue with the first two of the above six mitigation measures (i.e., the 2,200 yard shutdown and reduced intensity during surface-ducting conditions). The Ninth Circuit affirmed the District Court’s decision not to vacate its injunction, 518 F.3d 658, but in a companion opinion, 518 F.3d 704, it did, pending Supreme Court action, temporarily modify the injunction in two ways, as follows:

(1) The 2,200 yard safety zone was modified to allow the Navy only to reduce, rather than suspend, its use of MFA sonar if marine mammals are detected at a “critical point in the exercise,” defined as a point when, in the discretion of the Admiral overseeing the exercise or the commander of the sonar-emitting vessel, continued use of MFA sonar is critical to the certification of a strike group or the effective training of its personnel.

(2) The power-down requirement during significant surface-ducting conditions was modified so that it would apply only when a marine mammal is detected within a specified distance from the sonar source, as follows: (a) a 6 dB reduction if a marine mammal is within 2,000 meters of the sonar source; (b) a 10 dB reduction when a marine mammal is detected within 1,000 meters of the source; and (c) shut off sonar when a marine mammal is within 500 meters of the source.

The court also noted that the Navy could seek emergency relief from the District Court “in the unlikely event that” the required mitigation measures, once implemented, did interfere with training and certification. 518 F.3d 658, 703.

The Commission’s brief submitted to the Supreme Court elaborates, as follows:

On March 22, 2007 the Commission filed a lawsuit against the Navy regarding its training exercises. California Coastal Commission v. United States Department of the Navy et al., United States District Court, Central District of California, CV 07-01899 FMC (FMOx).⁶ On that same day, respondents Natural Resources Defense Council, Inc., International Fund for Animal Welfare, Cetacean Society International, League for Coastal Protection, Ocean Futures Society, and Jean-Michel Cousteau (collectively NRDC) filed this litigation. On August 7, 2007, the district court partially granted NRDC’s motion for a preliminary injunction, finding that NRDC demonstrated a probability of success on the merits and the possibility of irreparable harm. App. 195a-218a. The district court found, based on the numerous scientific studies, declarations, reports and other evidence before it, plaintiffs established to a near certainty that the use of MFA sonar will cause irreparable injury to the environment and to NRDC. App. 217a. The district court’s decision was based in large part on the Navy’s own EA which concluded

⁶ The Commission’s case has been stayed pending resolution of the appeal in this case. The Commission intervened on appeal as an appellee in this case. [footnote from brief]

that its actions will result in 170,000 instances of Level B harassment, including 8,000 temporary threshold shift exposures and 466 cases of permanent injury to beaked and ziphiid whales. App. 204a. The district court found the Navy's evidence of predicted injury to 436 Cuvier's beaked whales was especially significant in light of the National Oceanic and Atmospheric Administration's (NOAA) estimate that there are as few as 1,211 such whales remaining off the entire west coast. App. 204a.

On August 16, 2007 the Navy filed an appeal and an emergency motion for stay. JA 1-2. On August 31, 2007 the motions panel of the Court of Appeals for the Ninth Circuit granted the Navy's emergency motion to stay the preliminary injunction. App. 175a-194a. On October 25, 2007 the court of appeals granted the Commission's motion to intervene. JA 7. On November 13, 2007 the merits panel found plaintiffs had met the necessary burden of proof to demonstrate that some form of preliminary injunctive relief was appropriate, had shown a strong likelihood of success on the merits as well as the possibility of irreparable injury, had shown the balance of hardships tipped in their favor and had shown the public interest would be advanced by an injunction that required adequate mitigation measures. App. 172a-173a. However, the panel found the district court had not adequately explained why a broad injunction was necessary. App. 173a. The court of appeals remanded the case to the district court with directions to narrow its injunction so as to provide mitigation conditions under which the Navy could conduct its training. App. 174a.

On remand, the district court considered the parties' briefs on proposed mitigation conditions and toured a Navy vessel to improve its understanding of the Navy's sonar training procedures and the feasibility of the proposed mitigation measures. App. 150a. On January 3, 2008 the district court issued a preliminary injunction that allowed the Navy to train using MFA sonar but subject to seven carefully tailored mitigation measures. App. 164a-170a. The district court again found that based on the numerous scientific studies, declarations, reports and other evidence submitted, plaintiffs demonstrated to a near certainty that use of MFA sonar during the planned training exercises "will cause irreparable harm to the environment and plaintiffs." App. 164a. The district court further found that the balance of hardships tipped in favor of issuing an injunction and that the harm to the environment, plaintiffs and the public interest outweighed the harm that the Navy would incur or the public interest would suffer. App. 164a. The district court did not accept all of NRDC's arguments and took the Navy's concerns into consideration in crafting the mitigation measures. App. 103a- 104a; 165a-170a. On January 10, 2008, on its own initiative, the district court further modified the mitigation measures to accommodate the Navy. App. 144a-149a.

The Navy then sought and obtained a presidential exemption from the CZMA (App. 231a-232a) and emergency authorization from the Council on Environmental Quality (CEQ) for alternative NEPA arrangements. App. 233a-248a. On January 16, 2008 the Navy moved the court of appeals ex parte for an order vacating the preliminary injunction or staying it pending appeal. JA 11. The court of appeals remanded to allow the district court in the first instance to consider the application. JA 12. The district court denied the Navy's application, finding the CEQ's action beyond the scope of its regulation and invalid; therefore the Navy was not exempt from compliance with NEPA. App. 97a. On February 27, 2008, the court of appeals heard oral argument and on February 29, 2008, the court of appeals issued a lengthy opinion affirming the district court's issuance of the modified preliminary injunction. App. 1a-90a. The court of appeals held the district court neither relied on erroneous legal premises nor abused its discretion. App. 90a.

E. Federal Agency's Consistency Determination. The Navy has determined the project consistent to the maximum extent practicable with the California Coastal Management Program.

II. STAFF RECOMMENDATION:

The staff recommends that the Commission adopt the following motion:

MOTION: I move that the Commission conditionally concur with consistency determination CD-049-08 and determine that, as conditioned, the project described therein is fully consistent, and thus is consistent to the maximum extent practicable, with the enforceable policies of the California Coastal Management Program (CCMP).

STAFF RECOMMENDATION:

Staff recommends a **YES** vote on the motion. Passage of this motion will result in an agreement with the determination and adoption of the following resolution and findings. An affirmative vote of a majority of the Commissioners present is required to pass the motion.

RESOLUTION TO CONDITIONALLY CONCUR WITH CONSISTENCY DETERMINATION:

The Commission hereby **conditionally concurs** with consistency determination CD-049-08 by the Navy on the grounds that the project would be fully consistent, and thus consistent to the maximum extent practicable, with the enforceable policies of the CCMP, provided the Navy agrees to modify the project consistent with the conditions specified below, as provided for in 15 CFR §930.4.

Conditions:

1. Safety Zones. The Navy shall adopt safety zones (i.e., marine mammal preclusion zones) from the sonar source out to the distance at which the sonar has attenuated to 154 dB (received level (RL), expressed in decibels (re $1 \mu\text{Pa}^2 \cdot \text{s}$)). The Navy will monitor the area and lower sonar levels (or delay transmissions until an animal has left the safety zone) such that marine mammals and sea turtles will not be exposed to received levels greater than 154 dB. If the 154 dB level cannot be feasibly achieved, the Navy shall either (a) cease sonar transmissions whenever a marine mammal or sea turtle is detected within 2 km of the sonar dome; or (b) provide the Commission with sufficient information about the sonar intensities and attenuation rates, the maximum capabilities of its monitoring, and its proposed procedures, to enable the Commission to determine that the Navy will protect a safety zone as close as is possible to the 154 dB zone. The Navy shall provide this information to the Commission staff for review and approval by the Executive Director prior to the first exercise involving mid-frequency sonar and shall comply with the approved procedures.

2. Surveillance. Surveillance shall include two dedicated NOAA-trained marine mammal observers at all times during use of mid-frequency sonar. NOAA training includes using qualified watchstanders who have completed marine species awareness training and who have been approved by NMFS.

