



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

NATIONAL MARINE FISHERIES SERVICE

Southwest Region

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November 17, 2010

Commander, U.S. Pacific Fleet
Attn: Larry Foster, Environmental Readiness, N01CE1
250 Makalapa Drive
Pearl Harbor, HI 96860-3131

Dear Mr. Foster:

NOAA's National Marine Fisheries Service (NMFS) has reviewed the Department of the Navy's (Navy) informal consultation package (referenced herein as a biological assessment) for the Silver Strand Training Complex (SSTC), as revised on July 23, 2010 (Navy 2010a), submitted to NMFS in accordance with Section 7(c) of the Endangered Species Act (ESA) of 1973 as amended (16 U.S.C. § 1536(c)). As required under the National Environmental Policy Act (NEPA), the Navy also prepared an Environmental Impact Statement (EIS) (Navy 2010b), which NMFS reviewed and commented on several drafts. In addition, as required under Section 101(a)(5)(D) of the Marine Mammal Protection Act, the Navy has applied to NMFS for an Incidental Harassment Authorization (IHA) and, as part of this ESA consultation, provided NMFS with an updated version of their IHA application (dated September 1, 2010; Navy 2010c), on or around September 16, 2010. Some responses to NMFS' comments on the most recent biological assessment were contained in the IHA application and therefore, NMFS assumes information contained in the application are part of the informal consultation and, in some cases, update some of the information contained in the biological assessment. The proposed action includes current and proposed Navy training activities in the SSTC and southern nearshore areas of Naval Air Station North Island (NASNI), located in San Diego County, California, on and adjacent to the Silver Strand, a narrow, sandy isthmus separating San Diego Bay (Bay) from the Pacific Ocean.

In the EIS and the biological assessment, the Navy has assessed the potential impact of their current and proposed training activities on ESA-listed sea turtle species that may be present in the vicinity of the these activities. Included as part of the proposed training activities (proposed action) are a series of mitigation measures designed to minimize the potential for adverse effects to sea turtles as a result of training activities that produce acoustical noise or impulse pressure from underwater detonations and pier construction. The Navy has concluded that this proposed action may affect, but is not likely to adversely affect, ESA-listed Pacific sea turtles and requests NMFS' concurrence. In response, NMFS offers the following comments pursuant to section 7 of the ESA.



Proposed Project

The proposed action presented in the package by the Navy consists of a suite of training activities that are intended to achieve and maintain the Navy's fleet readiness to fulfill its mission requirements. For more than 70 years, the Navy has used southern California and the San Diego area as a training ground, as well as an operational base. The SSTC plays a key role in providing training assets in support of the Navy, Marine Corps, and Special Operations individual and unit/fleet training activities. In brief, the Navy proposes to:

1. continue current training and test and evaluation activities conducted within the study area;
2. increase the training tempo from baseline conditions and add new types of training;
3. conduct existing, routine training at additional locations within SSTC established training areas;
4. introduce new platforms and equipment; and
5. increase access and availability to existing beach and inland training areas.

The SSTC is divided into two non-contiguous areas: SSTC-NORTH and SSTC-SOUTH. SSTC-NORTH includes land areas on the northern half of the Silver Strand peninsula as well as adjacent nearshore waters of the Pacific Ocean and the San Diego Bay. SSTC-SOUTH includes land on the southern end of the Silver Strand peninsula, as well as adjacent nearshore waters of the Pacific Ocean. SSTC-NORTH and SSTC-SOUTH are separated by the Silver Strand State Beach. In all, SSTC includes nearly 3.9 nautical miles (nm) of coastline (2.6 nm at SSTC-NORTH and 1.3 nm at SSTC-SOUTH). SSTC-NORTH is composed of ten oceanside beach and boat training lanes (numbered as Boat Lanes 1 -10), ocean anchorage areas (numbered 101 through 178), bayside water training areas (Alpha through Hotel), and bayside beaches (Alpha through Charlie, Delta North and Delta South). SSTC-SOUTH consists of 4 oceanside beach and boat training lanes (numbered as Boat Lanes 11-14), and inland training areas and facilities inside a fenced area.

