Appendix A: Navy Activities Descriptions

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APPENDIX A NAVY ACTIVITIES DESCRIPTIONS

The United States (U.S.) Department of the Navy's (Navy's) activities can generally be categorized as either training or testing. Training activities involve Navy service members employing tactics and established weapons systems in a realistic manner to prepare for combat or similar situations. Testing activities, which include research, development, test, and evaluation (RDT&E), are performed to ensure that U.S. military forces have the latest technologies with which to engage in hostile or hazardous situations.

The descriptions that follow are intended to provide a better understanding of each training and testing activity commonly conducted by naval forces.

The Navy's training activities are organized generally into eight primary mission areas and a miscellaneous category (other training) that includes those activities that don't fall within one of the eight primary mission areas, but are an essential part of Navy training. Many of the activities described here may have a land component, occurring both at sea and on or over land. In this Environmental Impact Statement (EIS)/Overseas EIS (OEIS), only the at-sea component is analyzed, except for activities occurring in the Olympic Military Operations Area (MOA) which have a shoreline component.

A.1 TRAINING ACTIVITIES

The Navy's training activities are organized generally into eight primary mission areas (two of which are not conducted in the Northwest; Amphibious Warfare and Strike Warfare) and a miscellaneous category (Other Training) that includes those activities that do not fall within a primary mission area, but are an essential part of Navy training.

A.1.1 ANTI-AIR WARFARE TRAINING

Anti-air warfare is the primary mission area that addresses combat operations by air and surface forces against hostile aircraft. Navy ships contain an array of modern anti-aircraft weapon systems, including naval guns linked to radar-directed fire-control systems, surface-to-air missile systems, and radar controlled cannons for close-in point defense. Strike/fighter aircraft carry anti-aircraft weapons, including air-to-air missiles and aircraft cannons. Anti-air warfare training encompasses events and exercises to train ship and aircraft crews in employment of these weapons systems against simulated threat aircraft or targets. Anti-air warfare training includes surface-to-air gunnery, surface-to-air and air-to-air missile exercises, and aircraft force-on-force combat maneuvers.

A.1.1.1 Air Combat Maneuver

Activity Name	Activity Description	
Anti-Air Warfare		
Air Combat Maneuver	**Short Description:** Aircrews engage in flight maneuvers designed to gain a tactical advantage during combat.	
Long Description	Basic flight maneuvers where aircrew engage in offensive and defensive maneuvering against each other. During an air combat maneuver engagement, no ordnance is fired, countermeasures such as chaff and flares may be used. These maneuvers typically involve two aircraft; however, based upon the training requirement, air combat maneuver exercises may involve over a dozen aircraft. Participants typically are two or more aircraft. No weapons are fired.	
Information Typical to the Event	**Platform:** Fixed-wing aircraft (e.g., EA-6B, EA-18G) **Systems:** None **Ordnance/Munitions:** None **Targets:** None **Duration:** 1–2 hours	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Aircraft noise **Energy:** None **Physical Disturbance and Strike:** None **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	Chaff and flares	
Assumptions Used for Analysis	No munitions fired. Flare and chaff may be used. All flare and chaff analyzed under flare exercise and chaff exercise events.	

A.1.1.2 Missile Exercise (Air-to-Air)

Activity Name	Activity Description	
Anti-Air Warfare		
Missile Exercise (Air-to-Air)	**Short Description:** Aircrews defend against threat aircraft with missiles.	
Long Description	An event involves two or more jet aircraft and a target. Missiles are non-explosive practice munitions or high explosive warheads. The target is an unmanned aerial target drone (e.g., BQM-34, BQM-74), a Tactical Air-Launched Decoy, or a parachute suspended illumination flare. Target drones deploy parachutes and are recovered by boat or helicopter; Tactical Air-Launched Decoys and illumination flares are expended and not recovered. These events typically occur at high altitudes. Anti-air missiles may also be employed when training against threat missiles.	
Information Typical to the Event	**Platform:** Fixed wing aircraft (e.g., FA-18C, EA-18G, F-35) **Systems:** None **Ordnance/Munitions:** Anti-air missiles (e.g., AIM-7, AIM-9, AIM-120 [non-explosive and high explosive]) **Targets:** BQM-34, BQM-74, Tactical Air-Launched Decoy, illumination flare (e.g., LUU-2) **Duration:** 1–2 hours	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** None **Energy:** None **Physical Disturbance and Strike:** Military expended materials strike (target and missile fragment) **Entanglement:** Decelerator/parachutes **Ingestion:** Military expended materials (missile fragments, decelerator/parachute, flare casing, target fragments)	
Detailed Military Expended Materials Information	Decelerator/parachutes, flare casings, missile body, target fragments, missile fragments	
Assumptions Used for Analysis	1.25 missiles per event. Half of all missiles have explosive warheads, half are non-explosive. Assume 1.5 flares per Missile Exercise event	

