27. *Municipal Major Technical Innovation Program.*

Preliminary Results of Administrative Review

In accordance with 19 CFR 351.221(b)(4)(i), we have calculated an individual subsidy rate for Starbright for the POR. We preliminarily determine the total countervailable subsidy to be 30.87 percent *ad valorem.*

Assessment Rates/Cash Deposits

If these preliminary results are adopted in our final results of this review, 15 days after publication of the final results of this review the Department will instruct CBP to liquidate shipments of OTR Tires by Starbright entered or withdrawn from warehouse, for consumption from December 17, 2007 through December 31, 2008, at 30.87 percent *ad valorem* of the entered value. In keeping with the Agreement on Subsidies and Countervailing Measures of the World Trade Organization, shipments entered, or withdrawn from warehouse, for consumption on or after April 15, 2008, and on or before September 4, 2008, the period between the expiration of "provisional measures" and the publication of the final affirmative injury determination of the U.S. International Trade Commission, will be liquidated without regard to countervailing duties.

The Department will also instruct CBP to collect cash deposits of estimated countervailing duties at the rate of 30.87 percent *ad valorem* of the entered value on shipments of the subject merchandise produced by Starbright, entered, or withdrawn from warehouse, for consumption on or after the date of publication of the final results of this review. We will instruct CBP to continue to collect cash deposits for non-reviewed companies at the applicable company-specific or all-others rate established in the investigation.

Producer/exporter	Net subsidy rate (percent)
Hebei Starbright Tire Co., Ltd.	30.87

Disclosure and Public Comment

We will disclose the calculations used in our analysis to parties to this segment of the proceeding within five days of the publication of this notice. *See* 19 CFR 351.224(b). Pursuant to 19 CFR 351.309, interested parties may submit written comments in response to these preliminary results. Unless the time period is extended by the Department, case briefs are to be submitted within 30 days of the date of publication of this notice in the **Federal Register**. *See* 19 CFR 351.309(c). Rebuttal briefs, limited to issues raised in case briefs, may be filed not later than five days after the date of the filing of case briefs. Parties who submit briefs in this proceeding should provide a summary of the arguments not to exceed five pages and a table of statutes, regulations, and cases cited. Copies of case briefs and rebuttal briefs must be served on interested parties in accordance with 19 CFR 351.303(f).

Interested parties may request a hearing within 30 days after the date of publication of this notice. Unless otherwise specified, the hearing, if requested, will be held two days after the scheduled date for submission of rebuttal briefs. The Department will publish a notice of the final results of this administrative review within 120 days from the publication of these preliminary results.

We are issuing and publishing these results in accordance with sections 751(a)(1) and 777(i)(1) of the Act.

Dated: October 7, 2010.

Ronald K. Lorentzen,

Deputy Assistant Secretary for Import Administration.

[FR Doc. 2010–26283 Filed 10–18–10; 8:45 am]

BILLING CODE 3510–DS–P

DEPARTMENT OF COMMERCE

Foreign-Trade Zones Board

[Order No. 1712]

Reorganization/Expansion of Foreign-Trade Zone 196 Under Alternative Site Framework Fort Worth, TX

Pursuant to its authority under the Foreign-Trade Zones Act of June 18, 1934, as amended (19 U.S.C. 81a–81u), the Foreign-Trade Zones Board (the Board) adopts the following Order:

Whereas, the Board adopted the alternative site framework (ASF) in December 2008 (74 FR 1170, 01/12/09; correction 74 FR 3987, 01/22/09) as an option for the establishment or reorganization of general-purpose zones;

Whereas, the Alliance Corridor, Inc., grantee of Foreign-Trade Zone 196, submitted an application to the Board (FTZ Docket 18–2010, filed 3/16/2010) for authority to reorganize under the ASF with a service area that includes the Alliance Corridor area of Denton and Tarrant Counties, Texas, adjacent to the Alliance Customs and Border Protection user fee airport, FTZ 196's existing Sites 1–4 would be categorized as magnet sites and the grantee proposes an initial usage-driven site (Site 5);

Whereas, notice inviting public comment was given in the **Federal Register** (75 FR 14127–14128, 3/24/2010) and the application has been processed pursuant to the FTZ Act and the Board's regulations; and,

Whereas, the Board adopts the findings and recommendations of the examiner's report, and finds that the requirements of the FTZ Act and Board's regulations are satisfied, and that the proposal is in the public interest;

Now, therefore, the Board hereby orders:

The application to reorganize FTZ 196 under the alternative site framework is approved, subject to the FTZ Act and the Board's regulations, including Section 400.28, to the Board's standard 2,000-acre activation limit for the overall general-purpose zone project, to a five-year ASF sunset provision for magnet sites that would terminate authority for Sites 2, 3 and 4 if not activated by October 31, 2015, and to a three-year ASF sunset provision for usage-driven sites that would terminate authority for Site 5 if no foreign-status merchandise is admitted for a *bona fide* customs purpose by October 31, 2013.

Signed at Washington, DC, October 7, 2010.

Ronald K. Lorentzen,

Deputy Assistant Secretary for Import Administration, Alternate Chairman, Foreign-Trade Zones Board.

[FR Doc. 2010–26275 Filed 10–18–10; 8:45 am]

BILLING CODE P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648–XZ14

Takes of Marine Mammals Incidental to Specified Activities; Navy Training Conducted at the Silver Strand Training Complex, San Diego Bay

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

ACTION: Notice; proposed incidental harassment authorization; request for comments.

SUMMARY: NMFS has received an application from the U.S. Navy (Navy) for an Incidental Harassment Authorization (IHA) to take marine mammals, by harassment, incidental to conducting training exercises at the Silver Strand Training Complex (SSTC)

in the vicinity of San Diego Bay, California. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an IHA to the Navy to incidentally harass, by Level B Harassment only, four species of marine mammals during the specified activity.

DATES: Comments and information must be received no later than November 18, 2010.

ADDRESSES: Comments on the application should be addressed to Michael Payne, Chief, Permits, Conservation and Education Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910–3225. The mailbox address for providing e-mail comments is *0648-XZ14@noaa.gov.* NMFS is not responsible for e-mail comments sent to addresses other than the one provided here. Comments sent via e-mail, including all attachments, must not exceed a 10-megabyte file size.

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

A copy of the application containing a list of the references used in this document may be obtained by writing to the address specified above, telephoning the contact listed below (*see* **FOR FURTHER INFORMATION CONTACT**), or visiting the Internet at: *http://www.nmfs.noaa.gov/pr/permits/incidental.htm.* Documents cited in this notice may also be viewed, by appointment, during regular business hours, at the aforementioned address.

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

SUPPLEMENTARY INFORMATION:

Background

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (Secretary) to allow, upon request, the incidental, but not intentional taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) if certain findings are made and regulations are issued or, if the taking is limited to harassment, notice of a proposed authorization is provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such taking are set forth. NMFS has defined "negligible impact" in 50 CFR 216.103 as: "* * * an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival."

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

(i) Any act that injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild [Level A Harassment]; or

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

Section 101(a)(5)(D) of the MMPA established an expedited process by which citizens of the United States can apply for an authorization to incidentally take small numbers of marine mammals by harassment. Section 101(a)(5)(D) establishes a 45-day time limit for NMFS review of an application followed by a 30-day public notice and comment period on any proposed authorizations for the incidental harassment of marine mammals. Within 45 days of the close of the comment period, NMFS must either issue or deny the authorization.

Summary of Request

NMFS received an application on March 3, 2010, from the Navy for the taking, by harassment, of marine mammals incidental to conducting training exercises at the Navy's Silver Strand Training Complex (SSTC) in the vicinity of San Diego Bay, California, starting late November 2010. After addressing comments from NMFS, the Navy modified its application and submitted a revised application on September 13, 2010. The September 13, 2010, application is the one available for public comment (*see* **ADDRESSES**) and considered by NMFS for this proposed IHA.

Description of the Specific Activity

The Navy has been training and operating in the SSTC for over 60 years. The land, air, and sea spaces of the SSTC have provided, and continue to provide, a safe and realistic training environment for naval forces charged with defense of the Nation. The SSTC, Figure 1–1 of the Navy's IHA application, is located south of the City of Coronado, California and north of the City of Imperial Beach, California. It is composed of ocean and bay training lanes, adjacent beach training areas, ocean anchorages, and inland training areas. To facilitate range management and scheduling, SSTC is divided into numerous training sub-areas (Figure 1–1 of the Navy's IHA application). In-water training sub-areas include: The ocean side of the SSTC divided into two non-contiguous areas, SSTC–NORTH (Boat Lanes 1–10) and SSTC–SOUTH (Boat Lanes 11–14); SSTC–NORTH also includes south San Diego Bay in-water training areas, designated Alpha through Hotel and the Lilly Ann Drop Zone.

The Navy's mission is to maintain, train, and equip combat-ready naval forces capable of winning wars, deterring aggression, and maintaining freedom of the seas. Title 10, U.S. Code Section 5062 directs the Chief of Naval Operations to train all naval forces for combat. The Chief of Naval Operations meets that direction, in part, by conducting littoral training exercises and ensuring naval forces have access to ranges where they can develop and maintain skills for wartime missions. The Navy is proposing the following at SSTC: Continue current training, increase training tempo and types of training, conduct existing routine training at additional locations within SSTC established training areas, construct a demolition pit on inland training areas, and increase access availability of existing beach and inland training areas.

The Navy has conducted a review of its continuing and proposed training conducted at SSTC to determine whether there is a potential for harassment of marine mammals. The following discussion describes the underwater detonation training and pile driving conducted at SSTC. Other training events conducted at SSTC, which are not anticipated to rise to the level of harassment to marine mammals as defined under the MMPA, are more completely described in the SSTC Draft Environmental Impact Statement.

Underwater Detonations

Underwater detonations are conducted by Explosive Ordnance Disposal (EOD) units, Naval Special Warfare (NSW) units, MH–60S Mine Countermeasure helicopter squadrons, and Mobile Diving and Salvage units at the SSTC. The training provides Navy personnel with hands-on experience with the design, deployment, and detonation of underwater clearance devices of the general type and size that they are required to understand and utilize in combat. EOD groups conduct most of the underwater detonation training at SSTC as part of their training in the detection, avoidance, and neutralization of mines to protect Navy ships and submarines, and offensive mine laying in naval operations.

For safety reasons, underwater detonation training only occurs during daylight and can only be conducted in sea-states of up to Beaufort 3 (presence of large wavelets, crests beginning to break, presence of glassy foam, and/or perhaps scattered whitecaps). Table 1 describes the types of underwater detonation training events conducted within the SSTC.

TABLE 1—DETAILED DESCRIPTIONS OF SSTC UNDERWATER DETONATION TRAINING EVENTS

Training duration/event	Description
Shock Wave Action Generator (SWAG). 1 day	SWAG is a tool used by Explosive Ordnance Disposal (EOD) to disarm enemy limpet mines which have been attached to the hull of a ship. The SWAG is composed of a cylindrical steel tube, 3 inches long and 1 inch wide, containing approximately 0.033 lbs of explosives. The single explosive charge is highly focused. For SWAG training, a metal sheet containing an inert mine is lowered from the side of a small vessel, or small boat. Divers place a single SWAG on the mine that is located mid-water column, within water depths of 10–20 feet. A bag is placed over the mine to catch falling debris.
Mine Counter Measure 1 day	Events are performed from a small craft to locate and identify suspected ordnance either at mid-column or on the sea floor at a water depth of ≤ 72 feet. A detachment dives to locate the suspected ordnance. Once located, a single explosive charge (10–20 lbs NEW) is placed next to the ordnance to neutralize it. The neutralized mine is then raised, towed to shore, and beached.
Floating Mine .... 1 day	Personnel are inserted into the ocean via helicopter or 24-foot vessel, swim to the floating mine in water depths of less than 72 feet, and place a single explosive countercharge (less than 5 lbs NEW) on the mine. The team retreats a safe distance prior to command detonation of a single countercharge.
Dive Platoon .... 1 day	Divers are inserted into the ocean via helicopter or 24-foot vessel, dive to depths of 30–72 feet and detonate sequential charges on an inert mine shape placed on the bottom with 3.5 lbs NEW.
Very Shallow Water Mine Counter Measure. 1 day	Locating, identifying, and neutralizing mines (placing explosives on mines for the purposes of destroying them) placed either mid-column or on the sea floor at a water depth of ≤ 24 feet (10–20 lbs NEW). Use of explosives will occur during approximately 60% of training events and will ONLY occur in the SSTC oceanside Boat Lanes. All in-Bay training (40%) will not use any explosives. Personnel are transported to a location in one to two RHIBs and place transponders into the water. The transponders hover over the bottom to provide divers with shallow-water navigation instruction.
Unmanned Underwater Vehicle (UUV). 1 day	Training on use of UUVs. One to two RHIBs are used to transport personnel to a site. Two transponders are placed in the water, with an UUV between them. UUVs explore the area, photograph, and collect hydrographic information. After analysis is complete, appropriate Navy marine mammals are dispatched to localize and mark potential objects, followed by divers who clear the area of identified hazards. Approximately 3% of events involve placing a single 10–15 lbs NEW charge in water depths from 10 to 72 feet on the oceanside of SSTC–NORTH (on the bottom or up to 20 feet from the surface) to neutralize a simulated mine. Use and detonation of explosives will only occur in the SSTC oceanside Boat Lanes 1–14. Bayside UUV use in the Bay will be for operator training and not contain explosives.
MK8 Marine Mammal/ Marine Mammal Systems (MMS). 1 day	Navy divers work with the help of the Navy's trained marine mammals to detect underwater objects. Approximately 10% of training involves the setting of a 13- or 29 lbs NEW charge to detonate the objects. Sequential detonations operate at water depths of 10 to 72 feet and are bottom laid. Single charges are laid within water depths of 24 to 72 feet, 20 feet from the surface or below. Use of explosives will only occur in the SSTC oceanside Boat Lanes 1–14.
Mine Neutralization	Personnel are inserted via helicopter or vessel for underwater demolition training consisting of eight sequential charges placed on the sea floor using 3.5 lbs NEW explosive charges on various inert mine shapes in water depths of 30 to 72 feet to maintain qualifications.
Surf Zone Test Detachment Equipment T&E. 1 day	To support clearance capability in the surf zone (out to 10 feet of water), EOD would test and evaluate the effectiveness of new detection and neutralization equipment (*i.e.*, generally explosive counter-techniques to safely disarm/render safe mines) in surf conditions. Use of explosives will occur during 1% of training events (0.1 to 20 lbs NEW) and will only occur in the SSTC oceanside Boat Lanes 1–14.
Unmanned Underwater Vehicle Neutralization. 1 day	Training consists of placing 2 sequential charges consisting of a Seafox (3.3 lbs) or Archerfish (3.57 lbs) charge placed from depths of 10 feet to the bottom in water depth less than 72 feet.
Airborne Mine Neutralization System (AMNS). 1 day	The training would involve an MH–60S helicopter deploying an AMNS underwater vehicle into the water that searches for, locates, and destroys mines. The vehicle is self-propelled and unmanned. Approximately 20% of the training would involve the AMNS being remotely detonated (3.5 lbs NEW) when it encounters a simulated (inert) mine shape.
Naval Special Warfare Underwater Demolition Qualification/Certification. 1 day	Demolition Requalifications and Training provides teams with experience in underwater detonations by conducting detonations on metal plates near the shoreline. At water depths of 10 to 72 feet two sequential 12.5–13.75 lbs NEW charges are placed on the bottom or a single 25.5 lbs charge is placed from a depth of 20 feet to the bottom.
Naval Special Warfare Underwater Demolition Training. 1 day	Up to 40 persons participate in the activity, which involves small groups swimming to shore from four inflatable boats located approximately 1,000 yards offshore; boats may be beached on shore. A single charge of less than 10 lbs NEW (if detonated on the bottom) or less than 3.6 lbs NEW (if within five feet of the surface) is manually detonated near the shoreline in water less than 24 feet deep.