A full description of all the training activities that occur as part of the SSTC can be found in the SSTC EIS prepared by the Navy (Navy 2010b). In the biological assessment, the Navy identified 49 different training activities and highlighted the most probable risk factor associated with each activity that had the greatest potential for affecting sea turtles (Table 2-1 in Navy 2010a). In general, these activities and risk factors can be summarized into a few main categories, including: vessel traffic and collision risk, acoustic impacts from underwater detonations, acoustic impacts from pile-driving and construction, and other miscellaneous noise/disturbance from activities that occur in the water and on adjacent beaches of the SSTC.

The majority of the in-water training activities at SSTC are supported by the use of marine vessels. Most of the vessel-based activities involve the use of relatively slow moving or smaller vessels, including inflatable rubber boats, although some activities do involve the use of larger ships and faster moving water craft used for more evasive tactical training. Examples of training activities include: boat handling and navigation under multiple scenarios and conditions; reconnaissance and amphibious assaults; and operation of marine or amphibious vehicles during

various supply or positioning exercises. In total, 32 of the activities identified by the Navy as potentially affecting sea turtles involve vessel or water craft operations, with half (16) of these activities slated to occur within the bayside water training area of SSTC-North. For many training activities with both in-Bay and ocean locations, usually in-Bay training is the more precursory, fundamental training provided to personnel before attempting similar training in the more demanding ocean environment.

A total of 14 different training activities at SSTC were identified in the package as involving the use of underwater detonations by the Navy. For safety reasons, all of the underwater detonation training occurs during daylight, with sea-state conditions of up to Beaufort 3. Most of these activities (11) involve mine countermeasure training techniques, along with some demolition training and certifications. The net explosive weight (NEW) potential for these underwater detonations ranges from very small ordinances (0.033 lbs) up to larger ones (29 lbs). Most of the charges will run between 3.5 and 20 lbs NEW. The size and frequency of these detonations vary considerably based on the specific training activity involved. Some activities, such as testing new mine detection and neutralization equipment in the surf zone, involve only a few detonations per year (in this case: 4 detonations of up to 20 lbs NEW per year). Other activities, such as training with Shock Wave Action Generators (SWAG), may involve many more detonations in total throughout the year (SWAG training involves 90 detonations per year). There is also variation in the placement of charges, as some will be on or near the bottom, while others will be mid-water or even within 5 feet of the surface. All underwater detonation training activities occur on the ocean side of SSTC in depths ranging from very shallow water to 72 feet, with the exception of the small charge weight (0.033 lb) associated with SWAG, which is detonated within south San Diego Bay. Table 2-2 of the package provides more specific details on SSTC underwater detonation training activities.

The proposed action includes training activities associated with the construction and removal of a pier off the beach to allow for the offloading of supplies, referred to as Elevated Causeway (ELCAS) in the package. ELCAS training may occur within the south-central portion of the Bay along the western shoreline (Bravo beach training lane) as well as oceanside of SSTC-North (Boat Lanes 1-10 in Figure 11). Under the proposed action, this may happen up to 4 times a year. The potential effect of this activity is related to noise generated during the driving of pilings as the pier is installed, and their subsequent removal. Approximately 101 piles are driven into the beach and the surf zone (out to estimated 36 feet or less water depth) with a diesel impact hammer, with about 250 to 300 impacts per pile and each pile taking about 10 minutes to install. The ELCAS uses 24-inch diameter hollow steel piles. Pile installation is expected to occur over a period of 10 days. Pile driving will include a form of soft start-up where the pile driver increases impact strength as resistance goes up. This activity may occur 24 hours-per-day during ELCAS training. At the end of the training, a vibratory extractor attached to the pile head will be used to remove the piles, with each pile taking approximately 15 minutes to remove. Pile removal will occur over a period of around 3 days.

The remainder of the training and possible effects on sea turtles at SSTC described in the proposed action relate primarily to the amphibious activities of vehicles, vessels, and personnel moving around and potentially creating noise, disturbance, or habitat modifications. One specific training activity highlighted was the use of a helicopter and Organic Airborne Mine

Countermeasure (OAMCM) systems to identify and neutralize mines. In addition to the direct impacts to sea turtles from underwater detonation, there are potential indirect habitat effects related to the expenditure of ordinance near or on the bottom and the discharge of physical or chemical debris. In addition, OAMCM training may involve the use of Light Detection and Ranging (LIDAR) blue-green laser to locate floating and near-surface mines in shallow water. The proposed action also includes beach activities associated with SSTC training, such as the transfer of sea water to simulate fuel transfer or bringing saltwater ashore for desalinization.

