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3.16 PUBLIC SAFETY

Public safety issues include potential hazards inherent in flight operations, vessel movements, torpedo drops, mine laying, shore bombardment, underwater demolition, and onshore small arms firing. It is the policy of the Navy to observe every possible precaution in the planning and execution of all activities that occur onshore or offshore to prevent injury to people or damage to property.

3.16.1 Affected Environment

3.16.1.1 SOCAL Operating Areas

Military, commercial, institutional, and recreational activities take place in the Southern California (SOCAL) Operating Areas (OPAREAs). The Federal Aviation Administration (FAA) has established warning areas for military aircraft operations; however, most of the airspace and seaspace is available for co-use most of the time. Only hazardous activities require exclusive use of an area. The periods of use are scheduled and broadcast by the Navy through its Southern California Offshore Range (SCORE) web page and through Notices to Mariners (NOTMARs) and Notices to Airmen (NOTAMs).

The public typically accesses the offshore ocean areas for recreational purposes such as sport fishing, sailing, boating, tourist-related activities (sightseeing and whale watching), diving, and swimming. Warning Area 291 (W-291) is a Special Use Airspace (SUA) lying over international waters where the Navy conducts hazardous activities including missile firings, naval gunfire, and air-to-surface ordnance deliveries. Commercial and recreational vessels generally are allowed to operate in the SOCAL OPAREAs. During training events or exercises in these offshore areas, weapons deliveries are delayed or cancelled if the range is not clear. Prior to issuing a "Green Range," Navy personnel must ensure that the hazard footprint of the ordnance being fired is clear of nonparticipating surface vessels, divers, and aircraft.

Due to San Clemente Island's (SCI's) remote location, nearshore recreation in its vicinity is usually limited to military personnel and contractors stationed at SCI. Chartered and privately operated boats occasionally enter the nearshore areas of SCI for tourism and recreation. SCI's relatively warm waters, good underwater visibility, and largely pristine diving conditions make it a popular destination. A review of scuba diving charter advertisements shows dive trips scheduled as often as weekly by some operators. Most dive charters are scheduled for weekends. Diving occurs year-round, though the number of trips to SCI appears to peak during lobster season (October to March). Navy hazardous activities in the nearshore waters of SCI include airborne mine-laying training with wholly inert mine shapes, underwater demolition training, naval gunfire at targets in the Shore Bombardment Area (SHOBA), and air-to-surface munitions delivery in SHOBA.

Several exclusive use, security, and danger zones have been established around SCI (Figure 3.16-1, Table 3.16-1). These coastal areas are identified and described in 33 Code of Federal Regulations (C.F.R.) Parts 110, 165, and 334 as being restricted to naval vessels only or as presenting a hazard to mariners. The security zone, restricted anchorage, and restricted area around Wilson Cove are continuously restricted and regularly monitored.

Other designated zones are not continuously restricted. When not in use by the Navy, these areas are accessible by boaters, divers, and fisherman, with nearshore anchorages available. NOTMARs and NOTAMs are issued about the hazards of operating vessels or aircraft in the vicinity of SCI.



Figure 3.16-1: SCI Exclusive Use, Security, and Danger Zones

Table 3.16-1: San Clemente Island Exclusive Use, Security, and Danger Zones

Area	Description	Public Use
Wilson Cove		
Exclusive Use Zone (33 C.F.R. 110.218)	Located immediately offshore of Wilson Cove and used extensively by Navy ships for anchorage adjacent to the port facilities at Wilson Cove.	Anchoring is restricted to Navy vessels.
Security Zone (33 C.F.R. 165.1131)	Extends to the northeast from Wilson Cove for approximately 2 nm (4 km) from the coast and to the southeast for approximately 3 nm (6 nm) along the coast.	Entry prohibited except for Navy vessels, vessels authorized by the Navy, and emergencies.
Southeast Restricted Area (33 C.F.R. 334.920)	Covers the ocean areas near Naval Ordnance Test Station (NOTS) Pier and extends offshore for about 2 nm (4 km).	
West Cove		
Restricted Area (33 C.F.R. 334.921)	Extends to sea approximately 5 nm (9 km) to the southwest from the West Cove area, over the area where the underwater cables are laid to the acoustic sensors on the Southern California Anti-submarine Warfare (ASW) Range (SOAR).	When not in use by the Navy, available for public boating, diving, and fishing. No anchorage allowed in the West Cove restricted area. The public is informed of danger zone activities through the SCI website, NOTMARs, and NOTAMs.
Danger Zone (33 C.F.R. 334.960)	An approximately 1 nm by 3 nm (2 km by 6 km) rectangle for intermittent firing events, located 0.5 nm (0.9 km) offshore south of West Cove.	
Other		
Northwest Danger Zone (33 C.F.R. 334.961)	Extensive firing and demolition activities occur in this zone, located approximately 3 nm (6 km) off the northwestern end of SCI.	
SHOBA Danger Zone (33 C.F.R. 334.950)	Activities include naval gunfire, air-to-ground munitions delivery, and laser employment. Covers the entire southern third of SCI on both coasts.	

NOTES: nm - nautical miles, km - kilometer, C.F.R. - Code of Federal Regulations.

There are two possible mooring locations on the northern end of SCI. One is in Northwest Harbor and the other is in Wilson Cove (about 5 miles [mi.] south of Northwest Harbor on the eastern side of SCI). These buoys are normally for military use only.

3.16.1.1.1 Current Mitigation Measures

Navy activities in the SOCAL OPAREAs comply with numerous established safety procedures to ensure that neither participants nor nonparticipants engage in activities that would endanger life or property.

FACSFAC/SCORE Safety Procedures

Fleet Area Control and Surveillance Facility (FACSFAC) and SCORE have published safety procedures for activities on the offshore and nearshore areas (Department of the Navy [DoN] 1997b, 1999, 2004). These guidelines are directive for range users.