TABLE 1—DETAILED DESCRIPTIONS OF SSTC UNDERWATER DETONATION TRAINING EVENTS—Continued

Training duration/event	Description
SEAL Delivery Vehicle/ Advanced SEAL Delivery System Certification to Deploy. 14 days	Designed to certify SDV Team operators for deployment, events include direct action, reconnaissance, and/or counter-terrorism events. Training may include navigation runs into and out of the San Diego Bay, hydrographic reconnaissance, over the beach (OBT) training, combat swimmer, and underwater detonation training. Based on training tempo, multiple events could occur. Underwater detonation events involve a single timed charge of 10 lbs or less NEW in water depths of 24 feet or less placed from mid-water column to the seafloor that may be conducted in coordination with other training events. Use of explosives will only occur in the SSTC oceanside Boat Lanes 1–10. The whole Certification process is a 14 day evolution, although explosives would not be used every day.

Table 2 shows the underwater detonation training event types described above along with the net equivalent weight (NEW) for the charges involved, water depth, and number of events per year. NEW is a conversion that allows the comparison of different mixes of explosive formulas. Since different explosive formulas may have different explosive potentials, explosive potentials are often normalized and expressed as compared to the equivalent explosive potential of TNT (trinitrotoluene). While explosive NEW shown in Table 2 range from 0.03 lbs to 29 lbs, it should be noted that approximately 78% of the annual underwater detonation training events at the SSTC would use explosive weights less than 10 lbs (*see* Figure 2–2 of the Navy's IHA application).

TABLE 2—SSTC ANNUAL UNDERWATER EXPLOSIVE EVENTS

Underwater detonation training event	NEW (lbs)	No. of sequential detonations	Water depth (feet)	Charge depth	No. of training events/yr*	SSTC location
Shock wave action generator (SWAG)	0.033	1/det	10–20	Mid-water	74	SDB.**
Shock wave action generator (SWAG)	0.033	1/det	10–20	Mid-water	16	Oceanside.
Mine Counter Measure	10–20	1/det	≤72	Mid-water	29	Oceanside.
Mine Counter Measure	10–20	1/det	≤72	Bottom	29	Oceanside.
Floating Mine	≤5	1/det	≤72	Surface (<5 ft)	53	Oecanside.
Dive Platoon	3.5	1/det	39–72	Bottom	8	Oceanside.
Very Shallow Water Mine Counter Measure.	0.1–20	1/det	≤24	Bottom	60	Oceanside.
Unmanned underwater vehicle	10–15	1/det	10–72	Bottom to 10 ft from surface.	4	Oceanside.
Marine Mammal System	13 & 29	2/det	10–72	Bottom	8	Oceanside.
Marine Mammal System Operator Course.	13 & 29	1/det	24–72	Bottom to 20 ft from surface.	8	Oceanside.
Mine Neutralization	3.5	8/det	30–72	Bottom	4	Oceanside.
Surf Zone Testing and Evaluation	to 20	1/det	≤ 24	Bottom	2	Oceanside.
Unmanned Underwater Vehicle Neutralization.	3.3 & 3.57	2/det	10–72	Bottom to 10 ft from surface.	4	Oceanside.
Airborne Mine Neutralization System	3.53	1/det	40–72	Mid-water to bottom	10	Oceanside.
Qualification/Certification	12.5–13.75	2/det	10–72	Bottom	8	Oceanside.
Qualification/Certification	25.5	1/det	40–72	Bottom to 20 ft from surface.	4	Oceanside.
Naval Special Warfare Demolition Training.	≤10	1/det	≤24	Bottom	4	Oceanside.
Naval Special Warfare Demolition Training.	≤3.6	1/det	≤24	Surface	8	Oceanside.
SEAL Delivery Vehicle/Advance SEAL Delivery Vehicle.	≤10	1/det	≤24	Bottom to mid-water	40	Oceanside.

* No. of training events is the total amount of underwater detonation training involving each particular Training Event Type. Most Training events are a single detonation (*i.e.*, 1/detonation) per event. However, four of these Training Event Types involve sequential charges during the same training event. Sequential charges are either conducted with a 10-second delay between detonations or 30-minute delay between detonations.

** San Diego Bay.

Elevated Causeway System (ELCAS) Training

Elevated Causeway System (ELCAS) is a modular pre-fabricated causeway pier. ELCAS provides a link between offshore amphibious supply ships with associated lighterage (*i.e.*, small cargo boats and barges) and the shore by bridging the surf zone. Offloaded vehicles and supplies can be driven on the causeway to and from shore.

ELCAS events would occur up to four times a year at either the dedicated training lane within bayside Bravo Beach, or in the oceanside training lanes at SSTC–North. During ELCAS training events, 24-inch wide hollow steel piles are driven into the sand in the surf zone with an impact hammer. Pile installation occurs over a period of approximately 10 days and pile removal over approximately three days. Approximately 101 piles are driven into the beach and surf zone with a diesel impact hammer over the course of approximately 10 days, 24 hours a day (*i.e.*, during the day and night). Each pile takes an average of 10 minutes to install, with around 250 to 300 impacts per pile. Pile driving includes a semi-soft start as part of the normal operating procedure based on the design of the drive equipment. The pile driver increases impact strength as resistance goes up. At first, the pile driver piston drops a few inches. As resistance goes up, the pile driver piston will drop from a higher distance thus providing more impact due to gravity. The pile driver can take 5 to 7 minutes to reach full impact strength. As sections of piles are installed, causeway platforms are then hoisted and secured onto the piles with hydraulic jacks and cranes. The ELCAS is then used for a period of time, usually less than two weeks to transfer cargo back and forth from sea to shore.

At the end of all the ELCAS training, a vibratory hammer attached to the pile head will be used to remove piles by applying a rapidly alternating force to the pile by rotating eccentric weights about shafts, resulting in an upward vibratory force on the pile. The vertical vibration in the pile disturbs or "liquefies" the sediment next to the pile causing the sediment particles to lose their frictional grip on the pile. This also allows sediment to fill back into the hole that is left after the pile is removed. Removal takes approximately 15 minutes per pile over a period of around 3 days.

In relation to this IHA application, installation and removal of ELCAS support piles were deemed by the Navy to most likely have the potential to harass marine mammals.

Other Training

In addition to underwater detonations and ELCAS, the Navy performs a variety of other shallow water and amphibious training at SSTC. This training includes amphibious vessel and vehicle maneuvering, beach landings, causeway (floating pier) insertions onto the beach, swimming, land demolitions, transfer of fluids from vessel to the shore through a flexible conduit (seawater is used as the fluid during training), and helicopter overflight events.

Potential impacts from other training applicable to marine mammals included helicopter overflights, and marine boat and vessel movement within the SSTC. However, as discussed in detail in the Navy's IHA application, the Navy determined that only underwater detonations and ELCAS pile driving and pile removal training events at SSTC have the potential to rise to the level of harassment as defined under the MMPA, as amended in 1994. NMFS agrees with the Navy's determination.

Description of Marine Mammals in the Area of the Specified Activity

There are four marine mammal species within SSTC marine waters with confirmed or historic occurrence in the study area. These include the California sea lion (*Zalophus californianus*), Pacific harbor seal (*Phoca vitulina richardsii*), California coastal stock of bottlenose dolphin (*Tursiops truncatus*), and more infrequently gray whale (*Eschrichtius robustus*). None are listed as threatened or endangered under the Endangered Species Act (ESA).

The Navy's IHA application contains information on the status, distribution, seasonal distribution, and abundance of each of the species under NMFS jurisdiction mentioned in this document. Please refer to the application for that information (*see* **ADDRESSES**). Additional information can also be found in the NMFS Stock Assessment Reports (SAR). The Pacific 2009 SAR is available at: *http://www.nmfs.noaa.gov/pr/pdfs/sars/po2009.pdf.*

California Sea Lions

The California sea lion is by far the most commonly-sighted pinniped species at sea or on land in the vicinity of the SSTC. Nearly all of the U.S. Stock (more than 95%) of California sea lion breeds and gives birth to pups on San Miguel, San Nicolas, and Santa Barbara islands off California. Smaller numbers of pups are born on the Farallon Islands, and Año Nuevo Island (Lowry *et al.* 1992). In California waters, sea lions represented 97% (381 of 393) of identified pinniped sightings at sea during the 1998–1999 NMFS surveys (Carretta *et al.* 2000). They were sighted during all seasons and in all areas with survey coverage from nearshore to offshore areas (Carretta *et al.* 2000).

Survey data from 1975 to 1978 were analyzed to describe the seasonal shifts in the offshore distribution of California sea lions (Bonnell and Ford 1987). During summer, the highest densities were found immediately west of San Miguel Island. During autumn, peak densities of sea lions were centered on Santa Cruz Island. During winter and spring, peak densities occurred just north of San Clemente Island. The seasonal changes in the center of distribution were attributed to changes in the distribution of the prey species. If California sea lion distribution is determined primarily by prey abundance as influenced by variations in local, seasonal, and inter-annual oceanographic variation, these same areas might not be the center of sea lion distribution every year. Costa *et al.* (2007) was able to indentify kernel home range contours for foraging female sea lions during non-El Nino conditions, although there was some variation over the three years of this tagging study. Melin *et al.* (2008) showed that foraging female sea lions showed significant variability in individual foraging behavior, and foraged farther offshore and at deeper depths during El Nino years as compared to non-El Nino years. The distribution and habitat use of California sea lions vary with the sex of the animals and their reproductive phase. Adult males haul out on land to defend territories and breed from mid-to-late May until late July. The pupping and mating season for sea lions begins in late May and continues through July (Heath 2002). Individual males remain on territories for 27–45 days without going to sea to feed. During August and September, after the mating season, the adult males migrate northward to feeding areas as far away as Washington (Puget Sound) and British Columbia (Lowry *et al.* 1992). They remain there until spring (March–May), when they migrate back to the breeding colonies. Thus, adult males are present in offshore areas of the SSTC only briefly as they move to and from rookeries. Distribution of immature California sea lions is less well known, but some make northward migrations that are shorter in length than the migrations of adult males (Huber 1991). However, most immature sea lions are presumed to remain near the rookeries, and thus remain near SSTC for most of the year (Lowry *et al.* 1992). Adult females remain near the rookeries throughout the year. Most births occur from mid-June to mid-July (peak in late June).

California sea lions feed on a wide variety of prey, including Pacific whiting, northern anchovy, mackerel, squid, sardines, and rockfish (Antonelis *et al.* 1990; Lowry *et al.* 1991; Lowry and Carretta 1999; Lowry and Forney 2005; Bearzi 2006). In Santa Monica Bay, California sea lions are known to follow and feed near bottlenose dolphins (Bearzi 2006), and if in the near shore waters of SSTC, may forage on common coastal beach fish species (corbina and barred surfperch) as dolphins (Allen 2006).

There are limited published at-sea density estimates for pinnipeds within Southern California. Higher densities of California sea lions are observed during cold-water months. At-sea densities likely decrease during warm-water months because females spend more time ashore to give birth and attend to their pups. Radio-tagged female California sea lions at San Miguel Island spent approximately 70% of their time at sea during the non-breeding season (cold-water months) and pups spent an average of 67% of their time ashore during their mother's absence (Melin and DeLong 2000). Different age classes of California sea lions are found in the offshore areas of SSTC throughout the year (Lowry *et al.* 1992). Although adult male California sea lions feed in areas north of SSTC, animals of all other ages and sexes spend most, but not all, of their time feeding at sea during winter, thus, the winter estimates likely are somewhat low. During warm-water months, a high proportion of the adult males and females are hauled out at terrestrial sites during much of the period, so the summer estimates are low to a greater degree.