As part of the proposed action, Section 6 of the biological assessment (Navy 2010a) and Chapter 11 of the incidental harassment authorization application (Navy 2010c), which contained the most updated measures, describes detailed mitigation measures proposed to avoid, minimize, and compensate for effects to listed species. For very shallow water (0 to 24 feet water depths) detonations on the ocean side of the SSTC, two observers, shore-based and boat-based, will monitor a 1,200 foot safety zone before (10 minutes), during, and after (10 minutes) a detonation. For all shallow water (24 to 72 feet water depths) detonations (except for SWAG) on the ocean side of the SSTC, a minimum of two boat-based observers will monitor a 1,410 foot buffer zone before (30 minutes), during, and after (30 minutes) an explosive event. During Marine Mammal System operations involving SWAG detonations on the ocean side of the SSTC and in the Bay, two boat-based observers will monitor a safety zone of 180 feet before (10 minutes), during, and after (10 minutes) detonations. Observers will watch for sea turtles (and marine mammals) and report any animals within the safety zone. Initiation of detonations will cease if any such animals are within the marked safety zone. If any injured or dead turtles are observed following any detonations, the Navy will contact NMFS' Southwest Regional Office. According to the Navy's modeling and subsequent calculations, this mitigation is expected to protect sea turtles from an onset temporary threshold shift in their hearing, similar to the protection afforded marine mammals.

The Navy has proposed mitigation measures to protect sea turtles during ELCAS training, particularly during pile driving and removal activities. An observer will monitor a 150 foot "mitigation zone" before (30 minutes for pile driving and concurrently during pile removal), during, and after pile driving and removal activities. If sea turtles are found within the 150 foot mitigation zone, observers will implement shut-down/delay procedures. Pile removal activities will be halted if sea turtles are found within the 150 foot mitigation zone. In addition, pile driving activities will employ a "soft start," with pile driving increasing in impact strength as the resistance goes up, which will "alert" animals in the area and allow them time to vacate the area. Specifically during the first available ELCAS training, the Navy proposes to measure the sound propagation over various distances. Results from the empirical field data will be used to either confirm or refine the Navy's exposure predictions, and, NMFS assumes, subsequently modify the mitigation zone, as appropriate, to ensure sea turtles are protected from any adverse impacts associated with elevated sound pressure levels in the marine environment.

Effects Analysis

Green turtles (*Chelonia mydas*) are the only species listed under the ESA and under NMFS' jurisdiction that may be affected by this project. Based on genetic analyses and tracking studies conducted by NMFS' Southwest Fisheries Science Center, green turtles found in San Diego Bay

likely represent the endangered population of turtles breeding on the Pacific coast of Mexico. South San Diego Bay serves as important habitat for a resident population of approximately 100 juvenile and adult green turtles in this area. Because green turtles migrate in and out of the Bay to return to nesting and other foraging grounds, based on capture-mark-recapture data on sea turtles captured from 1990-2009, Eguchi et al. (2010) estimated the annual abundance of green turtles to range between 16 (CI=4-29) and 61 (CI=36-88).

Scientists believe that San Diego Bay is one of the northern-most foraging areas for green turtles, with the shallow inlet providing valuable food resources such as marine algae and seagrass. While some of the San Diego Bay green turtles are year-round residents, others migrate through central and north San Diego Bay in order to reach their southern breeding grounds, located in the southern state of Michoacan, Mexico, and at the Revillagigedos Islands, Mexico. Since the early 1960s, sea turtles have been sighted aggregating in the vicinity of the South Bay Power Plant, where warm water effluent is discharged throughout the year. Because of the low temperatures occurring during the winter months (November-April) in the Southern California Bight, sea turtles likely reside in the southern portion of the Bay, where the water is warmer and thus a more habitable environment (Eguchi et al. 2010). During the warm summer months, the turtles generally move out of the effluent channel and into the Bay, especially when temperatures within the channel exceed 90°F. With incursions of warm equatorial currents (e.g., during El Niño events), more turtles have been found within the Bay.