3. Elimination of expanded ASW training/instrumentation in the Tanner and Cortes Banks (Exhibits 2-3). The Navy shall either:

(a) eliminate from its proposed activities the proposed expansion of the shallow water training range in the Tanner and Cortes Banks; OR

(b) agree to not conduct any activities in these banks using mid-frequency sonar at levels exceeding 154 dB (source level) from May to November, the period of regularly surveyed high concentrations of foraging blue and fin whales in this area.

4. Passive Acoustic Monitoring. The Navy shall employ passive acoustic monitoring to enforce the safety zones described in Condition 1. All personnel engaged in passive acoustic sonar operations during an exercise employing mid-frequency sonar shall monitor for marine mammals and report the detection of any marine mammal to the appropriate watch station for dissemination and appropriate action.

5. Aerial Monitoring. The Navy shall ensure that aircraft operating in the Navy's instrumented range off San Clemente will monitor the area for marine mammals during their assigned missions and will monitor the area throughout any mid-frequency sonar exercises on the instrumented range. All other Naval aircraft flying low enough to reasonably spot a marine mammal will watch for marine mammals. The Navy shall require that all aerial sightings of marine mammals be reported to the appropriate watch stations for appropriate action. Appropriate action means taking mitigation measures and

disseminating the information to other units and watchstanders for increased situational awareness.

6. Gray Whale Migration Season. To the maximum extent feasible, the Navy shall 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. If conducting exercises during the migration season the Navy shall avoid known gray whale migration corridors.

7. Areas of High Marine Mammal Populations. To the maximum extent feasible, the Navy shall avoid training using high-intensity mid-frequency sonar in areas with known high concentrations of marine mammals, including but not limited to avoiding any active sonar transmissions:

(a) within the National Marine Sanctuaries off California's coast (e.g., the Channel Islands NMS)(and which includes the waters around Santa Barbara Island);

(b) within the Catalina Basin (between the Catalina and San Clemente Escarpments (Exhibit 3);

(c) seasonally (during the warm water months of May to November) in the Tanner and Cortes Banks (Exhibits 2-3, and 15); and

(d) adjacent to seamounts and coastal areas with complex, steep seabed topography, except on the Navy's instrumented range off San Clemente Island.

8. Night and low visibility conditions. The Navy shall operate mid-frequency sonar under reduced power during low visibility conditions, as follows:

Low visibility conditions (i.e., whenever the entire safety zone cannot be effectively monitored due to nighttime, high sea state, fog or other factors)
– The Navy will use additional detection measures, such as infrared (IR) or enhanced passive acoustic detection. Except in extraordinary circumstances, the Navy will power down sonar by 6 dB as if marine mammals were present in the zones it cannot see.

9. Stranding Response and Reporting/Marine Mammal Monitoring. The Navy shall coordinate with the NMFS Stranding Coordinator for any unusual marine mammal behavior, including stranding, beached live or dead cetacean(s), floating marine mammals, or out-of-habitat/milling live cetaceans that may occur at any time during or shortly after major exercises. The Navy shall also continue to submit "after-action" reports to NMFS and to the Commission staff after the completion of a major exercises, which will include:

- An assessment of the effectiveness of these mitigation and monitoring measures with recommendations of how to improve them.

- Results of the marine species monitoring during the major exercise. As much unclassified information as the Navy can provide including, but not limited to, where and when sonar was used (including sources not considered in take estimates, such as submarine and aircraft sonars) in relation to any measured received levels, source levels, numbers of sources, and frequencies, so it can be coordinated with observed cetacean behaviors. If necessary, classified information may be provided to NMFS personnel with an appropriate security clearance and need to know.

10. Surface Ducting Conditions. During significant surface ducting conditions, as defined by NMFS (2006), the Navy shall power down the sonar source by 6 dB from the maximum level that would otherwise be allowed by these conditions. The Navy shall assess whether surface ducting conditions are present at least once hourly during periods as specified by NMFS.

11. Choke-point exercises. Prior to implementing choke-point or simulated choke-point exercises, Navy commands shall:

- Provide NMFS (Stranding Coordinator and Protected Resources, Headquarters) with information regarding the time and place for the choke-point exercises in advance of any proposed choke-point exercise.

- Not proceed unless the Navy receives NMFS' approval as to whether non-Navy observers are required.

- Coordinate a focused monitoring effort around the choke-point/simulated choke-point exercise, to include pre-exercise monitoring (2 hours), during-exercise monitoring, and post-exercise monitoring (1-2 days). This monitoring effort will include at least one dedicated aircraft or one dedicated vessel for realtime monitoring from the pre- through post-monitoring time period, except at night, with the vessel or airplane maintaining regular communication with a Tactical Officer with the authority to shutdown, power-down, or delay the start-up of sonar operations. These monitors will communicate with the Navy command to ensure the safety zones are clear prior to sonar start-up, to recommend power-down and shut-down during the exercise, and to search extensively for potentially injured or stranding animals in the area and downcurrent of the area post-exercise.

12. Mine Shape Retrieval. To the maximum extent feasible, the Navy shall retrieve inert mine shapes dropped.

13. Baseline Monitoring. The Navy shall perform pre-exercise aerial monitoring commencing 60 minutes prior to commencement of mid-frequency sonar use, except as discussed in Condition 11, where additional pre-exercise monitoring is stipulated.

III. APPLICABLE LEGAL AUTHORITIES.

A. Conditional Concurrences. The federal consistency regulations (15 CFR § 930.4) provide for conditional concurrences, as follows:

(a) Federal agencies, ... should cooperate with State agencies to develop conditions that, if agreed to during the State agency's consistency review period and included in a Federal agency's final decision under Subpart C ... would allow the State agency to concur with the federal action. If instead a State agency issues a conditional concurrence:

(1) The State agency shall include in its concurrence letter the conditions which must be satisfied, an explanation of why the conditions are necessary to ensure consistency with specific enforceable policies of the management program, and an identification of the specific enforceable policies. The State agency's concurrence letter shall also inform the parties that if the requirements of paragraphs (a)(1) through (3) of the section are not met, then all parties shall treat the State agency's conditional concurrence letter as an objection pursuant to the applicable Subpart . . . ; and

(2) The Federal agency (for Subpart C) ... shall modify the applicable plan [or] project proposal, ... pursuant to the State agency's conditions. The Federal agency ... shall immediately notify the State agency if the State agency's conditions are not acceptable; and

...

(b) If the requirements of paragraphs (a)(1) through (3) of this section are not met, then all parties shall treat the State agency's conditional concurrence as an objection pursuant to the applicable Subpart.

In addition, given the open-ended nature of the Navy's submittal (the Commission staff requested that the Navy agree to a resubmittal for its activities in a specified time period (e.g., five years, but the Navy would not agree to this)), the Commission wishes to remind the Navy of the federal consistency regulation that provides for continued monitoring and coordination, 15 CFR § 930.45, which provides:

(a) Federal and State agencies shall cooperate in their efforts to monitor federally approved activities in order to make certain that such activities continue to be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the management program.

This regulation also provides a “reopener clause” in the event of project modifications or changed circumstances. Accordingly, subsection (b) provides:

(b) The State agency may request that the Federal agency take appropriate remedial action following a serious disagreement resulting from a Federal agency activity, including those activities where the State agency’s concurrence was presumed, which was: (1) Previously determined to be consistent to the maximum extent practicable with the management program, but which the State agency later maintains is being conducted or is having an effect on any coastal use or resource substantially different than originally described and, as a result, is no longer consistent to the maximum extent practicable with the enforceable policies of the management program
....

B. Practicability. The federal consistency regulations also provide:

15 CFR § 930.32: Consistent to the maximum extent practicable.

(a)(1) The term “consistent to the maximum extent practicable” means fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the Federal agency.

Since the Navy has raised no issue of practicability, as so defined, the standard before the Commission is full consistency with the policies of the California Coastal Management Program (CPRC §§ 30200-30265.5).

IV. FINDINGS AND DECLARATIONS:

The Commission finds and declares as follows:

A. Marine Resources/Water Quality/Fill of Coastal Waters. The Coastal Act provides:

Section 30230: Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Section 30233: (a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.

...

(3) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.

(4) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

...

(7) Nature study, aquaculture, or similar resource dependent activities.