The NMFS population estimate of the U.S. Stock of California sea lions is 238,000 (Carretta *et al.* 2010), with a minimum estimate based on a 2005 shore-based survey of all age and sex classes of 141,842 (NMFS, unpublished data, Carretta *et al.* 2010). The California sea lion is not listed under the ESA, and the U.S. Stock, some of which occurs in the SSTC, is not considered a strategic stock under the MMPA.

Pacific Harbor Seal

Harbor seals are considered abundant throughout most of their range from Baja California to the eastern Aleutian Islands. An unknown number of harbor seals also occur along the west coast of Baja California, at least as far south as Isla Asuncion, which is about 100 miles south of Punta Eugenia. Animals along Baja California are not considered to be a part of the California stock because it is not known if there is any demographically significant movement of harbor seals between California and Mexico (Carretta *et al.* 2010). Peak numbers of harbor seals haul out on land during late May to early June, which coincides with the peak of their molt. They generally favor sandy, cobble, and gravel beaches (Stewart and Yochem 1994; 2000), and most haul out on the central California mainland and Santa Cruz Island (Lowry and Carretta 2003; Carretta *et al.* 2010).

There are limited at-sea density estimates for pinnipeds within Southern California. Harbor seals do not make extensive pelagic migrations, but do travel 300–500 km on occasion to find food or suitable breeding areas (Herder 1986; Carretta *et al.* 2007). Nursing of pups begins in late February, and pups start to become weaned in May. Breeding occurs between late March and early May on the southern and northern Channel Islands. When at sea during May and June (and March to May for breeding females), they generally remain in the vicinity of haul-out sites and forage close to shore in relatively shallow waters. Based on likely foraging strategies, Grigg *et al.* (2009) reported seasonal shifts in harbor seal movements based on prey availability.

Harbor seals are opportunistic feeders that adjust their feeding to take advantage of locally and seasonally abundant prey which can include small crustaceans, rock fish, cusk-eel, octopus, market squid, and surfperch (Bigg 1981; Payne and Selzer 1989; Stewart and Yochem 1994; Stewart and Yochem 2000; Baird 2001; Oates 2005). If in the near shore waters of SSTC, harbor seals may forage on common coastal beach fish species, such as corbina and barred surfperch (Allen 2006).

Harbor seals are found in the SSTC throughout the year (Carretta *et al.* 2000) with local densities estimated at 0.010 animals/km^2 during the warm season and 0.020 animals/km^2 during the cold season.

Based on the most recent harbor seal counts (26,333 in May–July 2004, Lowry *et al.* 2005) and Hanan's revised correction factor, the harbor seal population in California is estimated by NMFS to number 34,233 (Carretta *et al.* 2010). The minimum size of the California harbor seal population is 31,600 (Carretta *et al.* 2010). Of the estimated California population (34,233), less than 30% are thought to reside within Southern California due to lack of suitable haul-out sites because of significant beach urbanization (Lowry *et al.* 2008).

The harbor seal is not listed under the ESA, and the California Stock, some of which occurs in the SSTC, is not considered a strategic stock under the MMPA. The California population has increased from the mid-1960s to the mid-1990s, although the rate of increase may have slowed during the 1990s as the population has reached and may be stabilizing at carrying capacity (Hanan 1996, Carretta *et al.* 2010).

Bottlenose Dolphin

There are two distinct populations of bottlenose dolphins within southern California, a coastal population found within 0.5 nm (0.9 km) of shore and a larger offshore population (Hansen 1990; Bearzi *et al.* 2009). The California Coastal Stock is the only one of these two stocks likely to occur within the SSTC. The bottlenose dolphin California Coastal Stock occurs at least from Point Conception south into Mexican waters, at least as far south as San Quintin, Mexico. In southern California, animals are found within 1,600 ft (500 m) of the shoreline 99% of the time and within 820 ft (250 m) 90% of the time (Hanson and Defran 1993). Occasionally, during warm-water incursions such as during the 1982–1983 el Niño event, their range extends as far north as Monterey Bay (Wells *et al.* 1990). Bottlenose dolphins in the Southern California Bight (SCB) appear to be highly mobile within a relatively narrow coastal zone (Defran *et al.* 1999), and exhibit no seasonal site fidelity to the region (Defran and Weller 1999). There is little site fidelity of coastal bottlenose dolphins along the California coast; over 80% of the dolphins identified in Santa Barbara, Monterey, and Ensenada have also been identified off San Diego (Defran *et al.* 1999; Maldini-Feinholz 1996; Carretta *et al.* 2008; Bearzi *et al.* 2009). Bottlenose dolphins could occur in the SSTC at variable frequencies and periods throughout the year based on localized prey availability (Defran *et al.* 1999).

The Pacific coast bottlenose dolphins feed primarily on surfperches (Family Embiotocidae) and croakers (Family Sciaendae) (Norris and Prescott 1961; Walker 1981; Schwartz *et al.* 1992; Hanson and Defran 1993), and also consume squid (*Loligo opalescens*) (Schwartz *et al.* 1992). The coastal stock of bottlenose dolphin utilizes a limited number of fish prey species with up to 74% being various species of surfperch or croakers, a group on non-migratory year-round coastal inhabitant (Defran *et al.* 1999; Allen *et al.* 2006). For Southern California, common croaker prey species include spotfin croaker, yellowfin croaker, and California corbina, while common surfperch species include barred surfperch and walleye surfperch (Allen *et al.* 2006). The corbina and barred surfperch are the most common surf zone fish where bottlenose dolphins have been observed foraging (Allen *et al.* 2006). Defran *et al.* (1999) postulated that the coastal stock of bottlenose dolphins showed significant movement within their home range (Central California to Mexico) in search of preferred but patchy concentrations of near shore prey (*i.e.,* croakers and surfperch). After finding concentrations of prey, animals may then forage within a more limited spatial extent to take advantage of this local accumulation until such time that prey abundance is reduced after which the dolphins once again shift location over larger distances (Defran *et al.* 1999). Bearzi (2005) and Bearzi *et al.* (2009) also noted little site fidelity from coastal bottlenose dolphins in Santa Monica Bay, California, and that these animals were highly mobile with up to 69% of their time spent in travel and dive-travel mode and only 5% of the time in feeding behaviors.

Group size of the California coastal stock of bottlenose dolphins has been reported to range from 1 to 57 dolphins (Bearzi 2005), although mean pod sizes were around 19.8 (Defran and Weller 1999) and 10.1 (Bearzi 2005). An at-sea density estimate of 0.202 animals/km^2 was used for acoustic impact modeling for both the warm and cold seasons as derived in National Center for Coastal Ocean Science (2005).

Based on photographic mark-recapture surveys conducted along the San Diego coast in 2004 and 2005, population size for the California Coastal Stock of the bottlenose dolphin is estimated to be 323 individuals (CV = 0.13, 95% CI 259–430; Dudzik *et al.* 2005; Carretta *et al.* 2010). This estimate does not reflect that approximately 35% of dolphins encountered lack identifiable dorsal fin marks (Defran and Weller 1999). If 35% of all animals lack distinguishing marks, then the true population size would be closer to 450–500 animals (Carretta *et al.* 2010). The California Coastal Stock of bottlenose dolphins is not listed under the ESA, and is not considered a strategic stock under the MMPA.

Gray Whale

The Eastern North Pacific population is found from the upper Gulf of California (Tershy and Breese 1991), south to the tip of Baja California, and up the Pacific coast of North America to the Chukchi and Beaufort seas. There is a pronounced seasonal north-south migration. The eastern North Pacific population summers in the shallow waters of the northern Bering Sea, the Chukchi Sea, and the western Beaufort Sea (Rice and Wolman 1971). The northern Gulf of Alaska (near Kodiak Island) is also considered a feeding area; some gray whales occur there year-round (Moore *et al.* 2007). Some individuals spend the summer feeding along the Pacific coast from southeastern Alaska to central California (Sumich 1984; Calambokidis *et al.* 1987; 2002). Photo-identification studies indicate that gray whales move widely along the Pacific coast and are often not sighted in the same area each year (Calambokidis *et al.* 2002). In October and November, the whales begin to migrate southeast through Unimak Pass and follow the shoreline south to breeding grounds on the west coast of Baja California and the southeastern Gulf of California (Braham 1984; Rugh 1984). The average gray whale migrates 4,050 to 5,000 nm (7,500 to 10,000 km) at a rate of 80 nm (147 km) per day (Rugh *et al.* 2001; Jones and Swartz 2002). Although some calves are born along the coast of California (Shelden *et al.* 2004), most are born in the shallow, protected waters on the Pacific coast of Baja California from Morro de Santo Domingo (28 °N) south to Isla Creciente (24 °N) (Urbán *et al.* 2003). Main calving sites are Laguna Guerrero Negro, Laguna Ojo de Liebre, Laguna San Ignacio, and Estero Soledad (Rice *et al.* 1981).

A group of gray whales known as the Pacific Coast Feeding Aggregation (PCFA) feeds along the Pacific coast between southeastern Alaska and northern to central California throughout the summer and fall (NMFS 2001; Calambokidis *et al.* 2002; Calambokidis *et al.* 2004). The gray whales in this feeding aggregation are a relatively small proportion (a few hundred individuals) of the overall eastern North Pacific population and typically arrive and depart from these feeding grounds concurrently with the migration to and from the wintering grounds (Calambokidis *et al.* 2002; Allen and Angliss 2010). Although some site fidelity is known to occur, there is generally considerable inter-annual variation since many individuals do not return to the same feeding site in successive years (Calambokidis *et al.* 2000; Calambokidis *et al.* 2004).

The Eastern North Pacific stock of gray whale transits through Southern California during its northward and southward migrations between December and June. Gray whales follow three routes from within 15 to 200 km from shore (Bonnell and Dailey 1993). The nearshore route follows the shoreline between Point Conception and Point Vicente but includes a more direct line from Santa Barbara to Ventura and across Santa Monica Bay. Around Point Vicente or Point Fermin, some whales veer south towards Santa Catalina Island and return to the nearshore route near Newport Beach. Others join the inshore route that includes the northern chain of the Channel Islands along Santa Cruz Island and Anacapa Island and east along the Santa Cruz Basin to Santa Barbara Island and the Osborn Bank. From here, gray whales migrate east directly to Santa Catalina Island and then to Point Loma or Punta Descanso or southeast to San Clemente Island and on to the area near Punta Banda. A significant portion of the Eastern North Pacific stock passes by San Clemente Island and its associated offshore waters (Carretta *et al.* 2000). The offshore route follows the undersea ridge from Santa Rosa Island to the mainland shore of Baja California and includes San Nicolas Island and Tanner and Cortes banks (Bonnell and Dailey 1993).

Peak abundance of gray whales off the coast of San Diego is typically January during the southward migration and in March during the migration north, although females with calves, which depart Mexico later than males or females without calves, can be sighted from March through May or June (Leatherwood 1974; Poole 1984; Rugh *et al.* 2001; Stevick *et al.* 2002; Angliss and Outlaw 2008). Gray whales would be expected to be infrequent migratory transients within the out portions of SSTC only during cold-water months (Carretta *et al.* 2000). Migrating gray whale that might infrequently transit through SSTC would not be expected to forage, and would likely be present for minutes to less than one or two hours at typical travel speeds of 3 knots (approximately 3.5 miles per hour) (Perryman *et al.* 1999; Mate and Urbán-Ramirez 2003). A mean group size of 2.9 gray whales was reported for both coastal (16 groups) and non-coastal (15 groups) areas around San Clemente Island (Carretta *et al.* 2000). The largest group reported was nine animals. The largest group reported by the U.S. Navy (1998) was 27 animals. Gray whales would not be expected in the SSTC from July through November (Rice *et al.* 1981), and are excluded from warm season analysis. Even though gray whale transitory occurrence is infrequent along SSTC, a cold season density is estimated at 0.014 animals per km^2 for purposes of conservative analysis.

Systematic counts of gray whales migrating south along the central California coast have been conducted by shore-based observers at Granite Canyon most years since 1967. The population size of the Eastern North Pacific gray whale stock has been increasing over the past several decades at a rate approximately between 2.5 to 3.3% per year since 1967. The most recent abundance estimates are based on the National Marine Fisheries Service's population estimate of 19,126 individuals as reported in Allen and Angliss (2010).

In 1994, due to steady increases in population abundance, the Eastern North Pacific stock of gray whales was removed from the List of Endangered and Threatened Wildlife, as it was no longer considered endangered or threatened under the ESA (Allen and Angliss 2010). The Eastern North Pacific stock of gray whale is not considered a strategic stock under the MMPA. Even though the stock is within Optimal Sustainable Population, abundance will rise and fall as the population adjusts to natural and man-caused factors affecting the carrying capacity of the environment (Rugh *et al.* 2005). In fact, it is expected that a population close to or at the carrying capacity of the environment will be more susceptible to fluctuations in the environment (Moore *et al.* 2001).

Potential Effects on Marine Mammals and Their Habitat

Anticipated impacts resulting from the Navy's proposed SSTC training activities include disturbance from underwater detonation events and pile driving from the ELCAS events, if marine mammals are in the vicinity of these action areas.

Impacts From Anthropogenic Noise

Marine mammals exposed to high intensity sound repeatedly or for prolonged periods can experience hearing threshold shift (TS), which is the loss of hearing sensitivity at certain frequency ranges (Kastak *et al.* 1999; Schlundt *et al.* 2000; Finneran *et al.* 2002; 2005). TS can be permanent (PTS), in which case the loss of hearing sensitivity is unrecoverable, or temporary (TTS), in which case the animal's hearing threshold will recover over time (Southall *et al.* 2007). Since marine mammals depend on acoustic cues for vital biological functions, such as orientation, communication, finding prey, and avoiding predators, marine mammals that suffer from PTS or TTS will have reduced fitness in survival and reproduction, either permanently or temporarily. Repeated noise exposure that leads to TTS could cause PTS.