- Commanders are responsible for ensuring that impact areas and targets are clear prior to commencing activities that are hazardous.
- On the Southern California Anti-Submarine Warfare Range (SOAR), the use of underwater ordnance must be coordinated with submarine operational authorities. The coordination also applies to towed sonar arrays and torpedo decoys.
- Aircraft or vessels expending ordnance shall not commence firing without permission of the scheduling authority for their specific range.
- Firing units and targets must remain in their assigned areas, and units must fire in accordance with current safety instructions.

- Except for SHOBA, ships are authorized to fire their weapons only in offshore areas and only at specific distances from land, depending on the caliber and range of the weapons fired. The larger the caliber, the farther offshore the firing must take place.
- The use of pyrotechnic or illumination devices and marine markers such as smoke or dye markers is allowed only in assigned areas, to avoid the launch of Search and Rescue forces when not required. Aircraft carrying ordnance to or from ranges shall avoid populated areas to the maximum extent possible.
- Aircrews operating in W-291 are aware that nonparticipating aircraft are not precluded from entering the area and may not comply with a NOTAM or radio warning that hazardous activities are scheduled or occurring. Aircrews are required to maintain a continuous lookout for nonparticipating aircraft while operating under visual flight rules (VFRs) in W-291.

Navy Standard Operating Procedures (SOPs)

In addition to the FACSFAC and SCORE procedures, the Navy has instituted the following standard operating requirements for use of the SOCAL Range Complex.

Aviation Safety

Aircraft in W-291 fly under VFRs and under visual meteorological conditions. This means that the commanders of military aircraft are responsible for the safe conduct of their flight. Prior to releasing any weapons or ordnance, the impact area must be clear of nonparticipating vessels, people, or aircraft. The Officer Conducting the Exercise (OCE) is ultimately responsible for the safe conduct of range training. A qualified Safety Officer is assigned to each training event or exercise, and can terminate activities if unsafe conditions exist. Aircraft entering the SCI Air Traffic Area are required to be in radio contact with SCORE or the SCI control tower. Section 3.13.1 describes the role of the FAA in coordinating the use of controlled airspace.

Submarine Safety

Submarines routinely operate in the SOCAL OPAREAs. The SOAR range has an array of 84 hydrophones to track submarines, torpedoes, and simulated submarine targets. To be tracked accurately on SOAR, vehicles are equipped with pingers (noise makers), whose noise is picked up by the hydrophone array. This technology allows for geospatial (i.e., location) tracking. The submarines on SOAR can communicate with SCORE via an underwater telephone system installed on the range, and by radio if the vessel is on the surface or has an antenna extended above the surface.

To enhance the safety of submarines while on the range, minimum vertical and horizontal separation distances are specified. Vertical separation of at least 100 feet (ft) (30.5 meter [m]) is required between the top of a submarine's sail and the depth of a surface ship's keel, or of a towed sonar array or helicopter dipping sonar. If a submarine (or submarine simulated target, the MK-30) is at periscope depth, at least a 1,500-yard (yd) (1,372-m) horizontal separation from surface ships is maintained by directing surface ships to alter their courses. Other vessels are allowed to approach no closer than 1,500 yd (1,372 m).

When two submarines are on the range, vertical separation is maintained by operating the submarines at different depths. Exercise torpedoes fired at submarines are programmed to run at preset depths to ensure sufficient vertical clearance between the torpedoes and the target submarine.

Surface Ship Safety

Surface ships conduct anti-submarine training against submarines and simulated submarine targets (the MK-30 or MK-39) in the SOCAL OPAREAs. During these exercises, surface ships

maintain radio contact with SCORE. Prior to launching a weapon, ships are required to obtain a "Green Range," which indicates that all safety criteria have been satisfied, and that the weapons and target recovery conditions and recovery helicopters and boats are ready to be employed.

Missile Exercise (MISSILEX) Safety

Safety is the top priority and paramount concern during SCORE missile exercises. These exercises can be surface-to-surface, subsurface-to-surface, surface-to-air, or air-to-air. A Missile Exercise (MISSILEX) Letter of Instruction is prepared prior to any missile firing exercise. This instruction establishes precise ground rules for the safe and successful execution of the exercise. Any MISSILEX participant who observes an unsafe situation can communicate a "Red Range" order over any voice communication systems. SCORE is in radio contact with participants at all times during a MISSILEX.

3.16.1.2 San Clemente Island

SCI is a central feature of the SOCAL Range Complex. SCI's distance from the mainland and its complete Navy ownership make SCI and adjacent waters ideal for Fleet training, weapon and electronics systems testing, and research and development activities. This isolation from the mainland is the key to conducting activities in a way that minimizes hazards to the public. Onshore hazardous activities include onshore weapons firing and demolition training, small arms and artillery firing in SHOBA, and naval gunfire at targets in SHOBA.

3.16.1.2.1 Existing Conditions

Public Access and Proximity

SCI is owned by the Navy. No public use is allowed. Access to SCI is granted for military activities and for preapproved, nonmilitary uses such as scientific research. A scheduled contract aircraft shuttle transports personnel between Naval Air Station North Island (NASNI) and SCI. When not in use by the Navy, the nearshore areas (e.g., Pyramid Cove or Horse Beach Cove) are available to civilian vessels. Nearshore ocean areas may be within the designated or actual hazard footprint of onshore training activities; the Navy has identified these areas and taken steps to control access to them when necessary (see Figure 3.16-1).

Training Ranges

Live Fire Activities in the Shore Bombardment Area (SHOBA)

SHOBA is the only range on the west coast available for naval surface vessel live firing. SHOBA also hosts artillery firing and aircraft bombing exercises, several of which involve the use of laser-guided weapons. SHOBA is used for the full range of naval ordnance. A Ready Service Locker (RSL) and an 81-millimeter (mm) mortar are located at Observation Post 1 (OP-1), and an RSL is being requested for OP-3.