Green turtles are also attracted to the high concentrations of eelgrass in San Diego Bay, and the presence of this important food item likely influences sea turtle activity patterns within the Bay. Evidence from telemetry studies show that they generally move back and forth between eelgrass beds and the warm effluent channel, with little time spent in between. Their movements indicate a strong diel pattern during the winter, with turtles foraging outside of the warm water effluent at night, returning to the channel in the morning (Eguchi et al. 2010). Surveys show that the sea turtles generally foraged within 2 kilometers of the effluent channel. Scientists have generally limited their turtle tracking studies to the south Bay; therefore, less is known of sea turtle movement within the central and northern areas of the Bay (where activities associated with SWAG and ELCAS occur), including the importance of eelgrass beds to turtles in this area.

Using satellite tags attached to their carapace, three green turtles have been tracked migrating out of the Bay and into the Pacific Ocean by researchers, with transmissions lasting from 46 days (2005) to 363 days (2002). While in San Diego Bay, the turtles spent the majority of their time in the southern portion of the Bay. Once they began to move north and out of the entrance to the Bay (generally late springtime), they moved more quickly and generally headed straight to their breeding grounds off Isla Revillagigedos or mainland Mexico (Dutton, NMFS-SWFSC, unpublished data). There is no data to suggest that green turtles are utilizing resources in the oceanside waters adjacent to the SSTC. In addition, there are no significant eelgrass beds in this area. In fact, the closest eelgrass bed is approximately six miles away from the training area (Merkel and Associates, 2008 Eelgrass Survey).

Potential impacts to any green turtles in the area from the project include: 1) behavioral changes (e.g. moving out of the immediate area, avoiding feeding) and/or hearing impairment due to sound pressure levels associated with explosives and pile driving; and 2) harassment and/or collision due to vessel activities during training exercises.

In assessing risk, NMFS considers increased vessel traffic to be a low risk activity, given the generally slow speed of vessels that are typically used in training exercises in San Diego Bay and the consequent low likelihood of encounter or collision with a sea turtle. Training activities using vessels at higher speeds will take place in the south central and central portion of the Bay or on the ocean side of SSTC, where green turtles are not expected to co-occur. As a result, NMFS concludes that the likelihood of harassment and/or collision associated with vessel activities is discountable. Therefore, NMFS concurs with the Navy's conclusion that this component of the project is not likely to adversely affect green sea turtles.

Given the low charge weight (.033 pounds) of SWAG, the location of detonations (Echo [south central part of the Bay]), outside of eelgrass beds, and in mid-water) and the mitigation proposed by the Navy (monitoring 180 feet during daytime hours and low sea state), NMFS believes the impacts of these operations to sea turtles to be discountable. Movement patterns of green turtles studied by Lyon et al. (2006) showed that, in the Bay during the winter months, sea turtles exhibited a strong diel pattern, foraging at night outside of the warm effluent channel and returning to the effluent plume in south San Diego Bay during the morning hours. Thus, in general, sea turtles found in the area of operations are likely to be rare during the winter months and transiting the area during other times of the year. In addition, with the mitigation proposed by the Navy for explosives training occurring on the ocean side of SSTC and the very low likelihood of turtle presence in the area, NMFS concurs with the Navy's determination that the effects of these activities on green turtles are discountable and therefore are not likely to adversely affect listed sea turtles.

Due to the relative distance of training activities associated with SWAG and the ELCAS to the southern portion of San Diego Bay, where green sea turtles in this area spend the majority of their time, NMFS considers the main threat of impacts associated with the proposed action to be due to the effects of pile driving on green sea turtles in the Bay.

Sounds introduced into the sea by man-made devices (e.g. pile driving with an impact hammer) can have a deleterious effect on sea turtles or marine mammals by causing stress, interfering with communication and predator/prey detection, and changing behavior. More significantly, acoustic overexposure to loud sounds can lead to a temporary or permanent loss of hearing (termed a temporary or permanent threshold shift). NMFS is currently in the process of determining safety criteria for marine species exposed to underwater sound. While there is a lack of published studies on the impacts of pile driving on sea turtles, based on the literature, sea turtles have higher hearing thresholds than most marine mammals at the frequencies where construction sound is concentrated (Ridgway et al. 1969; Lenhardt, 1994; Bartol and Ketten 2003). Therefore, NMFS has previously concluded that safety zones established for marine mammals should also provide sufficient protection for sea turtles.