Measured source levels from impact pile driving can be as high as 214 dB re 1 μPa @ 1 m. Although no marine mammals have been shown to experience TTS or PTS as a result of being exposed to pile driving activities, experiments on a bottlenose dolphin (*Tursiops truncates*) and beluga whale (*Delphinapterus leucas*) showed that exposure to a single watergun impulse at a received level of 207 kPa (or 30 psi) peak-to-peak (p-p), which is equivalent to 228 dB re 1 μPa (p-p), resulted in a 7 and 6 dB TTS in the beluga whale at 0.4 and 30 kHz, respectively. Thresholds returned to within 2 dB of the pre-exposure level within 4 minutes of the exposure (Finneran *et al.* 2002). No TTS was observed in the bottlenose dolphin. Although the source level of pile driving from one hammer strike is expected to be much lower than the single watergun impulse cited here, animals being exposed for a prolonged period to repeated hammer strikes could receive more noise exposure in terms of SEL than from the single watergun impulse (estimated at 188 dB re 1 μPa^2-s) in the aforementioned experiment (Finneran *et al.* 2002).

However, in order for marine mammals to experience TTS or PTS, the animals have to be close enough to be exposed to high intensity noise levels for prolonged period of time. Current NMFS standards for preventing injury from PTS and TTS is to require shutdown or power-down of noise sources when a cetacean species is detected within the isopleths corresponding to SPL at received levels equal to or higher than 180 dB re 1 μPa (rms), or a pinniped species at 190 dB re 1 μPa (rms). Based on the best scientific information available, these SPLs are far below the threshold that could cause TTS or the onset of PTS. Certain mitigation measures proposed by the Navy, discussed below, can effectively prevent the onset of TS in marine mammals, by establishing safety zones and monitoring safety zones during the training exercise.

In addition, chronic exposure to excessive, though not high-intensity, noise could cause masking at particular frequencies for marine mammals that utilize sound for vital biological functions. Masking can interfere with detection of acoustic signals such as communication calls, echolocation sounds, and environmental sounds important to marine mammals. Therefore, like TS, marine mammals whose acoustical sensors or environment are being masked are also impaired from maximizing their performance fitness in survival and reproduction.

Masking occurs at the frequency band which the animals utilize. Therefore, since noise generated from the proposed underwater detonation and pile driving and removal is mostly concentrated at low frequency ranges, it may have less effect on high frequency echolocation sounds by killer whales. However, lower frequency man-made noises are more likely to affect detection of communication calls and other potentially important natural sounds such as surf and prey noise. It may also affect communication signals when they occur near the noise band used by the animals and thus reduce the communication space of animals (*e.g.,* Clark *et al.* 2009) and cause increased stress levels (*e.g.,* Foote *et al.* 2004; Holt *et al.* 2009).

Masking can potentially impact marine mammals at the individual, population, community, or even ecosystem levels (instead of individual levels caused by TS). Masking affects both senders and receivers of the signals and can potentially have long-term chronic effects on marine mammal species and populations in certain situations. Recent science suggests that low frequency ambient sound levels have increased by as much as 20 dB (more than 3 times in terms of SPL) in the world's ocean from pre-industrial periods, and most of these increases are from distant shipping (Hildebrand 2009). All anthropogenic noise sources, such as those from underwater explosions and pile driving, contribute to the elevated ambient noise levels and, thus intensify masking. However, single detonations are unlikely to contribute much to masking.

Since all of the underwater detonation events and ELCAS events are planned in a very shallow water situation (wave length >> water depth), where low frequency propagation is not efficient, the noise generated from these activities is predominantly in the low frequency range and is not expected to contribute significantly to increased ocean ambient noise.

Finally, exposure of marine mammals to certain sounds could lead to behavioral disturbance (Richardson *et al.* 1995). Behavioral responses to exposure to sound and explosions can range from no observable response to panic, flight and possibly more significant responses as discussed previously (Richardson *et al.* 1995; Southall *et al.* 2007). These responses include: changing durations of surfacing and dives, number of blows per surfacing, or moving direction and/or speed; reduced/increased vocal activities, changing/cessation of certain behavioral activities (such as socializing or feeding); visible startle response or aggressive behavior (such as tail/fluke slapping or jaw clapping), avoidance of areas where noise sources are located, and/or flight responses (*e.g.,* pinnipeds flushing into water from haulouts or rookeries) (Reviews by Richardson *et al.* 1995; Wartzok *et al.* 2003; Cox *et al.* 2006; Nowacek *et al.* 2007; Southall *et al.* 2007).

The biological significance of many of these behavioral disturbances is difficult to predict, especially if the detected disturbances appear minor. However, the consequences of behavioral modification could be expected to be biologically significant if the change affects growth, survival, and reproduction. Some of these significant behavioral modifications include:

- Drastic change in diving/surfacing patterns (such as those thought to be causing beaked whale stranding due to exposure to military mid-frequency tactical sonar);
- Habitat abandonment due to loss of desirable acoustic environment; and
- Cease feeding or social interaction.

For example, at the Guerreo Negro Lagoon in Baja California, Mexico, which is one of the important breeding grounds for Pacific gray whales, shipping and dredging associated with a salt works may have induced gray whales to abandon the area through most of the 1960s (Bryant *et al.* 1984). After these activities stopped, the lagoon was reoccupied, first by single whales and later by cow-calf pairs.

The onset of behavioral disturbance from anthropogenic noise depends on both external factors (characteristics of noise sources and their paths) and the receiving animals (hearing, motivation, experience, demography) and is also difficult to predict (Southall *et al.* 2007).

However, the proposed action area is not believed to be a prime habitat for marine mammals, nor is it considered an area frequented by marine mammals. Therefore, behavioral disturbances that could result from anthropogenic construction noise associated with the Navy's proposed training activities are expected to affect only a small number of marine mammals on an infrequent basis.

Impacts From Underwater Detonations at Close Range

In addition to noise induced disturbances and harassment, marine mammals could be killed or injured by underwater explosions due to the impacts to air cavities, such as the lungs and bubbles in the intestines, to the shock wave (Elsayed 1997; Elsayed and Gorbunov 2007). The criterion for mortality and non-auditory injury used in MMPA take authorization is the onset of extensive lung hemorrhage and slight lung injury or ear drum rupture, respectively (*see* Table 3). Extensive lung hemorrhage is considered debilitating and potentially fatal as a result of air embolism or suffocation. In this Incidental Harassment Authorization application, all marine mammals within the calculated radius for 1% probability of onset of extensive lung injury (*i.e.,* onset of mortality) are counted as lethal exposures. The range at which 1% probability of onset of extensive lung hemorrhage is expected to occur is greater than the ranges at which 50% to 100% lethality would occur from closest proximity to the charge or from presence within the bulk cavitation region. (The region of bulk cavitation is an area near the surface above the detonation point in which the reflected shock wave creates a region of cavitation within which smaller animals would not be expected to survive). Because the range for onset of extensive lung hemorrhage for smaller animals exceeds the range for bulk cavitation and all more serious injuries, all smaller animals within the region of cavitation and all animals (regardless of body mass) with more serious injuries than onset of extensive lung hemorrhage are accounted for in the lethal exposures estimate. The calculated maximum ranges for onset of extensive lung hemorrhage depend upon animal body mass, with smaller animals having the greatest potential for impact, as well as water column temperature and density.

However, due to the small detonation that would be used in the proposed SSTC training activities and the resulting small safety zones to be monitored and mitigated for marine mammals in the vicinity of the proposed action area, it is unlikely that marine mammals would be killed or injured by underwater detonations.

Impact Criteria and Thresholds

The effects of an at-sea explosion or pile driving on a marine mammal depends on many factors, including the size, type, and depth of both the animal and the explosive charge/pile being driven; the depth of the water column; the standoff distance between the charge/pile and the animal; and the sound propagation properties of the environment. Potential impacts can range from brief acoustic effects (such as behavioral disturbance), tactile perception, physical discomfort, slight injury of the internal organs and the auditory system, to death of the animal (Yelverton *et al.* 1973; O'Keeffe and Young 1984; DoN 2001). Non-lethal injury includes slight injury to internal organs and the auditory system; however, delayed lethality can be a result of individual or cumulative sub-lethal injuries (DoN 2001). Short-term or immediate lethal injury would result from massive combined trauma to internal organs as a direct result of proximity to the point of detonation or pile driving (DoN 2001).

This section summarizes the marine mammal impact criteria used for the subsequent modeled calculations. Several standard acoustic metrics (Urick 1983) are used to describe the thresholds for predicting potential physical impacts from underwater pressure waves:

• Total energy flux density or Sound Exposure Level (SEL). For plane waves (as assumed here), SEL is the time integral of the instantaneous intensity, where the instantaneous intensity is defined as the squared acoustic pressure divided by the characteristic impedance of sea water. Thus, SEL is the instantaneous pressure amplitude squared, summed over the duration of the signal and has dB units referenced to 1 re μPa²-s.

• ⅓-octave SEL. This is the SEL in a ⅓-octave frequency band. A ⅓-octave band has upper and lower frequency limits with a ratio of 21:3, creating bandwidth limits of about 23 percent of center frequency.

• Positive impulse. This is the time integral of the initial positive pressure pulse of an explosion or explosive-like wave form. Standard units are Pa-s, but psi-ms also are used.

• Peak pressure. This is the maximum positive amplitude of a pressure wave, dependent on charge mass and range. Units used here are psi, but other units of pressure, such as μPa and Bar, also are used.

1. Harassment Threshold for Sequential Underwater Detonations

There may be rare occasions when sequential underwater detonations are part of a static location event. Sequential detonations are more than one detonation within a 24-hour period in a geographic location where harassment zones overlap. For sequential underwater detonations, accumulated energy over the entire training time is the natural extension for energy thresholds since energy accumulates with each subsequent shot.

For sequential underwater detonations, the acoustic criterion for behavioral harassment is used to account for behavioral effects significant enough to be judged as harassment, but occurring at lower sound energy levels than those that may cause TTS. The behavioral harassment threshold is based on recent guidance from NMFS (NMFS 2009a; 2009b) for the energy-based TTS threshold. The research on pure tone exposures reported in Schlundt *et al.* (2000) and Finneran and Schlundt (2004) provided the pure-tone threshold of 192 dB as the lowest TTS value. The resulting TTS threshold for explosives is 182 dB re 1 μPa²-s in any ⅓ octave band. As reported by Schlundt *et al.* (2000) and Finneran and Schlundt (2004), instances of altered behavior in the pure tone research generally began 5 dB lower than those causing TTS. The behavioral harassment threshold is therefore derived by subtracting 5 dB from the 182 dB re 1 μPa²-s in any ⅓ octave band threshold, resulting in a 177 dB re 1 μPa²-s behavioral disturbance harassment threshold for multiple successive explosives (Table 3).

2. Criteria for ELCAS Pile Driving and Removal

Since 1997, NMFS has been using generic sound exposure thresholds to determine when an activity in the ocean that produces impact sound (*i.e.,* pile driving) results in potential take of marine mammals by harassment (70 FR 1871). Current NMFS criteria (70 FR 1871) regarding exposure of marine mammals to underwater sounds is that cetaceans exposed to sound pressure levels (SPLs) of 180 dB root mean squared (dB_{rms} in units of dB re 1 μPa) or higher and pinnipeds exposed to 190 dB_{rms} or higher are considered to have been taken by Level A (*i.e.,* injurious) harassment. Marine mammals (cetaceans and pinnipeds) exposed to impulse sounds (*e.g.,* impact pile driving) of 160 dB_{rms} but below Level A thresholds (*i.e.,* 180 or 190 dB) are considered to have been taken by Level B behavioral harassment. Marine mammals (cetaceans and pinnipeds) exposed to non-impulse noise (*e.g.,* vibratory pile driving) at received levels of 120 dB RMS or above are considered to have been taken by Level B behavioral harassment (Table 3).

TABLE 3—EFFECTS CRITERIA FOR UNDERWATER DETONATIONS AND ELCAS PILE DRIVING/REMOVAL

Criterion	Criterion definition	Threshold
Underwater Explosive Criteria		
Mortality	Onset of severe lung injury (1% probability of mortality)	30.5 psi-ms (positive impulse).
Level A Harassment (Injury)	Slight lung injury; or	13.0 psi-ms (positive impulse).
	50% of marine mammals would experience ear drum rupture; and 30% exposed sustain PTS.	205 dB re 1 μPa²-s (full spectrum energy).
Level B Harassment	TTS (dual criteria)	23 psi (peak pressure; explosives <2,000 lbs), or 182 dB re 1 μPa²-s (peak ⅓ octave band).
	(sequential detonations only)	177 dB re 1 μPa²-s.
Pile Driving/Removal Criteria		
Level A Harassment	Pinniped only: PTS caused by repeated exposure to received levels that cause TTS.	190 dB_{rms} re 1 μPa.
	Cetacean only: PTS caused by repeated exposure to received levels that cause TTS.	180 dB_{rms} re 1 μPa.
Level B Behavioral Harassment.	Impulse noise: Behavioral modification of animals	160 dB_{rms} re 1 μPa.
	Non-impulse noise: Behavioral modification of animals	190 dB_{rms} re 1 μPa.