Small Arms and Demolition Ranges

SCI features small arms ranges (rifle, pistol, and automatic weapons), a hand grenade range, and a demolition range. The rifle range is located north of the runway, adjacent to the Basic Underwater Demolition/SEAL (BUD/S) Camp and Marine Operations (MAROPS) facilities. It is a 64-position, 300-yd (274-m) range, and is approved for small arms and automatic weapons. The hand grenade range is located immediately east of the rifle range. In addition, there is an old, approved machine gun range at Eel Point. The machine gun range was first approved for 0.50-caliber weapons in 1970 and was used by Naval Special Warfare (NSW) units. The range was later approved for M-79 grenade launchers, M-66 Light Anti-Armor-Weapon (LAAW) rockets, and all types of hand grenades. The Eel Point range is the subject of a current NSW proposal for reactivation, and is undergoing separate National Environmental Policy Act (NEPA) review.

NSW demolitions occur at the Underwater Demolition Team Land Training Site (the “donut”), located northeast of the rifle range. It was sited for 500-pound (lb) (227-kilogram [kg]) high explosives (net explosive weight [n.e.w.]) prior to 1975, and approval was later extended to automatic weapons firing. Two nearshore areas of Northwest Harbor are approved for underwater demolition: BUD/S Beach and Graduation Beach, which are active demolition training sites.

Munitions/Ordnance Storage

Ammunition and explosives are stored in bunkers and magazines on SCI. The types and amounts of materials that may be stored are determined by Department of Defense (DoD) safety regulations. Explosive Safety Quantity Distance (ESQD) arcs prescribe the minimum safe separation between the storage facilities and inhabited buildings. The Navy has established ESQD arcs for ordnance storage lockers used for SCI training activities.

The procedures for handling and storing munitions are found in Naval Sea Systems Command (NAVSEA) Ordnance Pamphlet (OP) 5, *Ammunition and Explosives Ashore, Safety Regulations for Handling, Storing, Production, Renovation, and Shipping*. RSLs are located in the BUD/S camp area north of the Naval Auxiliary Landing Facility (NALF) runway, at the Missile Assembly Building at NOTS Pier, and at OP-1 in SHOBA. There are six munitions storage bunkers or magazines in the Mill’s Circle area south of the VC-3 airfield. Each bunker is approved for up to 90,000 lb (40,823 kg) n.e.w. of ordnance.

Red Label areas are ordnance loading pads that are required for loading and off-loading explosives from cargo aircraft. The storage and Red Label areas on SCI are approved for explosives. Table 3.16-2 summarizes the storage capabilities of the ordnance storage locations.

Table 3.16-2: Ordnance Storage Facilities

Type	Capacity (lb)	ESQD Arc Distance (ft)
BUD/S Camp RSL 1	2,000	1,250
BUD/S Camp RSL 2	2,000	1,250
Missile Assembly Building RSL	1,000	1,250
Magazine 60320	90,000	1,795
Magazine 60321	90,000	1,795
Magazine 60322	90,000	1,795
Magazine 60323	90,000	1,795
Magazine 60324	90,000	1,795
Magazine 60325	90,000	1,795
NALF Red Label Area	10,000	1,250
VC-3 Red Label Area	5,000	1,250
OP-1 RSL	2,000	1,250

Source: SCI Explosive Safety Instructions

Transportation of Munitions

Ordnance arrives on SCI by either aircraft or ship. There are two Red Label areas where aircraft can off-load ordnance. The Red Label, or hazardous cargo area, at the airfield provides an approved area for the off-loading of ordnance from aircraft. This area is located at the western end of the NALF SCI airfield where the parallel taxiway joins the runway. The fixed-wing Red Label area is approved for up to 10,000 lb (4,538 kg) of explosives, n.e.w. Another Red Label area for rotary-wing aircraft is located at the eastern end of the VC-3 old airfield ramp. This area is approved for up to 5,000 lb (2,269 kg) of explosives, n.e.w.

After off-loading from aircraft, ordnance is transported to storage locations or directly to a designated range for use. The route from the airfield to the BUD/S camp is around the runway on Perimeter Road. The route to the storage magazines and SHOBA is south on Perimeter Road to Ridge Road. A bypass on Ridge Road allows munitions trucks traveling from the airfield to the

magazine or SHOBA to avoid Wilson Cove. If ordnance is off-loaded from a barge, ship, or boat in Wilson Cove, the route to the storage areas or ranges is along Wilson Cove Road north to Ridge Road. The transportation of ordnance through Wilson Cove requires convoys to pass through SCI's only built-up area where there are large numbers of personnel and structures.

3.16.1.2.2 Current Mitigation Measures

Munitions Safety

In all cases where munitions are expended on SCI, a qualified Range Safety Officer (RSO) is on duty. In addition, there are RSOs on duty at the Range Operations Center (ROC) at SCORE. Safety of participants is the primary consideration for all activities on weapons ranges on SCI. The fundamental guidance adhered to by units operating on SCI is that the range must be able to contain the hazard footprints of the weapons employed. The locations of firing points, impact areas, and surface danger zones form a ground footprint on SCI and in the nearshore waters. RSOs ensure that these areas are clear of personnel during activities. After every live-fire event, each participating unit ensures that all weapons are safe and cleared of rounds. The RSOs are also responsible for the emergency medical evacuation of people from the range in case of mishap.

Laser Safety

A comprehensive safety program exists for the use of lasers. Lasers are used for precision range finding and by target designation systems for guided munitions. Procedures are required to protect individuals from the hazard of severe eye injury due to the nature of the laser light. The completion of a laser safety course, protective goggles, a medical surveillance program, and mishap reporting procedures are required by all units conducting laser training. Laser safety requirements for aircraft include a dry run to ensure that target areas are clear. In addition, during actual laser use, the aircraft run-in headings are restricted to preclude inadvertent lasing of areas where personnel may be present.