The Navy's consistency determination (an electronic link to which can be found at the end of this report) addresses potential effects on: (a) shorebirds (particularly snowy plovers and least terns found on San Clemente Island); (b) 26 species of seabirds, including federally endangered species (California brown pelican, short-tailed albatross), federally threatened species (marbled murrelet), and one candidate species for listing (Xantus's murrelet); (c) marine flora (including kelp forests); (d) commercial and recreational fish stocks, and essential fish habitat, and (e) 27 species of marine mammals; (f) four species of sea turtles; and (g) abalones (black and white abalone).

1. Marine Mammals. The Commission has been consistent for over a decade in expressing concerns over the effects of anthropogenic sounds on the marine environment, particularly marine mammals. As noted in its December 13, 2005, comments to the Marine Mammal Commission's Advisory Committee on Acoustic Impacts on Marine Mammals, the Commission stated:

Anthropogenic noise is a recognized, but largely unregulated, form of ocean pollution that can deafen, disturb, injure, and kill marine life. Many species of marine mammals are known to be highly sensitive to sound and rely upon sound to navigate, find food, locate mates, avoid predators, and communicate with one another. A combination of noise sources, including shipping, oil and gas exploration and production, dredging, construction, and military activities, has resulted in dramatic increases in noise levels throughout the oceans. Over the last ten years, a growing body of evidence has shown that some forms of ocean noise can kill, injure, and deafen whales and other marine mammals. In particular, a sequence of marine mammal strandings and mortalities has been linked to exposure to mid-frequency sonar. There is also evidence that some affected animals do not strand but die at sea. This has increased public concern about the effects of anthropogenic noise on marine mammals, which has been acknowledged in a variety of domestic and international fora.

Marine mammals have evolved over millions of years and rely on sound for vital life functions and have specialized sensory capabilities to take advantage of the physics of sound in the ocean. Anthropogenic noise in the oceans has increased since the start of the industrial revolution and increases in ambient noise levels, as well as individual sound sources, can cause adverse effects, the extent and type of which are not well understood. Military technology and scientific research using low frequency active acoustics attempting to cover large distances have specifically targeted the ecological sound niches that low frequency specialist whales have evolved to rely on, necessarily competing with those marine mammal species. Peer-reviewed scientific literature indicates that marine mammals are affected by exposure to anthropogenic noise in a variety of ways that can be harmful or even lethal. However, there are significant gaps in information available to understand and manage these effects. This is particularly the case because marine mammals are extremely difficult to study and the marine environment is extraordinarily complex and dynamic. In addition, this is a relatively new field of concern and the amount of research undertaken to date has been limited in scope and duration.

The Navy's consistency determination documents 27 potentially affected marine mammal species in the SOCAL region, at least ten of which the Navy states are found in moderate or large numbers (Exhibit 10). The consistency determination states:

Baseline Description of the Resource

Cetaceans

*Twenty-seven species of cetaceans could be encountered in the SOCAL OPAREAs (Table 3-3), not including species considered to be extralimital in the SOCAL OPAREAs. They include both toothed whales (odontocetes) and baleen whales (mysticetes). At least ten species generally can be found in the SOCAL OPAREAs in moderate or high numbers, either year-round or during annual migrations into or through the area. Other species are represented by either small numbers, moderate numbers during part of the year, occasional sightings, or strandings. Five species of endangered or threatened cetaceans occur in the SOCAL OPAREAs. The blue whale (*Balaenoptera musculus*), fin whale (*B. physalus*), humpback whale (*Megaptera novaeangliae*), sei whale (*B. borealis*), and sperm whale (*Physeter macrocephalus*) are listed as endangered species and are protected under the ESA.*

A comparison of cetacean abundance in 1979-1980 with abundance in 1991 indicated that numbers of mysticetes and odontocetes increased in offshore California waters during that period. The status of cetacean stocks and their abundance estimates for California are summarized in Table 3-5 from marine mammal stock assessments prepared by Barlow et al. (1997), Forney et al. (2000), and Carretta et al. (2001 and 2004). The life histories of the cetaceans found in SOCAL Range Complex are described in Section 3.9 of the SOCAL Range Complex Draft EIS/OEIS.

As noted on pages 19-25 above (in the Section above (I.B.) titled Effects on Coastal Resources), the Navy maintains that the Commission's jurisdiction is limited to a small number of marine mammal species, the grey whale, two dolphin species, three seal species, and one sea lion species (plus the sea otter, which is not likely to be affected). That section also notes the Commission's disagreement with the Navy over both which activities affect the coastal zone, as well as which species are coastal zone species. As the Commission noted in reviewing the previous Navy consistency determination for its southern California training activities:

However the Commission takes a broader view than the Navy as to which activities may affect the coastal zone. Many of the species ... potentially affected by the proposed training activities spend some portions of their life cycles within coastal waters (e.g., birds that fly in and out of the coastal zone and marine species that swim in and out of the coastal zone)(see Exhibit 7 [of CD-086-06], NOAA letter to CCC, March 10, 1995).

Further support for this position can be found in testimony before the U.S. District Court by marine mammal expert Thomas A. Jefferson, whose testimony included:

A large number of marine mammals, 45 species, are presently known to occur in the Navy's exercise area of southern California and northern Baja California, Mexico, with 36 species regularly occurring there. The total includes six species listed as Endangered under the U.S. Endangered Species Act (the blue whale, fin whale, North Pacific right whale, sei whale, humpback whale, and sperm whale), three listed as Threatened (the Guadalupe fur seal, Steller sea lion, and sea otter), and eight species of beaked whales, a family of species that is known for its particular vulnerability to mid-frequency sonar. A complete list of species is appended to this Declaration as Exhibit B.

Most of the species regularly found in the exercise area may be expected to occur there within 3 nautical miles of shore, either exclusively as in the case of the coastal bottlenose dolphin or as part of their range. These species include most of the regularly occurring baleen whales, including the blue whale, fin whale, minke whale, humpback whale, and gray whale; most of the beaked whales, including Blainville's, Bird's, and Cuvier's beaked whales; most of the other toothed cetaceans, including the killer whale, short-finned pilot whale, and bottlenose dolphin; all of the sea lions and seals, including the Steller sea lion and Guadalupe fur seal; and the sea otter.

Moreover, as noted previously on page 23-25 of this report, in the District Court's review of this issue in NRDC v. Winter, the Court addressed whether the sonar activities outside the coastal zone constituted effects on the coastal zone; the District Court determined:

*The Navy Defendants have raised a number of additional arguments in support of their decision under the CZMA, none of which the Court finds persuasive. First, they contend that because the exercises will take place at least five nautical miles from shore, and often at least twelve nautical miles from shore, and because California's coastal zone extends only three nautical miles from shore, that there will be no impact on coastal resources. However, as discussed above, **MFA sonar can affect marine mammals, designated as coastal resources by statute, from miles away.** (See, e.g., Parsons Decl. ¶ 17 (noting that "these military exercises may ensonify coastal waters, even though exercises may be conducted outside the coastal zone.") Moreover, **consistency review is triggered regardless of where the harm occurs if it affects coastal resources, which include marine mammals that are periodically within the coastal zone.** 16 U.S.C. § 1456(c)(1)(A) ("Each Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs.") (emphasis added); California v. Norton, 311 F.3d 1162, 1172 (9th Cir. 2002) (requiring consistency review of offshore oil leases where seismic surveys outside the coastal zone may permanently injure marine mammals); Jefferson Decl. ¶ 6 ("Most of the species regularly found in the exercise area may be expected to occur there within 3 nautical miles of shore, either exclusively as in the case of the coastal bottlenose dolphin or as part of their range."). (PI Order at 15-16) [Emphasis added]*

Concerning the acoustic effects on marine mammals from the Navy's proposed activities, the Navy's analysis is attached as Exhibit 13. In it, the Navy notes that it has worked with NMFS in developing its analytical framework. This framework divides "take" (or "harassment," under the Marine Mammal Protection Act) into two categories (Level A and B harassment), as follows:

To analyze the potential impacts of sound in the water relative to CCC enforceable policies, categories of physical and behavioral responses of marine mammals to sound must be defined and correlated with quantitative levels of underwater sound. In this CD, the Marine Mammal Protective Act (MMPA) measures of Level A Harassment, which correlates with potential injury, and Level B Harassment, which correlates with behavioral effects, will be used to support this analysis. The MMPA measures of Level A and Level B Harassment are designed to evaluate effects on individual animals, however, so the results of this quantitative analysis must then be generalized to the entire local population of each affected species.