Assessing Harassment From Underwater Detonations

Underwater detonations produced during SSTC training events represent a single, known source. Chemical explosives create a bubble of expanding gases as the material burns. The bubble can oscillate underwater or, depending on charge-size and depth, be vented to the surface in which case there is no bubble-oscillation with its associated low-frequency energy. Explosions produce very brief, broadband pulses characterized by rapid rise-time, great zero-to-peak pressures, and intense sound, sometimes described as impulse. Close to the explosion, there is a very brief, great-pressure acoustic wave-front. The impulse's rapid onset time, in addition to great peak pressure, can cause auditory impacts, although the brevity of the impulse can include less SEL than expected to cause impacts. The transient impulse gradually decays in magnitude as it broadens in duration with range from the source. The waveform transforms to approximate a low-frequency, broadband signal with a continuous sound energy distribution across the spectrum. In addition, underwater explosions are relatively brief, transitory events when compared to the existing ambient noise within the San Diego Bay and at the SSTC.

The impacts of an underwater explosion to a marine mammal are dependent upon multiple factors including the size, type, and depth of both the animal and the explosive. Depth of the water column and the distance from the charge to the animal also are determining factors as are boundary conditions that influence reflections and refraction of energy radiated from the source. The severity of physiological effects generally decreases with decreasing exposure (impulse, sound exposure level, or peak pressure) and/or increasing distance from the sound source. The same generalization is not applicable for behavioral effects, because they do not depend solely on sound exposure level. Potential impacts can range from brief acoustic effects, tactile perception, and physical discomfort to both lethal and non-lethal injuries. Disturbance of ongoing behaviors could occur as a result of non-injurious physiological responses to both the acoustic signature and shock wave from the underwater explosion. Non-lethal injury includes slight injury to internal organs and auditory system. The severity of physiological effects generally decreases with decreasing sound exposure and/or increasing distance from the sound source. Injuries to internal organs and the auditory system from shock waves and intense impulsive noise associated with explosions can be exacerbated by strong bottom-reflected pressure pulses in reverberant environments (Gaspin 1983; Ahroon *et al.* 1996). Nevertheless, the overall size of the explosives used at the SSTC is much smaller than those used during larger Fleet ship and aircraft training events.

All underwater detonations proposed for SSTC were modeled as if they will be conducted in shallow water of 24 to 72 feet, including those that would normally be conducted in very shallow water (VSW) depths of zero to 24 feet. Modeling in deeper than actual water depths causes the modeled results to be more conservative (*i.e.,* it overestimates propagation and potential exposures) than if the underwater detonations were modeled at their actual, representative depths when water depth is less than 24 feet.

The Navy's underwater explosive effects simulation requires six major process components:

- A training event description including explosive type;
- Physical oceanographic and geoacoustic data for input into the acoustic propagation model representing seasonality of the planned operation;
- Biological data for the area including density (and multidimensional animal movement for those training events with multiple detonations);
- An acoustic propagation model suitable for the source type to predict impulse, energy, and peak pressure at ranges and depths from the source;
- The ability to collect acoustic and animal movement information to predict exposures for all animals during a training event (dosimeter record); and
- The ability for post-operation processing to evaluate the dosimeter exposure record and calculate exposure

statistics for each species based on applicable thresholds.

An impact model, such as the one used for the SSTC analysis, simulates the conditions present based on location(s), source(s), and species parameters by using combinations of embedded models (Mitchell *et al.* 2008). The software package used for SSTC consists of two main parts: An underwater noise model and bioacoustic impact model (Lazauski *et al.* 1999; Lazauski and Mitchell 2006; Lazauski and Mitchell 2008).

Location-specific data characterize the physical and biological environments while exercise-specific data construct the training operations. The quantification process involves employment of modeling tools that yield numbers of exposures for each training operation.

During modeling, the exposures are logged in a time-step manner by virtual dosimeters linked to each simulated animal. After the operation simulation, the logs are compared to exposure thresholds to produce raw exposure statistics. It is important to note that dosimeters only were used to determine exposures based on energy thresholds, not impulse or peak pressure thresholds. The analysis process uses quantitative methods and identifies immediate short-term impacts of the explosions based on assumptions inherent in modeling processes, criteria and thresholds used, and input data. The estimations should be viewed with caution, keeping in mind that they do not reflect measures taken to avoid these impacts (*i.e.,* mitigations). Ultimately, the goals of this acoustic impact model were to predict acoustic propagation, estimate exposure levels, and reliably predict impacts.

Predictive sound analysis software incorporates specific bathymetric and oceanographic data to create accurate sound field models for each source type. Oceanographic data such as the sound speed profiles, bathymetry, and seafloor properties directly affect the acoustic propagation model. Depending on location, seasonal variations, and the oceanic current flow, dynamic oceanographic attributes (*e.g.,* sound speed profile) can change dramatically with time. The sound field model is embedded in the impact model as a core feature used to analyze sound and pressure fields associated with SSTC underwater detonations.

The sound field model for SSTC detonations was the Reflection and Refraction in Multilayered Ocean/Ocean Bottoms with Shear Wave Effects (REFMS) model (version 6.03). The REFMS model calculates the combined reflected and refracted shock wave environment for underwater detonations using a single, generalized model based on linear wave propagation theory (Cagniard 1962; Britt 1986; Britt *et al.* 1991).

The model outputs include positive impulse, sound exposure level (total and in 1/3-octave bands) at specific ranges and depths of receivers (*i.e.,* marine mammals), and peak pressure. The shock wave consists of two parts, a very rapid onset "impulsive" rise to positive peak over-pressure followed by a reflected negative under-pressure rarefaction wave. Propagation of shock waves and sound energy in the shallow-water environment is constrained by boundary conditions at the surface and seafloor.

Multiple locations (in Boat Lanes and Echo area) and charge depths were used to determine the most realistic spatial and temporal distribution of detonation types associated with each training operation for a representative year. Additionally, the effect of sound on an animal depends on many factors including:

• Properties of the acoustic source(s): Source level (SL), spectrum, duration, and duty cycle;
• Sound propagation loss from source to animal, as well as, reflection and refraction;
• Received sound exposure measured using well-defined metrics;
• Specific hearing;
• Exposure duration; and
• Masking effects of background and ambient noise.

To estimate exposures sufficient to be considered injury or significantly disrupt behavior by affecting the ability of an individual animal to grow (*e.g.,* feeding and energetics), survive (*e.g.,* behavioral reactions leading to injury or death, such as stranding), reproduce (*e.g.,* mating behaviors), and/or degrade habitat quality resulting in abandonment or avoidance of those areas, dosimeters were attached to the virtual animals during the simulation process. Propagation and received impulse, SEL, and peak pressure are a function of depth, as well as range, depending on the location of an animal in the simulation space.

A detailed discussion of the computational process for the modeling, which ultimately generates two outcomes—the zones of influence (ZOIs) and marine mammal exposures, is presented in the Navy's IHA application.

Severity of an effect often is related to the distance between the sound source and a marine mammal and is influenced by source characteristics (Richardson and Malme 1995). For SSTC, ZOIs were estimated for the different charge weights, charge depths, water depths, and seasons using the REFMS model as described previously. These ZOIs for SSTC underwater detonations by training event are shown in Table 4 and conceptually illustrated in Figure 6–5 in the Navy's IHA application.

For single detonations, the ZOIs were calculated using the range associated with the onset of TTS based on the Navy REFMS model predictions.

For Multiple Successive Explosive events (*i.e.,* sequential detonations) ZOI calculation was based on the range to non-TTS behavior disruption. Calculating the zones of influence in terms of total SEL, 1/3-octave bands SEL, impulse, and peak pressure for sequential (10 sec timed) and multiple controlled detonations (>30 minutes) were slightly different than the single detonations. For the sequential detonations, ZOI calculations considered spatial and temporal distribution of the detonations, as well as the effective accumulation of the resultant acoustic energy. To calculate the ZOI, sequential detonations were modeled such that explosion SEL were summed incoherently to predict zones while peak pressure was not.

TABLE 4—MAXIMUM ZOIS FOR UNDERWATER DETONATION EVENTS AT SSTC

Underwater detonation training event	Season*	Maximum ZOI (yards)				
		TTS		Injury		Mortality
		23 psi	182 dB re 1 μPa²-s	13.0 psi-ms	205 dB re 1 μPa²-s	30.5 psi-ms
Shock wave action generator (SWAG)	Warm	60	20	0	0	0
	Cold	40	20	0	0	0

TABLE 4—MAXIMUM ZOIS FOR UNDERWATER DETONATION EVENTS AT SSTC—Continued

Underwater detonation training event	Season *	Maximum ZOI (yards)				
		TTS		Injury		Mortality
		23 psi	182 dB re 1 μPa²-s	13.0 psi-ms	205 dB re 1 μPa²-s	30.5 psi-ms
Shock wave action generator (SWAG)	Warm	60	20	0	0	0
	Cold	40	20	0	0	0
Mine Counter Measure	Warm	** 470	300	360	80	80
	Cold	430	340	160	80	80
Floating Mine	Warm	240	160	80	40	20
	Cold	260	180	80	40	20
Dive Platoon	Warm	210	330	80	90	50
	Cold	220	370	90	90	50
Unmanned Underwater Vehicle	Warm	440	280	360	80	80
	Cold	400	320	150	80	80
Marine Mammal Systems	Warm	380	420	360	140	90
	Cold	450	** 470	170	140	90
Marine Mammal Systems	Warm	400	330	360	100	90
	Cold	400	370	170	100	90
Mine Neutralization	Warm	330	330	80	90	50
	Cold	360	370	90	90	50
Surf Zone Training and Evaluation	Warm	** 470	300	160	80	80
	Cold	450	340	160	80	80
Unmanned Underwater Vehicle Neutralization	Warm	400	280	80	60	50
	Cold	400	320	90	60	50
Airborne Mine Neutralization System	Warm	220	170	80	40	40
	Cold	230	180	80	40	40
Qualification/Certification	Warm	** 470	330	140	100	80
	Cold	330	370	140	100	80
Qualification/Certification	Warm	430	330	300	90	90
	Cold	** 470	360	170	90	90
Naval Special Warfare Demolition Training	Warm	360	240	160	80	40
	Cold	360	250	160	80	40
Naval Special Warfare Demolition Training	Warm	400	280	80	60	50
	Cold	400	320	90	60	50
Navy Special Warfare SEAL Delivery Vehicle	Warm	360	240	160	80	40
	Cold	360	250	160	80	40

* Warm: November–April; cold: May–October.
** Indicates event types with maximum ZOI as compared to all underwater detonation events.

In summary, all ZOI radii were strongly influenced by charge size and placement in the water column, and only slightly by the environment variables.

Very Shallow Water (VSW) Underwater Detonations Live-Fire Tests ZOI Determination

Measurements of the propagated pressures during single-charge underwater detonation exercises in VSW at SSTC (and San Clemente Island) were conducted in 2002 as part of a study to evaluate existing underwater explosive propagation models for application to VSW conditions (unpublished, Naval Special Warfare Center/Anteon Corporation 2005, cited in the Navy's SSTC IHA Application 2010). The direct measurements made in those tests provided an in-place characterization of pressure propagation for the training exercises as they are actually conducted at the SSTC. During the tests, 2 and 15 lbs charges of NEW explosives were detonated in 6 and 15 feet of water with charges laying on the bottom or two feet off the bottom at SSTC and San Clemente Island. At SSTC, swell conditions precluded detonations at the 6-foot depth. Peak-pressures (unfiltered) and energies—between 100 Hz and 41 kHz—in 1/3-octave bands of highest energies from each detonation were measured in three locations relative to the charges: (1) 5–10 feet seaward of the charge, (2) 280–540 feet seaward, and (3) at about 1,000 feet seaward. Underwater detonations of small 2 lb charges at SSTC were measured at a "near range" location within feet of the charge and at a "single far range" of 525 feet from the charge (unpublished, Naval Special Warfare Center/Anteon Corporation 2005, cited in the Navy's SSTC IHA Application 2010). In the tests, the position of single charges—on and 2 feet off the bottom—affected the propagated peak-pressures. Off-bottom charges produced consistently greater peak-pressures than on-bottom charges as measured at about 200, 500, and 1,000 feet distances. Off-bottom 15 lb charges in 15 feet of water produced between 43–67% greater peak-pressures than on-bottom charges. Greater differences were found when detonations occurred in extremely shallow depths of 6 feet at San Clemente Island (unpublished, Naval Special Warfare Center/Anteon Corporation 2005, cited in the Navy's SSTC IHA Application 2010). Generally, measurements during single-charge exercises produced empirical data that were predicted by the propagation models. At about 1,000 feet seaward, peak-pressure varied from 11–17 pounds psi at different depths, and energies between 100 Hz and 41 kHz in the 1/3-octave bands of highest energies varied from about 175–186 dB re 1 μPa²-s at different depths. From the measurements, it was determined that the range at which the criterion for onset-TTS would be expected to occur in small odontocetes matched the range predicted by a conservative model of propagation that assumed a boundary-less medium and equal sound velocity at all depths in the range—*i.e.,* an "iso-velocity" model. Bottom and water-column conditions also influence pressure-wave propagation and dissipation of blast residues. In comparison, predictions made by the Navy's REFMS model (*see* above) were found to be unstable across the distances considered under the conditions of VSW with bottom or near bottom charge placement, reflective bottom, and a non-refractive water column (*i.e.,* equal sound velocity at all depths). The source of instability in the REFMS predictions is most likely due to the nature of the VSW zone wherein the ratio of depth to range is very small—a known problem for the REFMS' predictive ray-tracing. Therefore, the determination of ZOIs within the VSW zones was based on the empirical propagation data and iso-velocity model predictions discussed above for charge-weights of 20 lbs or less of NEW explosive on the bottom and for charge-weights of 3.6 lbs or less off the bottom. For SSTC this range was determined to be a 1,200-foot (400-yard) radius out from the site of the detonation with the shoreward half of the implied circle being truncated by the shoreline and extremely shallow water immediately off shore.