Lasers are used occasionally on the nearshore and onshore ranges for both precision distance range finding and target designation for guided munitions. Strict precautions and written instructions are in place and observed by laser users to ensure no personnel suffer eye injury due to the light energy. When laser training occurs in SHOBA, the SHOBA land area is considered a Laser Hazard Area.

Electromagnetic Radiation Safety

Communications and electronic devices such as radar, electronic jammers, and other radio transmitters produce electromagnetic radiation (EMR). Equipment that produces an electromagnetic field has the potential to generate hazardous levels of EMR. An EMR hazard exists when transmitting equipment generates electromagnetic fields that induce currents or voltages great enough to trigger electro-explosive devices in ordnance, harm people or wildlife, or create sparks that can ignite flammable substances in the area. This radiation can cause health hazards to people or cause explosive hazards to ordnance or fuels. Hazards are reduced or eliminated by establishing minimum distances from EMR emitters for people, ordnance, and fuels.

EMR is expressed in milliwatts per square centimeter. Its effects are directly proportional to the frequency of the source of EMR. For example, the lower the frequency of the EMR source, the lower the acceptable power density threshold before a potential hazard to human health exists. Likewise, the higher the frequency of the EMR source, the higher the acceptable power density threshold before health effects occur.

Hazards of Electromagnetic Radiation to Personnel, Hazards of Electromagnetic Radiation to Ordnance (HERO), and Hazards of Electromagnetic Radiation to Fuel have been determined for EMR sources based on frequency and power output. Site-specific studies are needed to determine

actual required separation distances. A study published in March 1996 by the Naval Surface Warfare Center, Dahlgren Division, was completed on the hazards of EMR for ordnance on SCI (DoN 1996). The report provides data on the status of HERO from stationary EMR sources on SCI, suggests emission controls for mobile sources aboard boats or in vehicles, and cautions on the use of ground-penetrating radar in areas known to contain unexploded ordnance. The report finds that no emissions from stationary sources exceed the Maximum Allowable Environment for HERO-susceptible ordnance. For HERO-unsafe ordnance, the report recommends emission controls for the Very High Frequency transmitter in Building 60212 and the High Frequency transmitters in Buildings 60226 and 60502. The required separation distances from Buildings 60226 and 60502 are 1,000 ft and 200 ft (305 m and 61 m), respectively, for HERO-unsafe ordnance.

Because of programmed improvements in both communications and radar tracking systems and the increased use of the Electronic Warfare Range, the electronic emissions environment on SCI is periodically reviewed. Navy personnel typically use low-power communications equipment (e.g., two-way radios, cellular telephones) during training.

3.16.2 Environmental Consequences

3.16.2.1 Approach to Analysis

Public safety impacts are considered significant if the general public is substantially endangered as a result of Navy activities on the ranges. For each training activity or group of similar activities, an estimate of risk to the general public was formulated, based on the Navy's current set of safety procedures for island and range activities. Activities in the SOCAL Range Complex are conducted in accordance with guidance provided in FACSFAC San Diego Instruction 3550.1, *SCORE User's Manual*. The instruction provides operational and safety procedures for all normal range events. Its emphasis is on providing the necessary information to range users so that they can operate safely and avoid affecting nonmilitary activities such as shipping, recreational boaters, divers, and commercial or recreational fishermen. Several factors were considered in evaluating the effects of the Navy's proposed activities on public safety. These factors include proximity to the public, ownership, access control, scheduling, public notification of events, frequency of events, duration of events, range safety procedures, operational control of training events, and safety history.

For terrestrial training activities, wildfires are a potential safety hazard. The primary cause of wildfires during military training on SCI is ordnance. The primary threat of wildfires is not to the public, however, but to terrestrial biological resources. Range safety procedures prohibit public access to ranges during live-fire events.

3.16.2.2 No Action Alternative

3.16.2.2.1 SOCAL Operating Areas

Public Safety

Fleet training will continue to occur in the SOCAL OPAREAs. Most offshore activities expend torpedoes, sonobuoys, or targets from ships, submarines, or aircraft. Both high explosive and nonexplosive practice ordnance are used in offshore activities. While activities are in progress, an RSO is always on duty. The RSO can halt an activity if a potentially unsafe condition arises. Range safety officials ensure that weapons platforms (e.g., ships, aircraft, submarines), targets, and weapons (e.g., naval guns, missiles, bombs) are operated safely, and that air operations and other hazardous Fleet training activities are safely executed in controlled areas.

The U.S. Navy's standard range safety procedures are designed to avoid risks to the public and to Navy activities. When aircraft or surface vessels fire ordnance, range procedures and safety practices ensure that there are no vessels or aircraft in the intended path or impact area of the

ordnance. Before any training event is allowed to proceed, the target area is determined to be clear using ship sensors, visual surveillance of the range from aircraft and range safety boats, and radar and acoustic data.

The hazard footprint of the ordnance to be used is based on the range of the weapon, and includes a large safety buffer to account for the item going off-target or functioning prematurely. For activities with a large hazard footprint (e.g., MISSILEXs), special sea and air surveillance measures are taken to search for, detect, and clear the area of intended activities. Aircraft are required to make a preliminary pass over the intended target area to ensure that it is clear of boats, divers, or other nonparticipants. Aircraft carrying ordnance are not allowed to fly over surface vessels.

Target areas will be cleared of personnel prior to conducting training, so the only public health and safety issue will be if an activity exceeded the safety area boundaries. Risks to public health and safety are reduced, in part, by providing termination systems on some of the missiles. In those cases where a weapon system does not have a flight termination capability, the target area will be determined to be clear of unauthorized vessels and aircraft, based on the flight distance the vehicle can travel, plus a 5-mi. area beyond the system performance parameters.