The Navy also compares these levels to estimated Permanent and Temporary Threshold Shift (PTS and TTS, respectively) levels, noting:

Cetaceans predicted to receive a sound exposure with EL [Exposure Level] of 215 dB re 1 $\mu\text{Pa}^2\text{-s}$ or greater are assumed to experience PTS and are counted as Level A harassment. Cetaceans predicted to receive a sound exposure with EL greater than or equal to 195 dB re 1 $\mu\text{Pa}^2\text{-s}$ but less than 215 dB re 1 $\mu\text{Pa}^2\text{-s}$ are assumed to experience TTS and are counted as Level B harassment.

Unlike cetaceans, the TTS and PTS thresholds used for pinnipeds vary with 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 are similar to otariids (TTS = 204 dB re 1 $\mu\text{Pa}^2\text{-s}$, PTS = 224 dB re 1 $\mu\text{Pa}^2\text{-s}$) but are lower for harbor seals (TTS = 183 dB re 1 $\mu\text{Pa}^2\text{-s}$, PTS = 203 dB re 1 $\mu\text{Pa}^2\text{-s}$).

The Navy states:

Summary of Physiological Effects Thresholds

PTS and TTS are the criteria for physiological effects resulting in injury (Level A harassment) and disturbance (Level B harassment), respectively. Sound exposure thresholds for TTS and PTS 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. The TTS threshold is primarily based on cetacean TTS data from Schlundt et al. (2000). Since these tests used short-duration tones similar to sonar pings, they are the most directly relevant data. The PTS threshold is based on a 20-dB increase in exposure EL over that required for onset-TTS. The 20-dB value is based on extrapolations from terrestrial mammal data indicating that PTS occurs at 40 dB or more of TS, and that TS growth occurring at a rate of approximately 1.6 dB/dB increase in exposure EL

Table 3-7 Physiological Effects Thresholds for TTS and PTS: Cetaceans and Pinnipeds

Physiological Effects			
Animal	Criteria	Threshold (re 1 $\mu\text{Pa}^2\text{-s}$)	MMPA Effect
Cetacean	TTS	195	Level B Harassment
	PTS	215	Level A Harassment
Pinnipeds			
Northern Elephant Seal	TTS	204	Level B Harassment
	PTS	224	Level A Harassment
Pacific Harbor Seal	TTS	183	Level B Harassment
	PTS	203	Level A Harassment
California Sea Lion	TTS	206	Level B Harassment
	PTS	226	Level A Harassment
Guadalupe Fur Seal	TTS	226	Level B Harassment
	PTS	206	Level A Harassment
Northern Fur Seal	TTS	206	Level B Harassment
	PTS	226	Level A Harassment

The Navy states in the EIS and CD that due to the uncertainties in the data, the appropriate analysis should be based on a “Risk-Function” approach to estimate potential effects. This entails developing a Risk Function curve, which is described on pages 3-34 to 3-40 of the Navy’s CD. This discussion includes:

The data used to produce the risk function were compiled from four species that had been exposed to sound sources in a variety of different circumstances. As a result, the risk function represents a general relationship between acoustic exposures and behavioral responses that is then applied to specific circumstances. That is, the risk function represents a relationship that is deemed to be generally true, based on the limited, best-available science, but may not be true in specific circumstances. In particular, the risk function, as currently derived, treats the received level as the only variable that is relevant to a marine mammal’s behavioral response. However, we know that many other variables—the marine mammal’s gender, age, and prior experience; the activity it is engaged in during an exposure event, its distance from a sound source, the number of sound sources, and whether the sound sources are approaching or moving away from the animal—can be critically important in determining whether and how a marine mammal will respond to a sound source (Southall et al. 2007). The data that are currently available do not allow for incorporation of these other variables in the current risk functions; however, the risk function represents the best use of the data that are available. [CD, p. 3-39]

Addressing beaked whales, species of particular concern with respect to mid-frequency sonar, the Navy states:

Special considerations are given to the potential for avoidance and disrupted diving patterns. Due to past incidents of beaked whale strandings associated with sonar operations, feedback paths are provided between avoidance and diving and indirect tissue effects. This feedback accounts for the hypothesis that variations in diving behavior or avoidance responses can result in nitrogen tissue supersaturation and nitrogen off-gassing, and possibly deleterious vascular bubble formation. Although hypothetical, this hypothesis is currently popular and hotly debated. [CD, p. 3-30]

Even for more cryptic species, such as beaked whales, the main determinant of causing a stranding appears to be exposure in a narrow channel with no egress thus animals are exposed for prolonged period rather than just several sonar pings over a several minutes (see Appendix F of the SOCAL Range Complex Draft EIS/OEIS [DoN 2008]). Such a narrow channel is defined as an area surrounded by land masses, separated by less than 35 nm and at least 10 nm in length, or an embayment, wherein activities involving multiple ships/subs (≥ 3) employing mid-frequency active sonar near land may produce sound directed

toward the channel or embayment that may cut off the lines of egress for marine mammals. There are no such narrow channels in the SOCAL Range Complex, so it is unlikely that mid-frequency active sonar would cause beaked whales to strand. In fact, no beaked whale strandings associated with MFAS have ever occurred in the SOCAL Range. [CD, p. 3-47]

Although not noted in the Navy's consistency determination (presumably because the Navy does not consider Cuvier's or other beaked whales to be considered coastal zone species), the Navy's Draft EIS acknowledges the greater potential for mid-frequency sonar to adversely affect beaked whales. The EIS thus states that what would normally be a "Level B" harassment for other cetaceans should be considered a "Level A" harassment (i.e., potentially lethal, rather than behavioral harassment)." The EIS states:

Evidence from five beaked whale strandings, all of which have taken place outside or the SOCAL Range Complex, and have occurred over approximately a decade, suggests that the exposure of beaked whales to MFA sonar in the presence of certain conditions (e.g., multiple units using tactical sonar, steep bathymetry, constricted channels, strong surface ducts, etc.) may result in strandings, potentially leading to mortality. Although these physical factors believed to contribute to the likelihood of beaked whale strandings are not present, in the aggregate, in the SOCAL Range Complex, scientific uncertainty exists regarding what other factors, or combination of factors, may contribute to beaked whale strandings. Accordingly, to allow for scientific uncertainty regarding contributing causes of beaked whale strandings and the exact mechanisms of the physical effects, the Navy will also request authorization for take, by mortality, of the beaked whale species present in Southern California. [DEIS/OEIS, p. 3.9-104]

Concerning total numbers of estimated marine mammal "takes," the Navy states in the DEIS/OEIS:

*Summary of Potential Mid and High-Frequency Active Sonar Effects
Table 3.9-9 represents the number of Alternative 1 active sonar hours or usage per year for different sonar sources including the SQS-53C, SQS-56C, AQS-22 dipping sonar, SSQ-62 sonobuoys, and MK-48 torpedo sonar.*

This table (3.9-9 of the CD) includes the total annual number of Active Sonar Hours, Sonar Dips, Sonobuoy Deployments, and Torpedo Runs. These totals are:

Total Sonar Hours (both SQS-53 C and SQS-56 C mid-frequency sonars): 2,331 hours
Total number of AQS-22 Sonar Dips: 2,565
Total number of SSQ-62 Sonobuoy Deployments: 4,014
Total number of MK-48 Torpedo Events: 82

The Navy states:

[EIS] Table 3.9-10 presents estimated marine mammal exposures for potential non injurious (Level B) harassment, as well as potential onset of injury (Level A) to cetaceans and pinnipeds. Specifically, under this assessment for mid-frequency active sonar, the risk function methodology estimates 89,028 annual exposures that could potentially result in behavioral sub-TTS (Level B Harassment); 17,772 annual exposures that could potentially result in TTS (Level B Harassment); and 28 annual exposures could result in potential injury as PTS (Level A Harassment). No midfrequency active sonar exposures are predicted to result in any animal mortality.