Assessing ELCAS Pile Driving and Removal Impacts

Noise associated with ELCAS training includes loud impulsive sounds derived from driving piles into the soft sandy substrate of the SSTC waters to temporarily support a causeway of linked pontoons. Two hammer-based methods will be used to install/remove ELCAS piles: Impact pile driving for installation and vibratory driving for removal. The impact hammer is a large metal ram attached to a crane. A vertical support holds the pile in place and the ram is dropped or forced downward. The energy is then transferred to the pile which is driven into the seabed. The ram is typically lifted by a diesel power source.

The methodology for analyzing potential impacts from ELCAS events is similar to that of analyzing explosives. The ELCAS analysis includes two steps used to calculate potential exposures:

• Estimate the zone of influence for Level A injurious and Level B behavioral exposures for both impact pile driving and vibratory pile removal using the practical spreading loss equation (CALTRANS 2009).

• Estimate the number of species exposed using species density estimates and estimated zones of influence.

The practical spreading loss equation is typically used to estimate the attenuation of underwater sound over distance. The formula for this propagation loss can be expressed as:

$$TL = F * \log (D1/D2)$$

Where:

TL = transmission loss (the sound pressure level at distance D1 minus the sound pressure level at distance D2 from the source, in dB_{rms} re 1μPa)
F = attenuation constant
D1 = distance at which the targeted transmission loss occurs
D2 = distance from which the transmission loss is calculated

The attenuation constant (F) is a site-specific factor based on several conditions, including water depth, pile type, pile length, substrate type, and other factors. Measurements conducted by the California Department of Transportation (CADOT) and other consultants (Greeneridge Science) indicate that the attenuation constant (F) can vary from 5 to 30. Small-diameter steel H-type piles have been found to have high F values in the range of 20 to 30 near the pile (*i.e.,* between 30–60 feet) (CALTRANS 2009). In the absence of empirically measured values at SSTC, NMFS and the Navy worked to set the F value for SSTC to be on the low (conservative, and more predictive) end of the small-diameter steel piles at F = 15, to indicate that the spreading loss is between the spherical (F = 20) and cylindrical (F = 10).

Actual noise source levels of ELCAS pile driving at SSTC depend on the type of hammer used, the size and material of the pile, and the substrate the piles are being driven into. Using known equipment, installation procedures, and applying certain constants derived from other west coast measured pile driving, predicted underwater sound levels from ELCAS pile driving can be calculated. The ELCAS uses 24-inch diameter hollow steel piles, installed using a diesel impact hammer to drive the piles into the sandy on-shore and near-shore substrate at SSTC. For a dock repair project in Rodeo, California in San Francisco Bay, underwater sound pressure level (SPL) for a 24-inch steel pipe pile driven with a diesel impact hammer in less than 15 ft of water depth was measured at 189 dB_{rms} re 1μPa from approximately 33 ft (11 yards) away. SPL for the same type and size pile also driven with a diesel impact hammer, but in greater than 36 ft of water depth, was measured to be 190 to 194 dB_{rms} during the Amoco Wharf repair project in Carquinez Straits, Martinez, California (CADOT 2009). The areas where these projects were conducted have a silty sand bottom with an underlying hard clay layer, which because of the extra effort required to drive into clay, would make these measured pile driving sound levels louder (more conservative) than they would if driving into SSTC's sandy substrate. Given the local bathymetry and smooth sloping sandy bottom at SSTC, ELCAS piles will generally be driven in water depths of 36 ft or less.

Therefore, for the purposes of the Navy's SSTC ELCAS analysis, both the Rodeo repair project (189 dB_{rms}) and the low end of the measured values of the Amoco Wharf repair projects (190 dB_{rms}) are considered to be reasonably representative of sound levels that would be expected during ELCAS pile driving at SSTC. For hollow steel piles of similar size as those proposed for the ELCAS (<24-in diameter) used in Washington State and California pile driving projects, the broadband frequency range of underwater sound was measured between 50 Hz to 10.5 kHz with highest energy at frequencies <1 to 3 kHz (CALTRANS 2009). Although frequencies over 10.5 kHz are likely present during these pile driving projects, they are generally not typically measured since field data has shown a decrease in SPL to less than 120 dB at frequencies greater than 10.5 kHz (Laughlin 2005; 2007). It is anticipated that ELCAS pile driving would generate a similar sound spectra.

For ELCAS training events, using an estimated SPL measurement of 190 dB_{rms} re 1 μPa at 11 yards as described above, the circular ZOIs surrounding a 24-inch steel diesel-driven ELCAS pile can be estimated via the practical spreading loss equation to have radii of:

• 11 yards for Level A injurious harassment for pinnipeds (190 dB_{rms});

• 46 yards for Level A injurious harassment for cetaceans (180 dB_{rms}), and

• 1,094 yards for the Level B behavioral harassment (160 dB_{rms}).

It should be noted that ELCAS pier construction starts with piles being driven near the shore and extends offshore. Near the shore, the area of influence would be a semi-circle and towards the end of the ELCAS (approximately 1,200 feet or 400 yards from the shore) would be a full circle. The above calculated area of influence conservatively assumes that all ELCAS piles are driven offshore at SSTC, producing a circular zone of influence, and discounts the limited propagation from piles driven closer to shore.

Noise levels derived from piles removed via vibratory extractor are different than those driven with an impact hammer. Steel pilings and a vibratory driver were used for pile driving at the Port of Oakland (CALTRANS 2009). Underwater SPLs during this project for a 24-inch steel pile in 36 ft of water depth at a distance of 11 yards (33 feet) from the source was field measured to be 160 dB_{rms}. The area where this project was conducted (Oakland) has a harder substrate, which because of the extra effort required to drive and remove the pile, would make these measured pile driving sound levels louder (more conservative) than they would if driving and removing into and from SSTC's sandy substrate. Conservatively using this SPL measurement for SSTC and F = 15, the ZOIs for a 24-inch steel pile removed via a vibratory extractor out to different received SPLs can be estimated via the practical spreading loss equation to be:

- < 1 yard for Level A injurious harassment for pinnipeds (190 dB_{rms});
- One (1) yard for Level A injurious harassment for cetaceans (180 dB_{rms}), and
- 5,076 yards for the Level B behavioral harassment (120 dB_{rms}).

As discussed above, the above calculated area of influence conservatively assumes that all ELCAS piles are driven and subsequently removed offshore at SSTC, producing a circular zone of influence.

Proposed Mitigation Measures

In order to issue an incidental take authorization under Section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable adverse impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses.

For the Navy's proposed SSTC training activities, the Navy worked with NMFS and proposed the following mitigation measures to minimize the potential impacts to marine mammals in the project vicinity as a result of the underwater detonation and ELCAS pile driving/removal events.

Mitigation for Underwater Detonations in Very Shallow Water (0–24 Feet)

The following mitigation procedures formalize practices that are currently in effect at SSTC for detonations conducted in the VSW zone.

1. Easily visible anchored floats would be positioned on a 1,200-foot (400-yard) radius of a roughly semi-circular zone (the shoreward half being bounded by shoreline and immediate off-shore water) around the detonation location for small explosive exercises at the SSTC. These mark the outer limits of the safety zone. The 1,200 foot or 400 yard radius is the safety zone for VSW as determined from empirical measurements as discussed earlier.

2. For each VSW underwater detonation event, a safety-boat with a minimum of one observer would be launched at least 30 minutes prior to detonation and moves through the area around the detonation site. The task of the safety observer is to exclude humans from coming into the area and to augment a shore observer's visual search of the mitigation zone for marine mammals. The safety-boat observer is in constant radio communication with the exercise coordinator and shore observer discussed below.

3. A shore-based observer will also be deployed for VSW detonations in addition to boat based observers. The shore observer will indicate that the area is clear of marine mammals after 10 or more minutes of continuous observation with no marine mammals having been seen in the mitigation zone (1,200 feet or 400 yards) or moving toward it.

4. At least 10 minutes prior to the planned initiation of the detonation event-sequence, the shore observer, on an elevated on-shore position, begins a continuous visual search with binoculars of the mitigation zone. At this time, the safety-boat observer informs the shore observer if any marine mammal has been seen in the safety zone and, together, both search the surface within and beyond the safety zone for marine mammals.

5. The observers (boat and shore based) will indicate that the area is not clear any time a marine mammal is sited in the safety zone or moving toward it and, subsequently, indicate that the area is clear of marine mammals when the animal is out and moving away and no other marine mammals have been sited.

6. Initiation of the detonation sequence would only begin on final receipt of an indication from the shore observer that the area is clear of marine mammals and will be postponed on receipt of an indication from that or any observer that the area is not clear of marine mammals.

7. Following the detonation, visual monitoring of the safety zone continues for 30 minutes for the appearance of any marine mammal in the zone. Any marine mammal appearing in the area would be observed for signs of possible injury.

8. Any marine mammal observed after an VSW underwater detonation either injured or exhibiting signs of distress would be reported to Navy environmental representatives from the regional Navy shore commander (Commander, Navy Region Southwest) and U.S. Pacific Fleet, Environmental Office, San Diego Detachment. Using Marine Mammal Stranding communication trees and contact procedures established for the Southern California Range Complex, the Navy will report these events to the Stranding Coordinator of NMFS' Southwest Regional Office. These voice or e-mail reports will contain the date and time of the sighting, location (or if precise latitude and longitude is not currently available, then the approximate location in reference to an established SSTC beach feature), species description (if known), and indication of the animals status.

Mitigation for Underwater Detonations in Shallow Water

Modeling results for ZOIs discussed previously were used to develop mitigation zones applicable to the mitigation measures for underwater detonations in water between 24–72 feet at the SSTC. The ZOIs effectively represent the mitigation zone that would be established around each detonation point to prevent Level B harassment to marine mammals. While the ZOIs vary between the different types of underwater detonation training, the Navy is proposing to establish a 470-yard mitigation zone for the maximum zone of influence from all underwater detonations except Shock Wave Generator (SWAG) detonations conducted on the oceanside of SSTC (*see* Table 4). This large a mitigation zone is not necessary for any underwater detonations other than the Marine Mammal System operations (*see* Table 4), but it is proposed as a conservative (*i.e.,* over protective) measure. SWAGs have smaller, more directional charges and therefore a small ZOI, so a smaller mitigation zone of 60 yards is proposed.

The mitigation measures for underwater detonation events on the oceanside of SSTC (except for SWAG events) are listed as follows:

I. Underwater Detonation Mitigation (24–72 Feet) (All Except SWAG)

1. A mitigation zone of 1,410 feet (470 yards) will be established around each underwater detonation point. This mitigation zone is based on the maximum range to onset-TTS (either 23 psi or 182 dB re 1 μPa^2-s).

2. A minimum of two boats, including but not limited to small zodiacs and 11-meter Rigid Hulled Inflatable Boats (RHIB) will be deployed. One boat will act as an observer platform, while the other boat is typically the diver support boat.

3. Two observers with binoculars on one small craft/boat will survey the

detonation area and the mitigation zone for marine mammals from at least 30 minutes prior to commencement of the scheduled explosive event and until at least 30 minutes after detonation.

4. In addition to the dedicated observers, all divers and boat operators engaged in detonation events can potentially monitor the area immediately surrounding the point of detonation for marine mammals (and other protected species such as sea turtles).

5. If a marine mammal is sighted within the 1,410-foot (470-yard) mitigation zone or moving towards it, underwater detonation events will be suspended until the marine mammal has voluntarily left the area and the area is clear of marine mammals for at least 30 minutes.

6. Immediately following the detonation, visual monitoring for marine mammals within the mitigation zone will continue for 30 minutes. Any marine mammal observed after an underwater detonation either injured or exhibiting signs of distress will be reported to Navy environmental representatives from the regional Navy shore commander (Commander, Navy Region Southwest) and U.S. Pacific Fleet, Environmental Office, San Diego Detachment. Using Marine Mammal Stranding communication trees and contact procedures established for the Southern California Range Complex, the Navy will report these events to the Stranding Coordinator of NMFS' Southwest Regional Office. These voice or e-mail reports will contain the date and time of the sighting, location (or if precise latitude and longitude is not currently available, then the approximate location in reference to an established SSTC beach feature), species description (if known), and indication of the animal's status.

II. Underwater Detonation Mitigation (SWAG Events Only)

A modified set of mitigation measures would be implemented for SWAG detonations, which involve much smaller charges of 0.03 lbs NEW.

1. A mitigation zone of 180 feet or 60 yards will be established around each SWAG detonation site.

2. A minimum of two boats, including but not limited to small zodiacs and 11-meter Rigid Hulled Inflatable Boats (RHIB) will be deployed. One boat will act as an observer platform, while the other boat is typically the diver support boat.

3. Two observers with binoculars on one small craft/boat will survey the detonation area and the mitigation zone for marine mammals (and other protected species such as sea turtles) from at least 10 minutes prior to commencement of the scheduled explosive event and until at least 10 minutes after detonation.

4. In addition to the dedicated observers, all divers and boat operators engaged in detonation events can potentially monitor the area immediately surrounding the point of detonation for marine mammals.

5. Divers and personnel in support boats would monitor for marine mammals out to the 180 feet (60 yards) mitigation zone for 10 minutes prior to any detonation.

6. After the detonation, visual monitoring for marine mammals would continue for 10 minutes. Any marine mammal observed after an underwater SWAG detonation either injured or exhibiting signs of distress will be reported to Navy environmental representatives from the regional Navy shore commander (Commander, Navy Region Southwest) and U.S. Pacific Fleet, Environmental Office, San Diego Detachment. Using Marine Mammal Stranding communication trees and contact procedures established for the Southern California Range Complex, the Navy will report these events to the Stranding Coordinator of NMFS' Southwest Regional Office. These voice or e-mail reports will contain the date and time of the sighting, location (or if precise latitude and longitude is not currently available, then the approximate location in reference to an established SSTC beach feature), species description (if known), and indication of the animal's status.