A.1.1.3 Gunnery Exercise (Surface-to-Air)

Activity Name	Activity Description	
Anti-Air Warfare		
Gunnery Exercise (Surface-to-Air)	**Short Description:** Surface vessel crews defend against threat aircraft or missiles with large/medium-caliber guns.	
Long Description	Surface vessel personnel defend against threat aircraft or missile targets with guns to disable or destroy the threat. An event involves one vessel and a simulated threat aircraft or anti-vessel missile that is detected by the vessel's radar. Medium-caliber guns fire projectiles, typically non-explosive, to disable or destroy the threat before it reaches the vessel. The target is towed by a commercial air services jet.	
Information Typical to the Event	**Platform:** Surface vessel (all) **Systems:** None **Ordnance/Munitions:** Large/medium-caliber munitions (non-explosive) **Targets:** Towed banners behind aircraft **Duration:** 1–2 hours	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Aircraft noise, vessel noise, weapons firing noise **Energy:** None **Physical Disturbance and Strike:** Military expended materials strike (projectiles), vessel strike, aircraft strike (seabirds only) **Entanglement:** None **Ingestion:** Projectiles, casings	
Detailed Military Expended Materials Information	Projectiles Casings	
Assumptions Used for Analysis	All projectiles are non-explosive. Close In Weapon System employed in all events. Routine Close In Weapon System maintenance related firing can occur throughout study area, as long as a clear range is established. This is conducted at altitudes as low as 3,000 feet.	

A.1.1.4 Missile Exercise (Surface-to-Air)

Activity Name	Activity Description	
Anti-Air Warfare		
Missile Exercise (Surface-to-Air)	**Short Description:** Surface vessel crews engage threat missiles and aircraft with missiles.	
Long Description	Surface vessel crews defend against threat missiles and aircraft with vessel launched missiles. The event involves a simulated threat aircraft or anti-ship missile which is detected by the vessel's radar. Vessel launched anti-air missiles are fired (high explosive) to disable or destroy the threat. The target typically is a remote controlled drone. Anti-air missiles may also be used to train against land attack missiles.	
Information Typical to the Event	**Platform:** Surface vessels (all) **Systems:** None **Ordnance/Munitions:** Anti-air missiles (e.g., Sea Sparrow, Standard Missile SM-2, Rolling Airframe Missile [high explosive]) **Targets:** Unmanned drones (e.g., BQM-34, BQM-74) **Duration:** 1–2 hours	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** None **Energy:** None **Physical Disturbance and Strike:** Military expended materials strike (missile fragments), vessel strike, aircraft strike (seabirds only) **Entanglement:** None **Ingestion:** Missile fragments	
Detailed Military Expended Materials Information	Missile fragments	
Assumptions Used for Analysis	Two missiles per event. All anti-air missiles are high explosive. Missile explodes well above the ocean surface. All explosive and propellant consumed. Target typically not destroyed, unmanned drones are recovered.	