Based on past California dock repair projects where a similar type and size of piles were driven as compared to that proposed during ELCAS events and subsequent empirical field measurements taken to determine sound propagation loss, the Navy predicted underwater sound pressure levels that may be associated with ELCAS pile driving and removal, given particular bathymetric and bottom conditions. In consultation with the NMFS Office of Protected Resources regarding these calculations and their subsequent recommendations to apply a more

conservative attenuation constant, the Navy proposed the establishment of a 150 foot mitigation zone around pile driving operations (impulsive sound). During pile removal activities, which involve the use of a vibratory extractor (continuous sound), the Navy also proposed to monitor a 150 foot mitigation zone. If effective, a 150 foot zone is a reasonable distance to monitor. In consultation with the Navy, pile driving and removal would generally not be conducted at night, but there is potential for it to occur on occasion since it is a training activity that needs to replicate what Navy personnel may actually encounter overseas. The Navy uses large floodlights over the entire activity area, including lights directed toward the causeways as well as to the surrounding water. In addition, support vessels are located laterally and also use large flood lights to illuminate the surrounding area. The Navy has stated that these lights will allow, or at least maximize, their ability to visually detect any turtles in the 150 foot area (A. Stone, Navy, personal communication). Sea turtles are typically much smaller in size and will usually only present their head above the surface of the water for a moment or two before submerging during patterns of normal breathing behavior, although it is not uncommon for sea turtles to take a series of breaths in close succession.

Without more detailed information or actual documentation of the noise levels produced by pile driving associated with the training associated with ELCAS, it is not currently possible to more accurately describe what an appropriate safety zone would be. Therefore, NMFS strongly supports the Navy's proposal to monitor the acoustic propagation of pile driving. NMFS would be very interested in having the Navy conduct this monitoring during ELCAS training in the Bay, since the propagation of sound is likely very different than that on the ocean side of the SSTC, given the characteristics of the bottom, among other contributing factors. If there are sea turtles known to be equipped with sonic tags in the area of and during pile driving operations, NMFS recommends that the Navy collaborate with NMFS to analyze movements of these turtles in the immediate area during pile driving. Following any monitoring of sound attenuation associated with pile driving, NMFS recommends that the Navy share the results and re-calculations of safety zones as they are available.

The proposed monitoring of a 150 foot mitigation zone was designed by the Navy, in consultation with NMFS, to avoid harassment of marine mammals, and given the very low likelihood of sea turtles in the area and the temporary nature of the exercises, monitoring this mitigation zone should reduce impacts to sea turtles to discountable levels. NMFS concurs with the Navy that activities associated with pile driving exercises is not likely to adversely affect green sea turtles.

In conclusion, the Navy has determined that the proposed action, with mitigation and monitoring, will avoid adverse effects to sea turtles. On the rare occasion that a green turtle might be in the area, it may be subjected to higher than normal ambient sound, but any exposure would be temporary and discountable, especially since the turtle would likely be transiting through the area. Based on all of the above, NMFS concurs with the Navy's determination that the proposed project, may affect, but is not likely to adversely affect, green sea turtles. Although NMFS does not anticipate adverse impacts to green turtles due to this project, in the unlikely event that a sea turtle is injured or killed as a result of the project, the Navy should immediately contact our regional stranding coordinator, Mr. Joe Cordaro, at (562) 980-4017. This event would trigger initiation of a formal consultation under section 7 of the ESA.

This concludes ESA consultation in accordance with 50 CFR 402.14(b)(1) for the Navy's proposed training activities within the SSTC. Further consultation may be required if: (1) new information reveals effects of the action may affect listed species or critical habitat in a manner or to an extent not previously considered; (2) current Project plans change in a manner that causes an effect to the listed species that was not previously considered; or (3) a new species is listed or critical habitat designated that may be affected by the identified action.

Thank you for consulting with NMFS. In the future, I recommend that inconsistencies and/or inaccuracies within the text of the documents you send to NMFS be reviewed thoroughly and corrected by Navy staff prior to our receipt, as a considerable amount of delay in this consultation was due to the inordinate amount of time spent reviewing and providing comments on earlier drafts of documents. If you have any questions, feel free to contact Christina Fahy at (562) 980-4023 or Christina.Fahy@noaa.gov.

Sincerely,



R. McInnis

for Rodney McInnis
Regional Administrator

cc: Copy to file:151422SWR2010PR00487

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