The Navy stresses that the “take” estimates are “pre-mitigation estimates” (i.e., that the application of mitigation measures will reduce the level of take). The EIS states (p. 3.9-74-75):

It should be noted, however, that these exposure modeling results are statistically derived estimates of potential marine mammal sonar exposures without consideration of standard mitigation and monitoring procedures. The caveats to interpretations of model results are described previously. It is highly unlikely that a marine mammal would experience any long-term effects because the large SOCAL Range Complex training areas makes individual mammals' repeated or prolonged exposures to high-level sonar signals unlikely. Specifically, mid-frequency active sonars have limited marine mammal exposure ranges and relatively high platform speeds. The number of exposures that exceed the PTS threshold and result in Level A harassment from sonar is 28 for six species (blue whale, gray whale, long-beaked common dolphin, Pacific harbor seal, short-beaked common dolphin, and sperm whale). Therefore, long term effects on individuals, populations or stocks are unlikely.

When analyzing the results of the acoustic exposure modeling to provide an estimate of effects, it is important to understand that there are limitations to the ecological data (diving behavior, migration or movement patterns and population dynamics) used in the model, and that the model results must be interpreted within the context of a given species' ecology.

As described previously, this analysis assumes that short-term non-injurious sound exposure levels predicted to cause TTS or temporary behavioral disruptions qualify as Level B harassment. This approach is overestimating because there is no established scientific correlation between mid-frequency active sonar use and long term abandonment or significant alteration of behavioral patterns in marine mammals.

Because of the time delay between pings, and platform speed, an animal encountering the sonar will accumulate energy for only a few sonar pings over the course of a few minutes. Therefore, exposure to sonar would be a short-term event, minimizing any single animal's exposure to sound levels approaching the harassment thresholds.

The implementation of the mitigation and monitoring procedures as addressed in Section 3.9.10 will further minimize the potential for marine mammal exposures to underwater detonations. When reviewing the acoustic exposure modeling results, it is also important to understand that the estimates of marine mammal sound exposures are presented without consideration of standard protective measure operating procedures. Section 3.9.10 presents details of the mitigation measures currently used for ASW activities including detection of marine mammals and power down procedures if marine mammals are detected within one of the safety zones. The Navy will work through the MMPA incidental harassment regulatory process to discuss the mitigation measures and their potential to reduce the likelihood for incidental harassment of marine mammals.

Concerning effects the Navy considers to constitute coastal effects, the Navy states (CD, p. 3-49):

Potential Mid- and High Frequency Active Sonar Effects

Table 3-11 presents estimated marine mammal exposures for potential non-injurious (Level B) harassment, as well as potential onset of injury (Level A) to cetaceans and pinnipeds expected to be found in the CZ, or to migrate in and out of the CZ. Specifically, under this assessment for MFAS, the risk function methodology estimates 66,217 potential annual risk function exposures for coastal marine mammals in SOCAL OPAREAs as a whole that could result in behavioral sub-TTS (Level B Harassment). Approximately 82% of these 66,217 exposures are to California sea lions. The model estimates 5,546 annual potential exposures that could result in TTS (Level B Harassment). Approximately 82 percent of these 5,546 exposures are to Pacific harbor seals. The model estimates 11 annual potential exposures could result in injury as PTS (Level A Harassment). Approximately 82 percent of these 11 exposures are to Pacific harbor seals.

Table 3-11: Annual Sonar Exposures

SPECIES	SONAR EXPOSURES		
	Level B		Level A
	Risk Function	TTS	PTS
Gray whale	4,903	544	1
Bottlenose dolphin	1,257	191	0
Long beaked common dolphin	4,049	432	1
Northern elephant seal	833	5	0
Pacific harbor seal	1,014	4,559	9
California sea lion	54,346	3	0
Guadalupe fur seal	870	190	0
Total	67,272	5,924	11
NOTES:			
1. TTS and PTS thresholds shown in Table 3-7.			
2. Exposure values come from SOCAL LOA Supplement #2 submitted to NMFS in May 2008. This Supplement contained model revisions based on refined operational information and interpretation requested by NMFS.			

As noted above, the Navy’s “take” estimates are based on pre-mitigation conditions (i.e., assuming no mitigation measures are in place). The Navy expects these numbers to be significantly reduced when it applies its safety zones, which include lowering source levels at 1,000 yds. (by 6 dB) and 500 yds. (by 10 dB), if a marine mammal or sea turtle is detected by its monitors, and shut down if a marine mammal or sea turtle is detected within 200 yds. The Navy states (CD, p. 25):

Safety Zones—When marine mammals are detected by any means (aircraft, shipboard lookout, or acoustically) within 1,000 yd (914 m) of the sonar dome (the bow), the ship or submarine will limit active transmission levels to at least 6 decibels (dB) below normal operating levels. (A 6 dB reduction equates to a 75 percent power reduction because decibel levels are on a logarithmic scale, not a linear scale.) Thus, a 6 dB reduction results in a power level only 25 percent of the original power. Ships and submarines will continue to limit maximum transmission levels by this 6-dB factor until the animal has been seen to leave the area, has not been detected for 30 minutes, or the vessel has transited more than 2,000 yd (1,829 m) beyond the location of the last detection.

Should a marine mammal be detected within or closing to inside 500 yd (457 m) of the sonar dome, active sonar transmissions will be limited to at least 10 dB below the equipment's normal operating level. (A 10 dB reduction equates to a 90 percent power reduction from normal operating levels.) Ships and submarines will continue to limit maximum ping levels by this 10-dB factor until the animal has been seen to leave the area, has not been detected for 30 minutes, or the vessel has transited more than 2,000 yd (457 m) beyond the location of the last detection.

Should the marine mammal be detected within or closing to inside 200 yd (183 m) of the sonar dome, active sonar transmissions will cease. Sonar will not resume until the animal has been seen to leave the area, has not been detected for 30 minutes, or the vessel has transited more than 2,000 yd (457 m) beyond the location of the last detection.

Special conditions apply to dolphins and porpoises. If, after conducting an initial maneuver to avoid close quarters with dolphins or porpoises, the Officer of the Day (OOD) concludes that dolphins or porpoises are deliberately closing to ride the vessel's bow wave, no further mitigation actions are necessary while the dolphins or porpoises continue to exhibit bow wave riding behavior.

The Navy states that implementation of these mitigation measures would “provide an adequate safety margin to marine mammals,” and, furthermore, that implementation of larger safety zones would “not show appreciable further protection of exposure levels of marine mammals” but would “greatly reduce the ability of the sonar to detect submarines.” The Navy states (CD, p. 3-50-51):

The implementation of the mitigation and monitoring procedures described in Section 2 will minimize the potential for marine mammal exposures to MFAS. When reviewing the acoustic exposure modeling results, it is also important to understand that the estimates of marine mammal sound exposures are presented without consideration of standard protective measure operating procedures. Section 2 presents details of the mitigation measures currently used for ASW activities, including detection of marine mammals and power-down procedures if marine mammals are detected within one of the safety zones.