In addition, all training activities must comply with DoD Directive 4540.1, *Use of Airspace by U.S. Military Aircraft and Firing Over the High Seas* (DoD 1981) and OPNAVINST 3770.4A, *Use of Airspace by U.S. Military Aircraft and Firing Over the High Seas* (DoN 1981), which specify procedures for conducting aircraft operations and for firing missiles and projectiles. The missile and projectile firing areas are to be selected "so that trajectories are clear of established oceanic air routes or areas of known surface or air activity" (DoD 1981).

Demolition activities are conducted in accordance with Commander Naval Surface Force, U.S. Pacific Fleet (COMNAVSURFPAC) Instruction 3120.8F (DoN 1993). COMNAVSURFPAC Instruction 3120.8F specifies detonation procedures for underwater ordnance to avoid endangering the public or affecting other nonmilitary activities, such as shipping, recreational boating, diving, and commercial or recreational fishing.

Many offshore activities use mid-frequency sonar. The effect of sonar on humans varies with the frequency of sonar involved. Of the three types of sonar (high-, mid-, and low-frequency), mid-frequency and low-frequency have the greatest potential to affect humans (low-frequency sonar is not used in the SOCAL OPAREAs). The Naval Submarine Medical Research Laboratory and the Navy Experimental Diving Unit researched mid-frequency sonar to determine permissible limits of exposure to mid-frequency sonar. This research determined that an unprotected diver could safely operate for over 1 hour at a distance of 1,000 yd (914 m) from the Navy's most powerful sonar. At this distance, the sound pressure level will be approximately 190 decibels (dB). At 2,000 yd (1,829 m), or approximately 1 nm (2 km), an unprotected diver could operate for over 3 hours. Exposure to mid-frequency sonar in excess of 190 dB can cause slight visual-field shifts, fogging of the faceplate, spraying of water within the mask, and general ear discomfort of a temporary nature.

Recreational diving within the SOCAL OPAREAs occurs primarily at known dive sites. The locations of popular dive sites are well documented, dive boats are typically well marked, and diver-down flags are visible from the ships conducting the training, so negative interactions between Navy training activities in offshore areas and scuba divers are unlikely.

The Navy temporarily limits public access to areas where there is a risk of injury or property damage. The Navy notifies the public of hazardous activities through the use of NOTAMs and NOTMARs and the SCORE website. Prior public notification of Navy training activities, use of known training areas, avoidance of nonmilitary vessels and personnel, and the remoteness of the

offshore training areas from coastal population centers reduce the potential for interaction between the public and Navy vessels. To date, these conservative safety strategies have been successful.

Public Health

Management of hazardous materials and hazardous wastes during Navy training exercises in the SOCAL OPAREAs is addressed in Section 3.3, Hazardous Materials and Waste. No substantial releases of these materials to the environment are anticipated.

Materials expended on the sea ranges during U.S. Navy training exercises include liquid and soluble constituents of concern that quickly disperse in the water column. These materials also include solid constituents of concern that quickly settle to the ocean floor and soon become buried in sediment, coated by corrosion, or encrusted by benthic organisms. Because of the very small quantities of these materials relative to the extent of the sea ranges, the volume of the ocean, and the remoteness of the sea ranges relative to human populations, their concentrations in areas of potential human contact generally are undetectable. This issue is analyzed in detail in Section 3.4, Water Resources.

With regard to EMR hazards, SOPs are in place to protect Navy personnel and the public. These procedures include setting the heights and angles of EMR transmissions to avoid direct exposure, posting warning signs, establishing safe operating levels, and activating warning lights when radar systems are operational. Sources of EMR include radar, navigational aids, and Electronic Warfare (EW). These systems are the same as, or similar to, civilian navigational aids and radars at local airports and television weather stations throughout the United States. EW systems emit EMR similar to that from cell phones, hand held radios, commercial radio, and television stations. Measures also are in place to avoid excessive exposure from EMR emitted by military aircraft.

3.16.2.2.2 San Clemente Island

Live-Fire Activities in the Shore Bombardment Area

Most of the training in SHOBA takes place onshore, although some activities involve weapons firing by aircraft or from ships in nearby waters. The boundaries and extent of the nearshore SHOBA Danger Zone are published in 33 C.F.R. § 334.950.

Explosive Ordnance Disposal (EOD) activities have no public safety impacts because there is no routine public access to SCI. Ground access in SHOBA's two impact areas is hazardous because of the potential for military activities and the presence of unexploded ordnance (UXO). For the remaining SHOBA activities that expend munitions from aircraft or surface vessels, the Navy uses advance notice and scheduling, and strict on-scene procedures are in place to prevent firing of weapons without first ensuring that the firing danger area is clear of civilian vessels, aircraft, or other nonparticipants. Aircraft are required to make a preliminary pass over the target prior to dropping any ordnance. If the target area is not clear, they are precluded from dropping their ordnance. This requirement applies to both nonexplosive practice weapons and high explosive bombs. The public is notified of the location, date, and time of hazardous activities via NOTAMs, NOTMARs, and the SCORE website.

To ensure that no unauthorized personnel have access to SHOBA during hazardous activities, ground access is strictly controlled. This control is accomplished by locked gates and visual confirmation that the area is clear of personnel. For NSW activities, the RSO ensures the area is clear. For other ground activities, SCORE or the Naval Gunfire Liaison Officer ensures the area is clear.

In the history of SHOBA, there have been no recorded accidents resulting in injury to personnel or property damage. During an exercise, helicopters are on standby to fight any wildfires resulting from training activities. These procedures to protect the public from harm and the limits on public

access onshore at SCI ensure that the effects of SHOBA training and testing activities on public safety will be negligible.