A.1.2 ANTI-SURFACE WARFARE TRAINING

Anti-surface warfare is a type of naval warfare in which aircraft, surface ships, and submarines employ weapons and sensors in operations directed against enemy surface ships or boats. Air-to-surface exercises are conducted by long-range attacks using simulated air-launched cruise missiles or other precision guided munitions, bombs, or aircraft cannon. Anti-surface warfare is also conducted by warships employing torpedoes, naval guns, and surface-to-surface missiles. In the Northwest Training and Testing (NWTT) Study Area, warships will use only naval guns during exercises; use of torpedoes and missiles by surface ships will be simulated within the Study Area. Submarines will also simulate attacks on surface ships using torpedoes or submarine-launched, anti-ship cruise missiles. Gunnery training generally involves expenditure of ordnance (normally non-explosive practice munitions) against a towed or floating target. A sinking exercise is a specialized training event that provides an opportunity for ship, submarine, and aircraft crews to use multiple weapons systems to deliver high explosive ordnance on a deactivated vessel, which is deliberately sunk. Sinking exercises are no longer conducted in the NWTT Study Area. Anti-surface warfare also encompasses maritime security, that is, the interception of a suspect surface ship by a Navy ship for the purpose of boarding-party inspection or the seizure of the suspect ship. Training in these tasks is conducted in visit, board, search and seizure exercises.

A.1.2.1 Gunnery Exercise Surface-to-Surface (Ship)

Activity Name	Activity Description	
Anti-Surface Warfare		
Gunnery Exercise Surface-to-Surface (Ship)	**Short Description:** Vessel crews engage surface targets with vessel's small-, medium-, and large-caliber guns designed to provide close range defense against patrol boats, smaller boats, swimmers, and floating mines. Some of the small- and medium-caliber gunnery exercises analyzed include those conducted by the U.S. Coast Guard.	
Long Description	This exercise involves vessel crews engaging surface targets at sea with small-, medium-, and large-caliber weapons. Vessels use small caliber weapons to practice defensive marksmanship, typically against stationary floating targets. The target may be a 10-foot diameter red balloon (Killer Tomato), a 50-gallon steel drum, or other available target, such as a cardboard box. Some targets are expended during the exercise and are not recovered. Vessel crew qualifications conducted at sea employ stationary targets on deck. Small-, medium-, and large-caliber projectiles fired during these events will be expended in the water. Shipboard protection systems utilizing small caliber projectiles will train against high speed mobile targets. Some of the small- and medium-caliber gunnery exercises analyzed include those conducted by the U.S. Coast Guard.	
Information Typical to the Event	**Platform:** Surface vessels **Systems:** None **Ordnance/Munitions:** Small-, medium-, and large-caliber (non-explosive) **Targets:** Recoverable or expendable floating target (stationary or towed), remote controlled high speed targets **Duration:** 2–3 hours	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Vessel noise, weapons firing noise, underwater explosions (e.g., E1, E5) **Energy:** None **Physical Disturbance and Strike:** Vessel and in-water device strike, military expended materials strike (projectile), target strike **Entanglement:** None **Ingestion:** Small-caliber projectiles, casings, target fragments	
Detailed Military Expended Materials Information	Small-, medium-, and large-caliber projectiles Casings Target fragments	
Assumptions Used for Analysis	Small-caliber rounds: 121,200 non-explosive practice munitions annually Medium-caliber rounds: 33,492 non-explosive practice munitions, and 178 high explosive (HE) munitions annually Large-caliber rounds: 2,720 non-explosive practice munitions and 160 HE munitions annually.	

A.1.2.2 Gunnery Exercise Surface-to-Surface (Boat)

Activity Name	Activity Description	
Anti-Surface Warfare		
Gunnery Exercise Surface-to-Surface (Boat)	**Short Description:** Small boat crews engage surface targets with small-caliber (blank) weapons.	
Long Description	Boat crews engage surface targets with small-caliber (blank) weapons. Boat crews may use high or low speeds to approach and engage targets simulating other boats, swimmers, floating mines, or near shore land targets with small-caliber (blank) weapons. A number of different types of boats are used depending on the unit using the boat and their mission. Boats are most used to protect ships in harbors and high value units, such as: aircraft carriers, nuclear submarines, liquid natural gas tankers, etc., while entering and leaving ports. Boats are also used to conduct riverine operations and various naval special warfare operations. The boats used by these units include: small unit river craft, combat rubber raiding craft, rigid-hull inflatable boats, patrol craft, and many other versions of these types of boats. These boats use inboard or outboard, diesel or gasoline engines with either propeller or water jet propulsion.	
Information Typical to the Event	**Platform:** Boats **Systems:** None **Ordnance/Munitions:** Small-caliber (non-explosive, blank) **Targets:** Recoverable or expendable floating target **Duration:** 1 hour	**Location:** Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Vessel noise, weapons firing noise **Energy:** None **Physical Disturbance and Strike:** Vessel strike, in-water device strike, military expended material strike (casings) **Entanglement:** None **Ingestion:** Casings	
Detailed Military Expended Materials Information	Casings	
Assumptions Used for Analysis	1,500 small-caliber rounds fired annually, all blanks. No rounds, but some shell casings could be expended.	