Figure 3-8 demonstrates that the Navy's mitigation measures provide an adequate safety margin to marine mammals and allows for effective realistic ASW training. More restrictive power reduction and safety zone schemes, however, do not show appreciable further protection of exposure levels of marine mammals to MFAS but greatly reduce the ability of the sonar to detect submarines. The Temporary Threshold Shift (195 dB) is a scientifically measured, peer-reviewed value that identifies a causal relationship between MFAS exposure level and a temporary harm to marine mammals. A temporary diminishment of hearing acuity is associated with a received underwater sound exposure level (SEL) of 195 dB. The mitigation procedures are not expected to expose marine mammals to more than 179 dB at 200 yards. For a 1 second pulse, this is just about 3% of the SEL associated with a temporary reduction in hearing acuity, meaning the mammal only receives 3% of the energy required to cause temporary harm. Therefore, the Navy's power-down mitigation measure includes a significant safety margin. [Emphasis added]

The following chart from the Navy's CD shows exposure levels assuming marine mammals are detected and the Navy implements the safety zone measures:

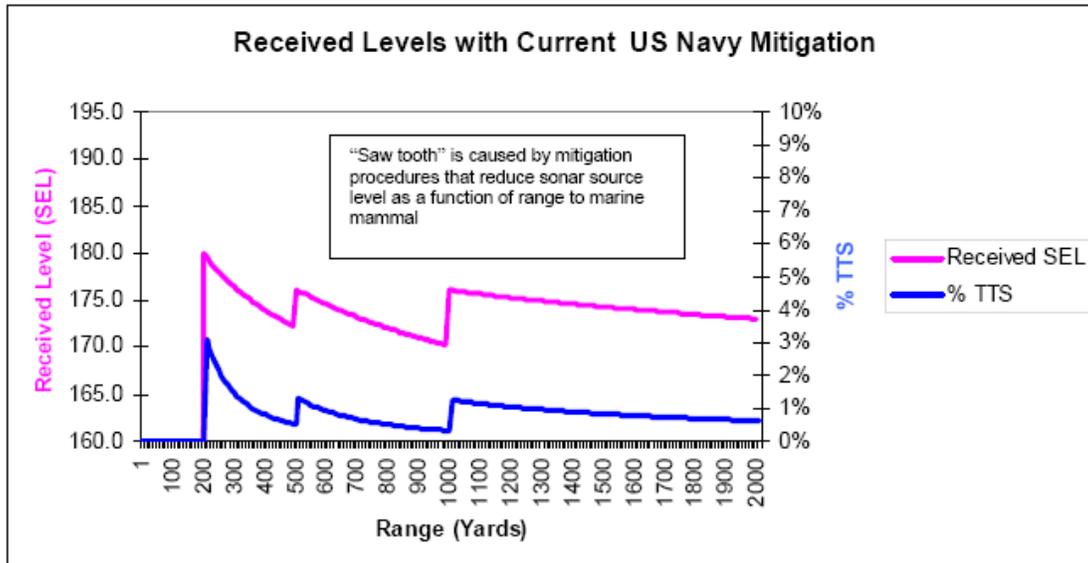


Figure 3-8: Received Levels with Current U.S. Navy Mitigation

The Navy states (CD, p. 3-51):

Maximum received level (top line) to which a marine mammal would be exposed using the mitigation procedures is 179 dB. This occurs just outside the 200 yard shutdown range. The maximum received level just before 6 dB power down at 1000 yards is 175 dB and the maximum dB just before 10 dB power down at 500 yards is 175 dB. At the 500 and 200 yard points, the primary concern is not behavioral disturbance (because the animal is not likely being disturbed and may be drawn to the sonar ping), but the potential for injury due to exposure to MFA sonar or vessel strike. The 500 and 200 yard measures have a large safety margin to prevent injury. The Navy mitigation procedures allow a maximum single ping exposure of about 2.5% (or about 1/40) of the amount of energy (bottom line above) known to cause the onset of temporary diminished audio acuity in some marine mammals. Placed in perspective, the level to which the Navy already mitigates (169 dB when reducing 6dB at 1000 yards) is even lower than humpback whale's vocalization at 190 dB (.4 to 4.0 kHz frequency). Marine mammals are often exposed to higher sound levels in their own communications.

After action reports for recent exercises in SOCAL indicate that protective measures have resulted in the minimization of sonar exposure to detected marine mammals. There have been no known instances of marine mammals behaviorally reacting to the use of sonar during these exercises. The current measures are effective because the typical distances to a received sound energy level associated with temporary threshold shift (TTS) are typically within 200 m of the most powerful active sonar used in the SOCAL (the AN/SQS 53 MFA sonar); The current safety zone for implementation of power-down and shut-down procedures begins when marine mammals come within 1,000 yards of that sonar.

The Navy concludes:

It is highly unlikely that a marine mammal would experience any long-term effects because, given the size of SOCAL Range Complex, repeated or prolonged exposures of individual animals to high-level sonar signals are unlikely. The SOCAL Range Complex has been the location of training and testing with MFAS for decades and there have been no known incidents of effects to individual marine mammals associated with these activities and no evidence of impacts to marine mammal populations. The extensive measures undertaken by the Navy to avoid or limit marine mammal exposure to active sonar, detailed in the Section 2 ASW discussion would reduce the number of PTS and TTS exposures below those presented in Table 3-11. The remaining TTS and behavioral exposures would cause only temporary effects to individual whales. Therefore, long term effects on individuals, populations, or stocks are unlikely.

While marine mammals may detect sonar emissions, underwater detonations, or ship noise from a distance, these exercises are intermittent and of short duration. Minor effects on individuals within a species and substantial effects on a few individuals of a species would have no substantial effect on regional populations of these species; takes are regulated under both the Endangered Species Act and Marine Mammal Protection Act specifically to avoid population-level effects. The proposed training activities will not affect the biological productivity of populations of marine mammals that are CZ resources. Specifically with regard to marine mammals, the proposed activities are consistent to the maximum extent practicable with Section 30230.

In its comments on the Navy's Draft EIS/OEIS, as well as in its litigation on the previous Navy southern California training exercises (which the Commission reviewed in CD-086-06, and which is currently pending before the U. S. Supreme Court), the Natural Resources Defense Council (NRDC) contended the Navy's Draft EIS/OEIS is inadequate because:

- *The Navy assumes that no marine mammals would be seriously injured or killed at sea, despite a growing, peer-reviewed, scientific record of injuries and mortalities and several court decisions that have rejected the Navy's claims. It takes this position even though the California coast has been identified by experts as one of the world's "key areas" for beaked whales, a family of species whose dangerous sensitivity to mid-frequency sonar is well known.⁷*
- *It has manipulated data and thrown out nearly the entire literature on behavioral impacts on marine mammals, in support of an abstract model that contradicts the actual evidence of harm.*
- *It presumes, entirely without analysis, that all of its impacts are short-term in nature and that none will have cumulative effects, even though the same*

⁷ C.D. MacLeod and G. Mitchell, Key Areas for Beaked Whales Worldwide, 7 J. Cetacean Res. Manage. 309-22 (2006).

populations and much of the same habitat would repeatedly be affected, year after year.

- *It claims, against generations of field experience, that marine mammals—even cryptic, deep-diving marine mammals like beaked whales—can effectively be spotted from fast-moving ships and avoided.*
- *It adopts precisely the same mitigation that a federal court has found to be “woefully inadequate and ineffectual” (NRDC v. Winter, 2007 WL 2481037 at *8-9 (C.D. Cal. 2007), aff’d 508 F.3d 885 (9th Cir. 2007)), and fails to prescribe measures that have been used repeatedly by the Navy in the past, used by other navies, or required by the courts.*
- *It summarily declines to put even a single square mile of habitat within its 120,000 nm² range off limits to sonar training and, indeed, has refused even to evaluate possible geographic alternatives. It takes this position in spite of several contrary court decisions, the determinations of the California Coastal Commission, past Navy practice, and agreement within the scientific community that the avoidance of vulnerable habitat represents one of the most effective means of reducing impacts from mid-frequency sonar.*
- *It commits itself—without any analysis of alternatives—to build an instrumented range on Cortes and Tanner Banks: an extremely productive offshore area that hosts a globally important population of endangered blue whales, has the highest recorded densities of endangered fin whales and other species in the region, and supports some of the highest catch rates of commercial fisheries in southern California.*
- *It insists that its proposed activities are consistent to the “maximum extent practicable” with the California Coastal Act and coastal zone management plan (DEIS at 6-5)—notwithstanding previous findings to the contrary by the California Coastal Commission and an adverse ruling before a federal court on precisely this issue. NRDC v. Winter, 2007 WL 2481037 at *8-9 (C.D. Cal. 2007), aff’d 508 F.3d 885 (9th Cir. 2007).*

NRDC’s comments also assert that:

the Navy’s threshold estimates for injury and behavioral change are too high (stating that the Navy’s assumptions are “...inconsistent with the scientific literature, with the legal standard of review, and with recent court decisions ...”) (Appendix A, NRDC Comment letter (p. 7));

the Navy “...disregards data gained from actual whale mortalities” (Ibid., p. 8);

the Navy fails to take into account non-auditory injury mechanisms (p. 8-9);

“...peak power may matter more to beaked whale mortalities than integrated energy...,” and that “the Navy should [therefore] establish a dual threshold for marine mammal injury” (p. 9);

the Navy’s extrapolations are from a too limited set of data and from too few species (p. 9-10);

the Navy’s data sources are primarily from studies on captive animals and are not representative of animals in the wild (p. 11);

the Navy’s risk function does not take into account some species’ social ecology (p. 14);

the Navy inadequately addresses cumulative, long-term behavioral impacts;

the Navy’s risk function analysis contains numerous errors and questionable assumptions;⁸

the Navy ignores a number stranding events linking strandings with military sonar (p. 15-18);

the Navy ignores the difficulty in detecting beaked whales (p. 19);

the Navy ignores “reverberation effect (as in the Haro Strait incident)” (p. 21); and

in averaging the distribution data the Navy “does not account for the frequency of sightings of marine mammal species in certain discrete areas, such as Cortes and Tanner Banks” (p. 21).