Amphibious Warfare Training

U.S. Marine Corps (USMC) amphibious activities vary from small boat raids to major events with several Landing Craft Air Cushion (LCAC), Landing Craft Utility (LCU), Amphibious Assault Vehicles (AAVs), or Expeditionary Fighting Vehicles (EFVs) coming ashore simultaneously on different beach areas. A portion of the Marines may be airlifted to SCI landing zones by helicopter. High explosive ordnance is not expended in the over-the-beach portion of the amphibious assaults. During the time that the LCACs, LCUs, AAVs, or EFVs are transiting toward the shore from the larger amphibious assault ships, the transit lanes are temporarily cleared of private vessels to minimize any hazard to the public. Prior notification of activities, avoidance of nonmilitary vessels, and low frequency of activities tend to prevent interaction between civilian vessels and the amphibious vehicles.

Naval Special Warfare

Access control is the key to reducing the risk to the public due to the hazardous nature of NSW training. These training activities use demolition explosives, both on land and underwater; small arms firing on static ranges; land navigation training; and Sea, Air, Land (SEAL) platoon-sized events using high explosive ordnance in authorized areas. Because there is no general public access to SCI, the activities occurring on SCI pose no risk to public safety. For those activities with an offshore or nearshore component, the Navy ensures that the danger area is clear of civilian boats, divers, or aircraft before any hazardous operation commences. Activities are cancelled or delayed if there is any doubt about the safety of the public or the participants. During the use of high explosive ordnance at any of the NSW training areas, the designated RSO is responsible for the safety of the participants and nonparticipants. RSOs are trained to evaluate the potential hazards of activities by a formal risk assessment process. They also provide range safety briefings and debriefings prior to and after training events. Radio communications are used extensively during exercises to avoid unsafe situations. The area used for training is isolated by the use of security guards, if necessary.

Due to the strictly controlled nature of the NSW training on SCI, this training will have no effect on public safety.

Strike Warfare

Bombing Exercises (BOMBEXs) occur on land exclusively in SHOBA; these activities are described above. Combat Search and Rescue (CSAR) training occurs over and on SCI, where public access is prohibited. No public health or safety effects result from these activities.

Other Island Operations

Other Island Operations include EOD training and NALF operations. These activities occur in areas that are closed to the general public. The explosive destruction of munitions is hazardous, but the areas in which these activities occur are very isolated. These activities typically do not pose a public safety concern.

Operations at NALF are generally restricted to military aviation and contract flights to bring personnel to SCI and return them to the mainland. A few nonmilitary general aviation flights occur at the airfield, but only for official business with prior permission granted. NALF is an emergency airfield for general aviation traffic if a suitable alternate airfield is not available. Due to the remoteness of SCI from major air traffic routes and the mainland, military flight operations at NALF do not affect the major civil airway structure on the mainland. Most of SCI's air traffic operates at low altitudes, so the trans-Pacific air routes between SCI and Santa Catalina Island are not affected by NALF airfield operations.

Research, Development, Test and Evaluation

SCI and adjacent waters accommodate a variety of Research, Development, Test, and Evaluation (RDT&E) activities. Most tests are benign activities that can be executed on a co-use basis with other users. The major RDT&E events that have public safety implications are tests involving Tomahawk missiles, Standard missiles, Joint Stand-Off Weapons (JSOWs), Unmanned Aerial Vehicles (UAVs), and sonobuoys. In these test scenarios, each system has a ground hazard footprint and may also require a large amount of cleared airspace.

Before any missile is fired or any ordnance is dropped, the Navy ensures that no civilian boats are in the hazard footprint of the weapon to be fired. The events are scheduled well in advance, and temporary access restrictions are announced by NOTMARs and NOTAMs, which are also posted on the SCORE website. In addition, there is extensive coordination with the FAA to ensure that no aircraft under FAA control are at risk. For long-range missile systems, such as the Tomahawk, chase aircraft follow the missile during flight so that, if a malfunction occurs, the missile can be destroyed in flight by the Safety Observer in the chase aircraft. If the Navy cannot confirm that the airspace or sea area covered by the hazard footprint is clear of nonparticipants, the test is either delayed or canceled.

Sonobuoys are tested exclusively in the SCI Underwater Range (SCIUR) east of Wilson Cove. The same procedures as described above are used for this operation. The Navy ensures that the designated sonobuoy target area is clear of boats, aircraft, divers, or other nonparticipants. UAVs are flown from SCI only after extensive coordination with SCI Air Traffic Control and the FAA.

3.16.2.3 Alternative 1

3.16.2.3.1 SOCAL Operating Areas

Offshore activities proposed under Alternative 1 would have all the components of the No Action Alternative, but the training tempo would increase by about 24 percent and new weapons platforms and systems would be employed. The safety procedures implemented under this alternative would be the same as those described above under the No Action Alternative. The remoteness of the offshore areas, the use of temporary access restrictions, and public notification procedures would substantially reduce potential safety risks during these activities.

Public Safety

Several training activities would experience increases from current levels in support of the Fleet Response Training Plan (FRTP). Only the number of training activities would increase; no new types of training would be introduced. Increases in the number of individual training exercises would incrementally increase the potential for conflicts with nonparticipants. Given the Navy's comprehensive, conservative safety procedures and its excellent safety record for these activities, however, the actual risk to public safety from training activities would remain very low.

Public Health

Management of hazardous materials and hazardous wastes in conjunction with U.S. Navy training exercises in the SOCAL OPAREAs is addressed in Section 3.3, Hazardous Materials and Waste. No substantial releases of these materials to the environment are anticipated.

The quantities of materials expended on the sea ranges during Navy training exercises would increase moderately under Alternative 1, compared with the quantities expended under the No Action Alternative. The natures of these materials and their environmental fates are analyzed in detail in Section 3.4, Water Resources.