A.1.2.3 Missile Exercise Air-to-Surface

Activity Name	Activity Description	
Anti-Surface Warfare		
Missile Exercise (Air-to-Surface)	**Short Description:** Fixed-wing aircrews simulate firing precision-guided missiles, using captive air training missiles (CATMs) against surface targets. Some activities include firing a missile with a high explosive (HE) warhead.	
Long Description	Fighter and maritime patrol aircraft simulate the firing of precision-guided missiles against surface targets. The aircrew uses sensors, usually radar, to locate a surface target. The crew then simulates the firing of an actual missile by using a non-firing CATM that has been loaded on the aircraft. Some activities include firing a missile with a HE warhead at a target.	
Information Typical to the Event	**Platform:** Fixed wing aircraft (e.g., EA-6B, EA-18G) **Systems:** None **Ordnance/Munitions:** Air-to-surface missile (HE) **Targets:** Recoverable floating target (stationary or towed), Remotely operated target **Duration:** 2 hours	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Aircraft noise, tow vessel noise, underwater explosions (e.g., E10) **Energy:** None **Physical Disturbance and Strike:** Military expended materials strike (missile), vessel strike, aircraft strike (seabirds only) **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	Missile fragments	
Assumptions Used for Analysis	Assume one target per event. Most missiles are non-firing. Some missiles are live missiles with HE warhead (4 HE missiles per year).	

A.1.2.4 Bombing Exercise Air-to-Surface

Activity Name	Activity Description	
Anti-Surface Warfare		
Bombing Exercise (Air-to-Surface)	**Short Description:** Fixed-wing aircrews deliver bombs against surface targets.	
Long Description	Fixed-wing aircrews deliver bombs against surface targets. Aircraft altitudes during delivery can be as low as 400 feet. Fixed-wing aircraft conduct a bombing exercise against stationary floating targets (e.g.: MK-58 smoke buoy). An aircraft clears the area, deploys a smoke buoy or other floating target, and then delivers high explosive (HE) or non-explosive practice munitions (NEPM) bomb(s) on the target. A range boat may be used to deploy targets for an aircraft to attack. The majority of bombing exercises conducted within the Northwest Training and Testing Study Area utilize NEPM. Exercises for strike fighters typically involve a flight of two aircraft delivering unguided or guided munitions that may be either HE or NEPM. The following munitions may be employed by strike fighter aircraft in the course of the bombing exercise: Unguided munitions: Non explosive sub-scale NEPM bombs (MK-76 and Bomb Dummy Unit [BDU]-45), explosive and non-explosive general purpose bombs (MK-80 series). Precision-guided munitions: Laser-guided bombs (explosive, non-explosive), Laser-guided Training Rounds (non-explosive), Joint Direct Attack Munition (explosive, non-explosive).	
Information Typical to the Event	**Platform:** Fixed wing (e.g., F/A-18, F-35, P-8, P-3) **Systems:** None **Ordnance/Munitions:** Bombs (e.g., MK-76, BDU-45, MK-80 series **Targets:** Expendable floating target (e.g., smoke float) **Duration:** 1 hour	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Underwater explosions (e.g., E12), aircraft noise **Energy:** None **Physical Disturbance and Strike:** Military expended materials strike (non-explosive bomb), aircraft strike (seabirds only) **Entanglement:** None **Ingestion:** Bomb fragments, Target fragments, Smoke floats	
Detailed Military Expended Materials Information	Bomb fragments Inert Bombs Target fragments Smoke floats	
Assumptions Used for Analysis	Approximately 90 percent of non-explosive bombs are the sub-scale NEPM bombs such as the MK-76 and BDU-48. 110 NEPM and 10 HE bombs annually.	