The Navy has not yet responded to NRDC’s or other comments it has received on its Draft EIS/OEIS.

In its previous review of Navy southern California training exercises (CD-086-06), the Commission determined that the Navy’s proposed safety zones and other mitigation measures concerning the use of mid-frequency sonar, which were similar to those proposed in the subject training exercises, were inadequate to protect marine mammals. The Commission’s findings in that case are incorporated here by reference. To summarize, the Commission found:

⁸ This assertion is supported by a critique of the Navy’s risk assessment model by David Bain, Ph.D., entitled, “Critique of the Risk Assessment Model Employed To Calculate Takes in the Hawaii Range Complex Supplemental Draft Environmental Impact Statement.”

... the Commission believes that a lower threshold than articulated by NMFS is warranted. NMFS appears to have taken a “middle ground” approach, noting that available evidence exists to support a lower threshold, but basing its determination on the level at which 25% of mammals were behaviorally affected in a captive dolphin study (Finneran and Schlundt (2004)). As the Commission noted in CD-037-06, the Nowacek study ..., which NMFS cited but did not base its threshold on, supports reliance on a lower threshold, given that it addresses animals not in captivity (and not trained to expect rewards). Also, the Natural Research Council has expressed concerns (see pages 29-32) over reliance solely on studies of captive animals. Given this information, combined with the paucity of data concerning the effects of anthropogenic sound on marine species, and the difficulty in detecting marine mammals and sea turtles, a compelling case exists that a lower threshold is warranted. ...Therefore, ..., the Commission does not believe the Navy has established a basis for its proposed [in that case] 186 dB threshold. An equivalent if not better case can be made for adopting what Woods Hole Oceanographic Institution has suggested (i.e., a more precautionary 154 dB threshold).” Consequently, the Commission believes ... conditions ... are needed to bring the project into consistency with the marine resource policy of the Coastal Act (Section 30230).

The conditions the Commission adopted would, if the Navy had agreed to them, have required the Navy to, among other measures:

(1) implement larger safety zones that would avoid exposing marine mammals to not greater than 154 dB RL, OR if the 154 dB level could not be feasibly achieved, shut down sonar if a marine mammal is detected within 2 km of the sonar dome, OR provide the Commission with sufficient information about the sonar intensities and attenuation rates, and the maximum capabilities of its monitoring, to enable the Commission to determine that the Navy will protect a safety zone as close as is possible to the 154 dB zone;

(2) avoid, where possible, effect on gray whales, the Channel Islands National Marine Sanctuary, and areas with known high concentrations of marine mammals, and complex, steep seabed topography (except on the Navy’s instrumented range off San Clemente Island);

(3) implement additional measures for night and low visibility conditions, during Surface Ducting Conditions, and for Choke-point exercises;

(4) implement pre-exercise monitoring one-half hour before sonar use.

The rationale for these types of measures has only been strengthened since the date of this previous Commission action (January 10, 2007). First, as noted on pages 23-25, 28-30 & 38-39 of this report, to date the Courts have agreed with the Commission’s rationale as to the need for greater levels of protection for marine species from mid-frequency sonar than those proposed by the Navy. Second, as supported in two recent reports (see footnotes), NRDC notes:

The best available scientific evidence, as reported in the peer-reviewed literature, indicates that sound levels at the most likely locations of beaked whales beached in the Bahamas strandings run far lower than the Navy's threshold for injury here: approximately 150-160 dB re 1 μ Pa for 50-150 seconds, over the course of the transit.⁹

A further modeling effort, undertaken in part by the Office of Naval Research, suggests that the mean exposure level of beaked whales, given their likely distribution in the Bahamas' Providence Channels and averaging results from various assumptions, may have been lower than 140 dB re 1 μ Pa.¹⁰

In addition, the Commission notes that the maximum received levels (with implementation of the Navy's proposed safety zones) modeled by the Navy do not include the potential for surface ducting to increase the received levels (by causing the sound to approximate a cylindrical rather than spherical spreading mode, which would magnify the received levels at the specified distances). The Commission further notes that the very whales known to most be vulnerable to mid-frequency sonar are those that are most difficult to detect (and which are known to behave in a manner avoiding anthropogenic sound). The document in footnote 10 below (Hildebrand) summarizes the concern over beaked whales and military sonar as follows:

Summary of Beaked Whale Stranding Events

*The mass strandings of beaked whales following exposure to sound from sonar or airguns present a consistent pattern of events. Cuvier's beaked whales are, by far, the most commonly involved species, making up 81% of the total number of stranded animals. Other beaked whales (including *Mesoplodon europaeus*, *M. densirostris*, and *Hyperoodon ampullatus*) account for 14% of the total, and other cetacean species (*Stenella coeruleoalba*, *Kogia breviceps*, and *Balaenoptera acutorostrata*) are sparsely represented. It is not clear whether: (a) *Ziphius cavirostris* are more prone to injury from high-intensity sound than other species, (b) their behavioral response to sound makes them more likely to strand, or (c) they are substantially more abundant than the other affected species in the areas and times of the exposures leading to the mass strandings. One, two, or three of these possibilities could apply. In any event, *Z. cavirostris* has proven to be the "miner's canary" for high-intensity sound impacts. The deployment of naval ASW sonars in the 1960s and the coincident increase in *Z. cavirostris* mass strandings suggest that lethal impacts of anthropogenic sound on cetaceans have been occurring for at least several decades.*

⁹ J. Hildebrand, "Impacts of Anthropogenic Sound," in T.J. Ragen, J.E. Reynolds III, W.F. Perrin, and R.R. Reeves, *Conservation beyond Crisis* (2005). See also International Whaling Commission, 2004 Report of the Scientific Committee, Annex K at 6.3.

¹⁰ J. Hildebrand, K. Balcomb, and R. Gisiner, *Modeling the Bahamas Beaked Whale Stranding of March 2000* (2004) (presentation given at the third plenary meeting of the U.S. Marine Mammal Commission Advisory Committee on Acoustic Impacts on Marine Mammals, 29 July 2004).

The settings for these strandings are strikingly consistent: an island or archipelago with deep water nearby, appropriate for beaked whale foraging habitat. The conditions for mass stranding may be optimized when the sound source transits a deep channel between two islands, such as in the Bahamas, and apparently in the Madeira incident. When exposed to these sounds, some beaked whales swim to the nearest beach. The animals appear on the beach not as a tight cluster of individuals but rather distributed over miles of coastline. Such scatter in the distribution of stranding locations is an important characteristic, which has resulted in these events being called “atypical” mass strandings (Frantzis 1998, 2004, Brownell et al. 2004). The stranded animals die if they are not returned to the sea by human intervention, and the fate of the animals that are returned to the sea is unknown. Necropsies of stranded animals suggest internal bleeding in the eyes, ears, and brain, as well as fat embolisms.

The implicated sounds involve pulses with high-intensity source levels (235 dB re 1 μ Pa at 1 m) from sonar or airgun arrays. Middle frequencies (1–6 kHz) are clearly implicated in the sonar-induced stranding incidents. It is unclear whether low-frequency sound also has the potential of causing injury to beaked whales. Although airguns create predominantly low-frequency energy, they may also have ample mid-frequency energy. The actual sound exposure levels received by animals that later strand are unknown although in the best-documented events these levels may be bounded by careful sound propagation modeling and by knowledge of where the animals are most likely to be found. Source levels high enough to create permanent or temporary hearing loss would be experienced only at ranges close to the source (< 1 km). The sound exposures calculated for sites of most likely animal presence appear to be significantly lower.