Mitigation for ELCAS Training at SSTC

NMFS worked with the Navy and proposes the below mitigation procedures for ELCAS pile driving and removal events along the oceanside Boat Lanes at the SSTC for marine mammal species.

1. *Mitigation Zone:* A mitigation zone will be established at 150 feet (50 yards) from ELCAS pile driving and pile removal events. This mitigation zone is based on the predicted range to Level A harassment (180 dB_{rms}) for cetaceans, and is being applied conservatively to both cetaceans and pinnipeds.

2. Monitoring will be conducted within the 150 foot or 50 yard mitigation zone surrounding ELCAS pile driving and removal events for the presence of marine mammals before, during, and after pile driving and removal events.

3. If marine mammals are found within the 150-foot (50-yard) mitigation zone, pile removal events will be halted until the marine mammals have voluntarily left the mitigation zone.

4. Monitoring for marine mammals will take place concurrent with pile removal events and 30 minutes prior to pile driving and removal commencement. A minimum of one trained observer will be placed on shore, on the ELCAS, or in a boat at the best vantage point(s) practicable to monitor for marine mammals.

5. Monitoring observer(s) will implement shut-down/delay procedures by calling for shut-down to the hammer operator when marine mammals are sighted within the mitigation zone.

6. Soft Start—ELCAS pile driving would implement a soft start as part of normal construction procedures. The pile driver increases impact strength as resistance goes up. At first, the pile driver piston drops a few inches. As resistance goes up, the pile driver piston will drop from a higher distance thus providing more impact due to gravity. This will allow marine mammals in the project area to vacate or begin vacating the area minimizing potential harassment.

7. *ELCAS Acoustic Monitoring:* The Navy proposes, under the associated SSTC marine mammal monitoring plan, to conduct underwater acoustic propagation monitoring during the first available ELCAS deployment at the SSTC under this Incidental Harassment Authorization application. This acoustic monitoring would provide empirical field data on ELCAS pile driving and removal underwater source levels, and propagation specific to ELCAS training at the SSTC. These results will be used to either confirm or refine the Navy's exposure predictions (source level, F value, exposures) described earlier.

NMFS has carefully evaluated these proposed mitigation measures. Our evaluation of potential measures included consideration of the following factors in relation to one another:

- The manner in which, and the degree to which, the successful implementation of the measure is expected to minimize adverse impacts to marine mammals,
- The proven or likely efficacy of the specific measure to minimize adverse impacts as planned, and
- The practicability of the measure for applicant implementation, including consideration of personnel safety, practicality of implementation.

Based on our evaluation of these proposed measures, NMFS has preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable adverse impacts on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Proposed Monitoring and Reporting Measures

Proposed Monitoring Measures

In order to issue an ITA for an activity, Section 101(a)(5)(D) of the MMPA states that NMFS must set forth "requirements pertaining to the monitoring and reporting of such taking". The MMPA implementing regulations at 50 CFR 216.104(a)(13) indicate that requests for IHAs must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present. The proposed monitoring and reporting measures for the Navy's proposed SSTC training exercises are provided below.

The SSTC Monitoring Program, proposed by the Navy as part of its IHA application, is focused on mitigation based monitoring and presented more fully in Appendix A of the Navy's IHA application. Main monitoring techniques include use of civilian scientists as marine mammal observers during a sub-set of SSTC underwater detonation events to validate the Navy's pre and post event mitigation effectiveness, and observe marine mammal reaction, or lack of reaction to SSTC training events. Also, as stated in the Proposed Mitigation section, the Navy proposes to conduct an acoustic monitoring project during the first field deployment of the ELCAS to the SSTC. The objective of this project under the SSTC Monitoring Plan would be to empirically measure site-specific ELCAS underwater sound propagation at SSTC, with the goal of refining future marine mammal exposure estimates.

Monitoring methods proposed for the SSTC training exercise include:

• Marine Mammal Observers (MMO) at SSTC underwater detonations.

• ELCAS underwater propagation monitoring project.

• Leverage aerial monitoring from other Navy-funded monitoring.

I. Marine Mammal Observer at a Sub-Set of SSTC Underwater Detonations

Civilian scientists acting as MMOs will be used to observe a sub-set of the SSTC underwater detonation events. The goal of MMOs is two-fold. One, to validate the suite of SSTC specific mitigation measures applicable to a sub-set of SSTC training events, and to observe marine mammal behavior in the vicinity of SSTC training events.

MMOs will be field-experienced observers that are either Navy biologists or contracted marine biologists. These civilian MMOs will be placed either alongside existing Navy SSTC operators during a sub-set of training events, or on a separate small boat viewing platform. Use of MMOs will verify Navy mitigation efforts within the SSTC, offer an opportunity for more detailed species identification, provide an opportunity to bring animal protection awareness to Navy personnel at SSTC, and provide the opportunity for an experienced biologist to collect data on marine mammal behavior. Data collected by the MMOs is anticipated to integrate with a Navy-wide effort to assess Navy training impacts on marine mammals (DoN 2009). Events selected for MMO participation will be an appropriate fit in terms of security, safety, logistics, and compatibility with Navy underwater detonation training.

MMOs will collect the same data currently being collected for more elaborate offshore ship-based observations including but not limited to:

(1) Location of sighting;
(2) Species;
(3) Number of individuals;
(4) Number of calves present;
(5) Duration of sighting;
(6) Behavior of marine animals sighted;
(7) Direction of travel;
(8) Environmental information associated with sighting event including Beaufort sea state, wave height, swell direction, wind direction, wind speed, glare, percentage of glare, percentage of cloud cover; and
(9) When in relation to Navy training did the sighting occur [before, during or after the detonation(s)].

The MMOs will not be part of the Navy's formal reporting chain of command during their data collection efforts. Exceptions will be made if a marine mammal is observed by the MMO within the SSTC specific mitigation zones the Navy has formally proposed to the NMFS. The MMO will inform any Navy operator of the sighting so that appropriate action may be taken by the Navy trainees.

II. Leverage From Existing Navy-Funded Marine Mammal Research

The Navy will report results obtained annually from the Southern California Range Complex Monitoring Plan (DoN 2009) for areas pertinent to the SSTC. In the Navy's 2011 Letter of Authorization renewal application and subsequent Year 3 Southern California Monitoring Plan (DoN 2010), a new study area for aerial visual survey was created. This area would start at the shoreline of the oceanside Boat Lanes at SSTC and extend seaward to approximately 10 nm offshore. The goal of these aerial visual surveys is to document marine mammal occurrence within a given sub-area off Southern California. Significant surface area can be covered by a survey aircraft flying at 800 to 1,000 feet for approximately five hours. The use of both airplanes and helicopters as aerial platforms will be considered for the survey area off SSTC. Both aircraft type, in particular the helicopter, provide excellent platforms for documenting marine mammal behaviors and through digital photography and digital video.

Reporting Measures

In order to issue an ITA for an activity, section 101(a)(5)(A) of the MMPA states that NMFS must set forth "requirements pertaining to the monitoring and reporting of such taking." Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

I. General Notification of Injured or Dead Marine Mammals

Navy personnel will ensure that NMFS (regional stranding coordinator) is notified immediately (or as soon as clearance procedures allow) if an injured or dead marine mammal is found during or shortly after, and in the vicinity of, any Navy training exercises involving underwater detonations or pile driving. The Navy will provide NMFS with species or description of the animal(s), the condition of the animal(s) (including carcass condition if the animal is dead), location, time of first discovery, observed behaviors (if alive), and photo or video (if available).

II. Final Report

The Navy will submit a final report to the Office of Protected Resources, NMFS, no later than 90 days after the expiration of the LOA. The report will, at a minimum, includes the following marine mammal sighting information:

(1) Location of sighting;
(2) Species;
(3) Number of individuals;
(4) Number of calves present;
(5) Duration of sighting;
(6) Behavior of marine animals sighted;
(7) Direction of travel;
(8) Environmental information associated with sighting event including Beaufort sea state, wave height, swell direction, wind direction, wind speed, glare, percentage of glare, percentage of cloud cover; and

(9) When in relation to Navy training did the sighting occur [before, during or after the detonation(s)].

In addition, the Navy would provide the information described below for all of its underwater detonation events and ELCAS events under the IHA, if issued. The information includes: (1) Total number of each type of underwater detonation events (of these listed in Table 2 of this document) conducted at the SSTC, and (2) total number of piles driven and extracted during the ELCAS exercise.

The Navy will submit to NMFS a draft report as described above and will respond to NMFS comments within 3 months of receipt. The report will be considered final after the Navy has addressed NMFS' comments, or three months after the submittal of the draft if NMFS does not comment by then.

Estimated Take by Incidental Harassment

Estimated Marine Mammal Exposures From SSTC Underwater Detonations

The quantitative exposure modeling methodology estimated numbers of individuals exposed to the effects of underwater detonations exceeding the thresholds used, as if no mitigation measures were employed.

All estimated exposures are seasonal averages (mean) plus one standard deviation using ½ of the yearly training tempo to represent each season. Taking this approach was an effort to be conservative (*i.e.,* allow for an overestimate of exposure) when estimating exposures typical of training during a single year.

Table 5 shows number of annual predicted exposures by species for all underwater detonation training within the SSTC. As stated previously, only events with sequential detonations were examined for non-TTS behavior disruption.

TABLE 5—SSTC MODELED ESTIMATES OF SPECIES EXPOSED TO UNDERWATER DETONATIONS WITHOUT IMPLEMENTATION OF MITIGATION MEASURES

Species		Annual Marine Mammal Exposure (All Sources)		
		Level B Behavior (Multiple Successive Explosive Events Only)	*Level B TTS*	*Level A*
		177 dB re 1 μPa	*182 dB re 1 μPa²-s/23 psi*	*205 dB re 1 μPa²-s/13.0 psi-ms*
Gray Whale				
Warm				
Cold	0	0	0	0
Bottlenose Dolphin				
Warm	30	43	0	0
Cold	40	55	0	0
California Sea Lion				
Warm	4	4	0	0
Cold	40	51	0	0
Harbor Seal				
Warm	0	0	0	0
Cold	0	0	0	0
Total Annual Exposures	114	153	0	0

In summary, for all underwater detonations, the Navy's impact model predicted that no mortality and/or Level A harassment (injury) would occur to marine mammal species and stocks within the proposed action area.

For non-sequential (*i.e.,* single detonation) training events, the Navy's impact model predicted a total of 153 annual exposures that could result in Level B harassment (TTS), which include 98 annual exposures to bottlenose dolphins and 55 annual exposures to California sea lions.

For sequential (Multiple Successive Explosive events) training events, the Navy's impact model predicted a total of 114 annual exposures that could result in Level B behavioral harassment, which include 70 annual exposures to bottlenose dolphins and 44 annual exposures to California sea lions.

Estimated Marine Mammal Exposures From ELCAS Pile Driving and Removal

I. Pile Driving

Using the marine mammal densities presented in the Navy's IHA application, the number of animals exposed to annual Level B harassment from ELCAS pile driving can be estimated:

Exposures per event = ZOI × (warm season marine mammal density + cold season marine mammal density), with ZOI = $\pi \times R^2$, where R is the radius of the ZOI.

Area of Exposures per year = (Exposures per event × number of days of pile driving)/year.

Pile driving is estimated to occur 10 days per ELCAS training event, with up to four training exercises being conducted per year (40 days per year).

Based on the assessments conducted, using the methodology discussed previously, and without consideration of current mitigation measures, ELCAS pile driving is predicted to result in no Level A Harassments to any marine mammal (received SPL of 190 dB_{rms} for pinnipeds and 180 dB_{rms} re 1 μPa for cetacean, respectively) but 40 bottlenose dolphins and 20 California sea lions by Level B behavioral harassment (Table 6).

II. Pile Removal

Using the marine mammal densities presented in the Navy's IHA application, the number of animals exposed to annual Level B harassment from ELCAS pile driving can be estimated:

Exposures per event = ZOI × (warm season marine mammal density + cold season marine mammal density), with ZOI = $\pi \times R^2$, where R is the radius of the ZOI.

Area of Exposures per year = (Exposures per event × number of days of pile removal)/year.

Pile removal is estimated to occur 3 days per ELCAS training event, with up to four training exercises being conducted per year (12 days per year).

Based on the assessments conducted, using the methodology discussed previously, and without consideration of current mitigation measures, ELCAS pile driving is predicted to result in no Level A Harassments to any marine mammal (received SPL of 190 dB_{rms} for pinnipeds and 180 dB_{rms} re 1 μPa for cetacean, respectively) but in Level B behavioral harassment of 168 bottlenose dolphins, 102 California sea lions, 12 harbor seals, and 6 gray whales (Table 6).

TABLE 6—EXPOSURE ESTIMATES FROM ELCAS PILE DRIVING AND REMOVAL PRIOR TO IMPLEMENTATION OF MITIGATION MEASURES

Species	Annual Marine Mammal Exposure (All Sources)			
	Level B Behavior (Non-Impulse) 120 dB $_{rms}$ re 1 μPa	*Level B Behavior (Impulse) 120 dB $_{rms}$ re 1 μPa*	*Level A (Cetacean) 120 dB $_{rms}$ re 1 μPa*	*Level A (Pinniped) 120 dB $_{rms}$ re 1 μPa*
Gray Whale:				
Installation	N/A	0	0	0
Removal	6	N/A	0	0
Bottlenose Dolphin:				
Installation	N/A	40	0	0
Removal	168	N/A	0	0
California Sea Lion:				
Installation	N/A	20	0	0
Removal	102	N/A	0	0
Harbor Seal:				
Installation	N/A	0	0	0
Removal	12	N/A	0	0
Total Annual Exposures	288	60	0	0

Potential Impacts to Marine Mammal Habitat

The proposed training activities at SSTC will not result in any permanent impact on habitats used by marine mammals, and potentially short-term to minimum impact to the food sources such as forage fish. There are no known haul-out sites, foraging hotspots, or other ocean bottom structures of significant biological importance to harbor seals, California sea lions, or bottlenose dolphins within SSTC. Therefore, the main impact associated with the proposed activity will be temporarily elevated noise levels and the associated direct effects on marine mammals, as discussed previously.