3.16.2.3.2 San Clemente Island

The overall tempo of training activities on SCI, aside from NALF airfield operations, would increase by about 45 percent relative to that of the No Action Alternative. NALF operations would increase by about 5 percent under Alternative 1, relative to the No Action Alternative.

Activities in Shore Bombardment Area

SHOBA training under Alternative 1 would have all the components of the No Action Alternative, but at an increased rate and with the addition of Training Areas and Ranges (TARs) 20, 21, and 22. Training events in each of these TARs would employ high explosive ordnance under highly controlled conditions. Temporary access restrictions to the nearshore waters of these TARs are proposed to ensure public safety. If the nearshore waters were not clear of nonparticipants, the Navy would delay the training until the areas were clear. A combination of controlled access, public notification of hazardous activities, and adherence to range safety procedures would substantially limit the public safety risks of these activities.

Amphibious Training

Under Alternative 1, one battalion-size landing of about 1,500 personnel, lasting up to 4 days and employing the full combined arms team used by the USMC, would occur each year. Marine forces would come ashore over 2 days, with the force landing at West Cove, Northwest Harbor, Wilson Cove, or SHOBA. About 20 ships and amphibious vehicles would be involved on the busiest training day. Although the number of ships and amphibious vehicles would be larger than for most SCI activities, they would be spread over a large area of ocean. The only live-firing during the exercise would occur in SHOBA. Once the Marines were on shore, temporary access restrictions to the nearshore waters would be lifted.

Exercises of this magnitude would be scheduled well in advance. Website notification, NOTAMs, and NOTMARs would be provided, and temporary access restrictions would be announced on the SCORE website (www.scisland.org). The extensive planning, scheduling, briefing, command and control, and training for these exercises would substantially reduce the potential for any public safety effects. Due to the highly controlled nature of these amphibious exercises and the Navy's procedures for informing the public of the scheduled activities, effects on public safety would be negligible.

Naval Special Warfare

Alternative 1 would include all NSW training activities described under the No Action Alternative, plus 19 new TARs. All of the new TARs would be located on land, except for TARs 7 and 8, which are water drop zones (no live-firing is proposed in TARs 7 and 8). When not in use, TARs 7 and 8 would be open for use by the public. The expenditure of high explosive ordnance in the on-land TARs would be tightly controlled. The TARs are outside of the traditional live-fire area of SHOBA, so special procedures would be developed to ensure safety. These procedures would include (1) scheduling, (2) providing advance notification to island personnel, (3) implementing range surveillance 30 to 60 minutes prior to initiation, (4) ensuring visual confirmation by the RSO that the area is clear of all nonparticipants, (5) ensuring weather conditions allow clear visibility of all targets and impact areas, (6) ensuring all unit members have been briefed and trained for their roles, (7) designating a safe area for nonparticipants, (8) ensuring proper range guards and road barricades are in place, and (9) briefing all personnel on fire-fighting equipment and location. Because the general public does not have access to SCI, the effects of these activities on public safety would be negligible with the continued implementation of established Navy safety procedures.

Other Island Operations

Under Alternative 1, Other Island Operations would include the same activities as considered under the No Action Alternative, but with small increases in their total number. The effects would be similar to those described under the No Action Alternative.

Under Alternative 1, airfield operations would increase by about 5 percent over the No Action Alternative. The conditions and types of operations at NALF SCI would be the same as described under the No Action Alternative. Since the existing air traffic control safety infrastructure at NALF SCI could adequately accommodate this increase in operations, effects on public safety would be negligible.

Research, Development, Test and Evaluation

Under Alternative 1, RDT&E activities would have all the components of the No Action Alternative, but UAVs would not be tested. The Mine Shape Drop tests and the Land Attack Standard Missile (LASM) tests require temporary exclusive use of the range to expend these munitions. The Mine Shape Drop tests have a very small hazard footprint, and the RSO can easily determine if the target area is clear of civilian boats, divers, or aircraft.

LASMs can have very large hazard footprints (up to 100 mi. [161 km] in length). The test planning process for this activity would include a substantial public safety effort and hazard analysis. Specific test plans and safety annexes would be developed prior to each test event and reviewed by multiple Navy commands. A test would not proceed unless the safety implications of the tests were fully resolved. Navy surface ships and aircraft would observe the hazard area to ensure that no civilian boats or aircraft were endangered. Systems tests requiring large hazard footprints are infrequent, and these systems would not be fired unless the Navy was confident that the test area was clear of public vessels and aircraft. Due to the Navy's attention to safety for the testing of new systems with large hazard footprints, the effects of increased RDT&E activities on public safety would be negligible.

3.16.2.4 Alternative 2

3.16.2.4.1 SOCAL Operating Areas

Offshore events proposed under Alternative 2 would have all the components of Alternative 1, but the number of annual events would increase by about 26 percent over the No Action Alternative. The safety procedures implemented under this alternative would be the same as those described above under the No Action Alternative. The remoteness of the offshore areas, the use of temporary access restrictions, and public notification procedures would substantially reduce potential safety risks during these activities.

Public Safety

Several training activities would experience increases from current levels in support of the FRTP. Only the number of training activities would increase; no new types of training would be introduced. Increases in the number of individual training exercises would increase the potential for conflicts with nonparticipants. Given the Navy's safety procedures and its excellent safety record for these activities, however, the actual potential for public safety impacts from training activities would remain very low.

The installation of the Shallow Water Training Range (SWTR) is a temporary activity confined to Navy land and sea training areas. Only authorized Navy and contractor personnel would be allowed in the vicinity of work areas. The Navy would use standard noticing procedures to ensure that members of the general public did not approach vessels engaged in installation activities. No effects on public health or safety are anticipated.