For instance, in the Bahamas, the most likely exposure levels appear to have been 150–160 dB re 1 μ Pa for 50–150 s, or less, well below the level expected to create hearing loss in odontocetes. Given that damage to hearing appears unlikely, other mechanisms are needed to explain the connection between sound exposure and stranding in beaked whales.

Additional support for this concern over beaked whales is found in the Court Declaration by Thomas A. Jefferson, which states:

In recent years, there has been a heightened level of concern about the effects of military mid-frequency sonar on marine mammals. Such sonar operations have been linked to the unusual strandings of a number of species of beaked whales and other cetaceans (e.g., Evans and England 2001; Southall et al. 2006; Wang and Yang 2006). Military sonar is even known to lead to the deaths of cetaceans, primarily beaked whales (e.g., Balcomb and Claridge 2001; Cox et al. 2006). The mechanism by which death occurs is incompletely understood, but appears to be related to formation of gas bubbles in the blood (e.g., Fernandez et al. 2005; Rommel et al. 2006). In addition, a number of less severe, but still potentially-detrimental, behavioral impacts of sonar and

other intense mid-frequency sources have been documented in a variety of marine mammal species, including baleen whales (e.g. Rendell and Gordon 1999; Richardson et al. 1995; Nowacek et al. 2004).

Based on all of the above information the Commission concludes that, with respect to activities involving the use of high-intensity, mid-frequency sonar, the mitigation measures the Navy has agreed to are inadequate to enable the Commission to find the Navy's proposal consistent with the requirements of Section 30230 that marine resources be maintained, enhanced, and where feasible, restored, that special protection be given to areas and species of special biological or economic significance, and that uses of the marine environment be carried out in a manner sustaining the biological productivity of coastal waters and maintaining healthy populations of all species of marine organisms.

The Commission further finds that, because (as explained above) it is proposed within a biologically highly productive area, the proposed expansion of the shallow water training range into the Tanner and Cortes Banks area cannot be found consistent with the requirement of Section 30230 that special protection be given to areas and species of special biological significance, because it would only intensify use of active sonar in a biologically highly productive area during the warm water period.

Support for Commission's the finding that this area is of high biological significance is contained in the Court Declaration of eminent marine mammal surveyor John Calambokidis, which states:

5. The Southern California area is an important feeding area for a number of the larger baleen whales including blue, fin, and humpback whales, all species I have been studying. For blue whales, even though the world-wide abundance of this species appears to still be less than 5% of what it was prior to whaling, the density of animals off California appears to be higher than anywhere else in the world and this may be one of the largest surviving populations of this species. Our work identifying individual blue whales has yielded abundance estimates of about 2,000 blue whales that feed off California (Calambokidis and Barlow 2004). Within this California feeding area, southern California has consistently been one of the most important blue whale feeding areas. In recent years there have been changes in blue whale distribution apparently due to changes in prey abundance but these have actually resulted in an even higher proportion of the blue whale populations using southern California waters. While blue whales can occur almost year-round off California, highest densities are present from May to November. The potential risks to this concentrated occurrence of blue whales were made clear by the mortality of at least three blue whales in September 2007. All apparently killed by ship strikes off southern California. Fin whales are another species that remains endangered due to depletion from commercial whaling. They apparently utilize California waters year-round and southern California is an area that has shows concentrations of feeding fin whales (Carretta et al. 2007). Humpback whales feed off California primarily in spring to fall. Research we have conducted off California has

shown that humpback whales off California represent a distinct feeding aggregation separate from the animals that feed farther north in the eastern North Pacific (Calambokidis et al. 1996, 2001, Baker et al. 1998) .

6. While whale distribution can shift somewhat both through the season and year to year reflecting changes in prey distribution, there are several areas of southern California that have been particularly important feeding areas. These include the Santa Barbara Channel (extending westward to the area west of Pt Conception and San Miguel Island, the shelf edge all along the southern California coast, the waters on the north and west side of San Nicolas Island and the area around Tanner and Cortez Bank (Carretta et al. 2007, Croll et al. 2001, Cascadia unpublished data). The area around Tanner-Cortez Banks and especially extending out about 25 miles to the west side of the banks has been an important feeding area for both blue and fin whales based on a number of observations. Sightings of both fin and blue whales from SWFSC line-transect surveys (see Carretta et al. 2007) off southern California are highest in this area. We observed the highest concentrations of fin whales we have encountered anywhere off California during research in August 2003 based off the west side of Tanner-Cortez Banks (see Wiggins et al. 2004) and we were able to deploy seven suction-cup tags on these whales that documented they were feeding (Goldboggen et al. 2006). We have also encountered concentrations of blue whales in this region in the course of our visual surveys (Oleson et al. 2007a) and blue whales are acoustically detected hundreds of times per day in summer and fall from remote hydrophones deployed in this area (Oleson et al. 2007b).

For boundaries, John Calambokidis recommends:

To avoid the highest concentrations of baleen whales, sonar use should be excluded within 10 nm of the 200 fathom isobath defining Tanner and Cortes Banks (J. Calambokidis, pers. comm.; Oleson et al. 2007; Soldevilla et al. 2006; Larkman and Veit 1998). The exclusion zone would not apply within the existing SOAR range.

In addition, the Commission finds that the placement of the instrumentation for the shallow water training, which involves fill of open coastal waters, is subject to the requirements of Section 30233(a) of the Coastal Act. This instrumentation can be found consistent with the allowable use test of Section 30233(a) as an incidental public service (a finding the Commission adopted in reviewing replacement cables in the existing instrumented SOAR range (Navy consistency determination CD-15-05)). However, for placement of this instrumentation in the Tanner and Cortes Banks areas, the Commission could only find the activity consistent with the remaining tests of Section 30233(a) (i.e., the alternatives and mitigation tests) if the Navy were to agree to avoid using mid-frequency sonar in this expanded area during the highly productive season (May to November). If the Navy were to agree to Condition 3(b) (limit sonar use on the Tanner and Cortes Banks to the cold water season), and given the potential for the additional instrumentation to improve passive acoustic monitoring, the Commission could find such a modified proposal consistent with both Sections 30230 and

30233(a). If the Navy does not agree, the Commission could not find the activity to provide special protection for an area of special biological significance, to be the least damaging feasible alternative, or that adequate mitigation would be provided.

For all the activities, to be consistent with the applicable marine resource protection Coastal Act policies, the Navy would need to modify the activities to implement the conditions contained on pages 31-33 of this report. The Commission concludes that, only as conditioned to include these measures, would the proposed training exercises and other activities be consistent with the applicable marine resource protection and fill of open coastal waters policies (Sections 30230 and 30233) of the Coastal Act.

As provided in 15 CFR § 930.4(b), in the event the Navy does not agree with the Commission's conditions of concurrence, then all parties shall treat this conditional concurrence as an objection.

V. SUBSTANTIVE FILE DOCUMENTS:

[To be provided in an addendum to this report]

Exhibits

- 1-3. SOCAL Range
4. Southern California Anti-Submarine Warfare Range (SOAR)
- 5-7. SOCAL Operating Areas
8. Navy Acronyms
9. List of Training Area Locations
10. List of SOCAL Marine Mammal Species
11. Navy Discussion of Each Activity's Coastal Zone Effects
12. Navy Mitigation Measures
13. Navy Analysis of Effects on Coastal Zone Marine Mammals
14. Several Marine Mammal Sighting Maps from the Navy's September 2005 Marine Resources Assessment for the SOCAL Operating Area
15. Blue and Fin Whale Maps, Tanner and Cortes Banks, from NMFS BO, February 9, 2007, for Navy JTFEX/COMPTUEX Exercises (CD-086-06)

Appendix A (Separate Attachment)

1. U.S. Navy's Consistency Determination
2. NRDC's Comments on the Navy's Draft EIS/OEIS

Click on boxes above to link to Exhibits and Appendix A documents