The primary source of effects to marine mammal habitat is exposures resulting from underwater detonation training and ELCAS pile driving and removal training events. Other sources that may affect marine mammal habitat include changes in transiting vessels, vessel strike, turbidity, and introduction of fuel, debris, ordnance, and chemical residues. However, each of these components was addressed in the SSTC Environmental Impact Statement (EIS) and it is the Navy's assertion that there would be no likely impacts to marine mammal habitats from these training events.

The most likely impact to marine mammal habitat occurs from underwater detonation and pile driving and removal effects on likely marine mammal prey (*i.e.,* fish) within SSTC.

There are currently no well-established thresholds for estimating effects to fish from explosives other than mortality models. Fish that are located in the water column, in proximity to the source of detonation could be injured, killed, or disturbed by the impulsive sound and could leave the area temporarily. Continental Shelf Inc. (2004) summarized a few studies conducted to determine effects associated with removal of offshore structures (*e.g.,* oil rigs) in the Gulf of Mexico. Their findings revealed that at very close range, underwater explosions are lethal to most fish species regardless of size, shape, or internal anatomy. In most situations, cause of death in fish has been massive organ and tissue damage and internal bleeding. At longer range, species with gas-filled swimbladders (*e.g.,* snapper, cod, and striped bass) are more susceptible than those without swimbladders (*e.g.,* flounders, eels).

Studies also suggest that larger fish are generally less susceptible to death or injury than small fish. Moreover, elongated forms that are round in cross section are less at risk than deep-bodied forms. Orientation of fish relative to the shock wave may also affect the extent of injury. Open water pelagic fish (*e.g.,* mackerel) seem to be less affected than reef fishes. The results of most studies are dependent upon specific biological, environmental, explosive, and data recording factors.

The huge variation in fish populations, including numbers, species, sizes, and orientation and range from the detonation point, makes it very difficult to accurately predict mortalities at any specific site of detonation. All underwater detonations are of small scale (under 29 lbs NEW), and the proposed training exercises would be conducted in several areas within the large SSTC Study Area over the seasons during the year. Most fish species experience a large number of natural mortalities, especially during early life-stages, and any small level of mortality caused by the SSTC training exercises involving explosives will likely be insignificant to the population as a whole.

Therefore, potential impacts to marine mammal food resources within the SSTC are expected to be minimal given both the very geographic and spatially limited scope of most Navy at-sea activities including underwater detonations, and the high biological productivity of these resources. No short or long term effects to marine mammal food resources from Navy activities are anticipated within the SSTC Study Area.

Subsistence Harvest of Marine Mammals

NMFS has preliminarily determined that the Navy's proposed training activities at the SSTC would not have an unmitigable adverse impact on the availability of the affected species or stocks for subsistence use since there are no such uses in the specified area.

Negligible Impact and Small Numbers Analysis and Determination

Pursuant to NMFS' regulations implementing the MMPA, an applicant is required to estimate the number of animals that will be "taken" by the specified activities (*i.e.,* takes by harassment only, or takes by harassment, injury, and/or death). This estimate informs the analysis that NMFS must perform to determine whether the activity will have a "negligible impact" on the species or stock. Level B (behavioral) harassment occurs at the level of the individual(s) and does not assume any resulting population-level consequences, though there are known avenues through which behavioral disturbance of individuals can result in population-level effects. A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.,* population-level effects). An estimate of the number of Level B harassment takes alone is not enough information on which to base an impact determination.

In addition to considering estimates of the number of marine mammals that might be "taken" through behavioral harassment, NMFS considers other factors, such as the likely nature of any responses (their intensity, duration, *etc.*), the context of any responses (critical reproductive time or location, migration, *etc.*), as well as the number and nature of estimated Level A takes, the number of estimated mortalities, and effects on habitat.

The Navy's specified activities have been described based on best estimates of the planned training exercises at SSTC action area. Some of the noises that would be generated as a result of the proposed underwater detonation and ELCAS pile driving activities, are high intensity. However, the explosives that the Navy plans to use in the proposed SSTC action area are all small detonators under 29 lbs NEW, which result in relatively small ZOIs. In addition, the locations where the proposed training activities are planned are shallow water areas which would effectively contain the spreading of explosive energy within the bottom boundary. Taking the above into account, along with the fact that NMFS anticipates no mortalities and injuries to result from the action, the fact that there are no specific areas of reproductive importance for marine mammals recognized within the SSTC area, the sections discussed below, and dependent upon the implementation of the proposed mitigation measures, NMFS has determined that Navy training exercises utilizing underwater detonations and ELCAS pile driving and removal will have a negligible impact on the affected marine mammal species and stocks present in the SSTC Study Area.

NMFS' analysis of potential behavioral harassment, temporary threshold shifts, permanent threshold shifts, injury, and mortality to marine mammals as a result of the SSTC training activities was provided earlier in this document and is analyzed in more detail below.

Behavioral Harassment

As discussed earlier, the Navy's proposed SSTC training activities would use small underwater explosives with maximum NEW of 29 lbs 16 events per year in areas of small ZOIs that would mostly eliminate the likelihood of mortality and injury to marine mammals. In addition, these detonation events are widely dispersed in several designated sites within the SSTC Study Area. The probability that detonation events will overlap in time and space with marine mammals is low, particularly given the densities of marine mammals in the vicinity of SSTC Study Area and the implementation of monitoring and mitigation measures. Moreover, NMFS does not expect animals to experience repeat exposures to the same sound source as animals will likely move away from the source after being exposed. In addition, these isolated exposures, when received at distances of Level B behavioral harassment (*i.e.,* 177 dB re 1 μPa^2-s), are expected to cause brief startle reactions or short-term behavioral modification by the animals. These brief reactions and behavioral changes are expected to disappear when the exposures cease. Therefore, these levels of received impulse noise from detonation are not expected to affect annual rates or recruitment or survival.

In addition, ELCAS events planned at SSTC would employ relatively small hammers for impact and vibratory pile driving and removal, with extremely small safety radii for 180 dB (46 yards for impact pile driving and 1 yard for vibratory pile removal) and 190 dB (11 yards for impact pile driving and < 1 yard for vibratory pile removal) zones. Therefore, it is highly unlikely that any marine mammals would occur in such close proximity to the pile driving site.

TTS

NMFS and the Navy have estimated that individuals of some species of marine mammals may sustain some level of temporary threshold shift TTS from underwater detonations. TTS can last from a few minutes to days, be of varying degree, and occur across various frequency bandwidths. The TTS sustained by an animal is primarily classified by three characteristics:

- *Frequency*—Available data (of mid-frequency hearing specialists exposed to mid to high frequency sounds—Southall *et al.* 2007) suggest that most TTS occurs in the frequency range of the source up to one octave higher than the source (with the maximum TTS at ½ octave above).
- *Degree of the shift (i.e., how many dB is the sensitivity of the hearing reduced by)*—Generally, both the degree of TTS and the duration of TTS will be greater if the marine mammal is exposed to a higher level of energy (which would occur when the peak dB level is higher or the duration is longer). Since the impulse from detonation is extremely brief, an animal would have to approach very close to the detonation site to increase the received SEL. The threshold for the onset of TTS for detonations is a dual criteria: 182 dB re 1 μPa^2-s or 23 psi, which might be received at distances from 20–470 yards from the centers of detonation based on the types of NEW involved to receive the SEL that causes TTS compared to similar source level with longer durations (such as sonar signals).
- *Duration of TTS (Recovery time)*—Of all TTS laboratory studies, some using exposures of almost an hour in duration or up to SEL at 217 dB re 1 μPa^2-s, almost all recovered within 1 day (or less, often in minutes), though in one study (Finneran *et al.* 2007), recovery took 4 days.

Although the degree of TTS depends on the received noise levels and exposure time, all studies show that TTS is reversible and animals' sensitivity is expected to recover fully in minutes to hours based on the fact that the proposed underwater detonations are small in scale and isolated. Therefore, NMFS expects that TTS would not affect annual rates of recruitment or survival.

Acoustic Masking or Communication Impairment

As discussed above, it is also possible that anthropogenic sound could result in masking of marine mammal communication and navigation signals.

However, masking only occurs during the time of the signal (and potential secondary arrivals of indirect rays), versus TTS, which occurs continuously for its duration. Impulse sounds from underwater detonation and pile driving are brief and the majority of most animals' vocalizations would not be masked. Although impulse noises such as those from underwater explosives and impact pile driving tend to decay at distance, and thus become non-impulse, give the area of extremely shallow water (which effectively attenuates low frequency sound of these impulses) and the small NEW of explosives, the SPLs at these distances are expected to be barely above ambient level. Therefore, masking effects from underwater detonation are expected to be minimal and unlikely. If masking or communication impairment were to occur briefly, it would be in the frequency ranges below 100 Hz, which overlaps with some mysticete vocalizations; however, it would likely not mask the entirety of any particular vocalization or communication series because of the short impulse.

PTS, Injury, or Mortality

The modeling for take estimates show that no marine mammal would be taken by Level A harassment (injury, PTS included) or mortality due to the low power of the underwater detonation and the small ZOIs.

Based on these assessments, NMFS determined that approximately 6 gray whales, 221 California sea lions, 12 harbor seals, and 323 bottlenose dolphins could be affected by Level B harassment (TTS and sub-TTS) as a result of the proposed SSTC training activities. These numbers represent approximately 0.02%, 0.93%, and 0.06% of gray whales (eastern North Pacific stock), California sea lions (U.S. Stock), and harbor seal (California stock), respectively in the vicinity of the proposed SSTC Study Area (calculation based on NMFS 2009 U.S. Pacific Marine Mammal Stock Assessment; Carretta *et al.* 2010). However, the estimated take of California coastal stock of bottlenose dolphin indicates that the entire population (100%) could be affected as the result of the Navy's proposed SSTC training activities. Given the fact that these annual takes are spread over the entire year, and that on average each individual bottlenose dolphin would be exposed once to received levels that could cause Level B harassment in a year, NMFS does not believe such adverse effects would be biologically significant as to affect the growth, survivor, and reproduction of this stock.

Additionally, as discussed previously, the aforementioned take estimates do not account for the implementation of mitigation measures. With the implementation of mitigation and monitoring measures, NMFS expects that the takes would be reduced further. Coupled with the fact that these impacts will likely not occur in areas and times critical to reproduction, NMFS has preliminarily determined that the total taking incidental to the Navy's proposed SSTC training activities would have a negligible impact on the marine mammal species and stocks present in the SSTC Study Area.

Endangered Species Act (ESA)

No marine mammal species are listed as endangered or threatened under the ESA with confirmed or possible occurrence in the study area. Therefore, section 7 consultation under the ESA for NMFS's proposed issuance of an MMPA authorization is not warranted.

National Environmental Policy Act (NEPA)

The Navy is preparing an Environmental Impact Statement (EIS) for the proposed SSTC training activities. A draft EIS was released in July 2010 and it is available at *http://www.silverstrandtrainingcomplexeis.com/EIS.aspx/.* NMFS is a cooperating agency (as defined by the Council on Environmental Quality (40 CFR 1501.6)) in the preparation of the EIS. NMFS has reviewed the Draft EIS and will be working with the Navy on the Final EIS (FEIS).

NMFS intends to adopt the Navy's FEIS, if adequate and appropriate, and we believe that the Navy's FEIS will allow NMFS to meet its responsibilities under NEPA for the issuance of the IHA for training activities in the SSTC Study Area. If the Navy's FEIS is not adequate, NMFS will supplement the existing analysis and documents to ensure that we comply with NEPA prior to the issuance of the IHA.

Dated: October 14, 2010.

James H. Lecky,

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

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DEPARTMENT OF EDUCATION

Notice of Submission for OMB Review

AGENCY: Department of Education.

ACTION: Comment Request.

SUMMARY: The Director, Information Collection Clearance Division, Regulatory Information Management Services, Office of Management invites comments on the submission for OMB review as required by the Paperwork Reduction Act of 1995 (Pub. L. 104–13).

DATES: Interested persons are invited to submit comments on or before November 18, 2010.

ADDRESSES: Written comments should be addressed to the Office of Information and Regulatory Affairs, *Attention:* Education Desk Officer, Office of Management and Budget, 725 17th Street, NW., Room 10222, New Executive Office Building, Washington, DC 20503, be faxed to (202) 395–5806 or e-mailed to *oira_submission@omb.eop.gov* with a cc: To *ICDocketMgr@ed.gov.* Please note that written comments received in response to this notice will be considered public records.

SUPPLEMENTARY INFORMATION: Section 3506 of the Paperwork Reduction Act of 1995 (44 U.S.C. Chapter 35) requires that the Office of Management and Budget (OMB) provide interested Federal agencies and the public an early opportunity to comment on information collection requests. The OMB is particularly interested in comments which: (1) Evaluate whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information will have practical utility; (2) Evaluate the accuracy of the agency's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used; (3) Enhance the quality, utility, and clarity of the information to be collected; and (4) Minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology.

Dated: October 13, 2010.

Darrin A. King,

Director, Information Collection Clearance Division, Regulatory Information Management Services, Office of Management.

Institute of Education Sciences

Type of Review: Reinstatement.

Title of Collection: Schools and Staffing Survey (SASS 2011/12) Preliminary Field Activities 2010/11.

OMB Control Number: 1850–0598.

Agency Form Number(s): N/A.

Frequency of Responses: One time.

Affected Public: Businesses or other for-profit; Not-for-profit institutions; State, Local, or Tribal Government, State