Public Health

Management of hazardous materials and hazardous wastes in conjunction with Navy training exercises in the SOCAL OPAREAs is addressed in Section 3.3, Hazardous Materials and Waste. No substantial releases of these materials to the environment are anticipated.

The quantities of materials expended on the sea ranges during Navy training exercises would increase substantially under Alternative 2, compared with the quantities expended under the No Action Alternative. The natures of these materials and their environmental fates are described in Section 3.16.2.2.1. This issue is analyzed in detail in Section 3.4, Water Resources.

3.16.2.4.2 San Clemente Island

The overall tempo of training activities on SCI would increase by about 62 percent relative to that of the No Action Alternative.

Live Fire Activities in the Shore Bombardment Area

SHOBA training under Alternative 2 would have all the components of Alternative 1. Alternative 2 would involve more events, however, with increases mostly in naval gun fire, air strikes, close air support, and NSW activities. The safety procedures described under the No Action Alternative also would be included under Alternative 2. Therefore, effects of SHOBA activities on public safety would be negligible.

Amphibious Warfare Training

Under Alternative 2, two USMC Battalion Landings would occur per year, rather than one per year as described under Alternative 1 (this activity does not occur under the No Action Alternative). Effects on public safety would be negligible, however, because this activity occurs in areas from which the public is excluded.

Naval Special Warfare

The tempo of NSW activities under Alternative 2 would be substantially greater than under the No Action Alternative. These increases in activities would not measurably increase public safety risks, however, because the public is generally excluded from the areas where the activities take place and the Navy's safety procedures (described under the No Action Alternative) would ensure that nonparticipants were not endangered.

Other Island Operations

Components of other island operations under Alternative 2 would be the same as those described for Alternative 1 but the anticipated number of events would increase substantially. These activities generally do not affect public safety, and increasing their tempo would not affect public safety. For example, EOD operations would increase from 4 per year under the No Action Alternative to 10 per year under Alternative 2, but these on-island disposal operations pose no risk to public health or safety under any scenario.

Under Alternative 2, airfield operations would increase by about 9 percent over the No Action Alternative. The types of activities at NALF SCI would be the same as under the No Action Alternative. The existing air traffic control safety infrastructure at NALF SCI could adequately accommodate this increase in activities, so effects on public safety would be negligible.

Research, Development, Test and Evaluation (RDT&E)

Alternative 2 consists of the same RDT&E events as Alternative 1, with minor increases in the numbers of events. Public notification, temporary access restrictions, and the remoteness of these test events are key factors in ensuring that the general public would not be at risk.

3.16.3 Mitigation Measures

Current mitigation measures are addressed in Sections 3.16.1.1.1 and 3.16.1.2.2. No additional mitigation measures have been identified as necessary or appropriate.

3.16.4 Unavoidable Adverse Environmental Effects

No unavoidable adverse environmental effects were identified.

3.16.5 Summary of Effects by Alternative

Table 3.16-3 summarizes the effects and mitigation measures related to public safety for the No Action Alternative, Alternative 1, and Alternative 2.

Table 3.16-3: Summary of Public Safety Effects

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO12114 (Non-U.S. Territorial Waters)
No Action Alternative	<ul style="list-style-type: none"> Range clearance procedures are implemented prior to activities for both on-island and water range areas. Activities will not proceed unless the range is clear of nonparticipants. Therefore, there is no risk to public safety. 	<ul style="list-style-type: none"> Range clearance procedures are implemented prior to activities for range areas in non-U.S. Territorial Waters. Activities will not proceed unless the range is clear of nonparticipants. Therefore, there is no risk to public safety.
Alternative 1	<ul style="list-style-type: none"> Impacts on Public Safety under Alternative 1 would be the same as the No Action Alternative. 	<ul style="list-style-type: none"> Impacts on Public Safety under Alternative 1 would be the same as the No Action Alternative.
Alternative 2 (Preferred)	<ul style="list-style-type: none"> Impacts on Public Safety under Alternative 2 would be the same as the No Action Alternative. 	<ul style="list-style-type: none"> Impacts on Public Safety under Alternative 2 would be the same as the No Action Alternative.
Mitigation Measures	<ul style="list-style-type: none"> FACSFAC and SCORE have published safety procedures for activities on the offshore and nearshore areas that are directive for range users. Aircraft in W-291 fly under VFR and under visual meteorological conditions. To enhance the safety of submarines while on the range, minimum vertical and horizontal separation distances are specified. Prior to launching a weapon, ships are required to obtain a "Green Range," which indicates that all safety criteria have been satisfied, and that the weapons and target recovery conditions and recovery helicopters and boats are ready to be employed. A MISSILEX Letter of Instruction is prepared prior to any missile firing exercise. This instruction establishes precise ground rules for the safe and successful execution of the exercise. Procedures are required to protect individuals from the hazard of severe eye injury due to the nature of the laser light. Hazards of EMR to Personnel, Ordnance and Fuel have been determined for EMR sources based on frequency and power output. 	<ul style="list-style-type: none"> FACSFAC and SCORE have published safety procedures for activities on the offshore and nearshore areas that are directive for range users. Aircraft in W-291 fly under VFR and under visual meteorological conditions. To enhance the safety of submarines while on the range, minimum vertical and horizontal separation distances are specified. Prior to launching a weapon, ships are required to obtain a "Green Range," which indicates that all safety criteria have been satisfied, and that the weapons and target recovery conditions and recovery helicopters and boats are ready to be employed. A MISSILEX Letter of Instruction is prepared prior to any missile firing exercise. This instruction establishes precise ground rules for the safe and successful execution of the exercise. Procedures are required to protect individuals from the hazard of severe eye injury due to the nature of the laser light. Hazards of EMR to Personnel, Ordnance and Fuel have been determined for EMR sources.

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