A.1.2.5 Sinking Exercise

Activity Name	Activity Description	
Anti-Surface Warfare		
Sinking Exercise	**Short Description:** Aircraft, vessel, and submarine crews deliver ordnance on a seaborne target, usually a deactivated ship, which is deliberately sunk using multiple weapon systems. Sinking exercises are included in the No Action Alternative for the purpose of analysis, but are not part of the Proposed Action.	
Long Description	Ship personnel and aircrew deliver high explosive ordnance on a seaborne target, (large deactivated vessel), which is deliberately sunk using multiple weapon systems. A sinking exercise is typically conducted by aircraft, surface vessels, and submarines in order to take advantage of the ability to fire high-explosive ordnance on a full-size ship target. The target is typically a decommissioned ship made environmentally safe for sinking according to U.S. Environmental Protection Agency standards. The location is greater than 50 nautical miles (nm) from shore and in water depths greater than 6,000 feet (ft.). Vessel, aircraft, and submarine crews attack with coordinated tactics and deliver live high explosive ordnance to sink the target. Non-explosive practice munitions may be used during the initial stages to extend target life. Typically, the exercise lasts for 4–8 hours and possibly over 1–2 days; however it is unpredictable, and ultimately ends when the ship sinks.	
Information Typical to the Event	**Platform:** Vessels, Aircraft, Submarines **Systems:** None **Ordnance/Munitions:** Potentially all available (explosive and non-explosive) **Targets:** Decommissioned ship made environmentally safe for sinking (according to U.S. Environmental Protection Agency standards) **Duration:** 4–8 hours, possibly over 1–2 days (unpredictable and ultimately ends when the ship sinks)	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Underwater explosions (e.g., E5, E8, E11, E12), vessel noise, aircraft noise, weapons firing noise, heavyweight torpedo (e.g., TORP2) **Energy:** None **Physical Disturbance and Strike:** Military expended materials strike (non-explosive projectiles, projectile fragments), vessel strike, aircraft strike (seabirds only) **Entanglement:** Guidance wires **Ingestion:** Munitions fragments, small caliber projectiles, casings	
Detailed Military Expended Materials Information	Munitions fragments, Non-explosive ordnance, Guidance wires, Munitions fragments, Casings Ship hulk (decommissioned ship made environmentally safe for sinking according to U.S. Environmental Protection Agency standards)	

Activity Name	Activity Description
Anti-Surface Warfare	
Assumptions Used for Analysis	Greater than 50 nm from shore and in water depths greater than 6,000 ft. The participants and assets could include: • One full-size target ship hulk • One to five cruiser, destroyer, or frigate ships • One to 10 F/A-18, or maritime patrol aircraft • One or two HH-60H, MH-60R/S, or SH-60B helicopters • One E-2 aircraft for Command and Control • One submarine • One to three range clearance aircraft • Two to four Harpoon surface-to-surface or air-to-surface missiles • Two to eight air-to-surface Maverick missiles • Two to 16 MK-82 general purpose bombs • Two to four Hellfire air-to-surface missiles • One or two SLAM-ER air-to-surface missiles • Fifty to 500 rounds 5-inch and 76-millimeter (mm) gun • One to two MK-48 heavyweight submarine-launched torpedo • Two to 10,000 rounds .50 caliber and 7.62 mm • Assume two guidance wires expended per event

A.1.3 ANTI-SUBMARINE WARFARE TRAINING

Anti-submarine warfare involves helicopter and maritime patrol aircraft, ships, and submarines. These units operate alone or in combination, in operations to locate, track, and neutralize submarines. Controlling the undersea battle space is a unique naval capability and a vital aspect of sea control. Undersea battle space dominance requires proficiency in anti-submarine warfare. Every deploying strike group and individual surface combatant must possess this capability.

Various types of active and passive sonar are used by the Navy to determine water depth, locate mines, and identify, track, and target submarines. Passive sonar "listens" for sound waves by using underwater microphones, called hydrophones, which receive, amplify, and process underwater sounds. No sound is introduced into the water when using passive sonar. Passive sonar can indicate the presence, character, and movement of submarines; however, passive sonar, as a tool for detecting submarines, is increasingly ineffective as modern submarines become quieter. Active sonar is needed to locate objects because active sonar provides both bearing and range to the detected contact (such as an enemy submarine).

Active sonar transmits pulses of sound that travel through the water, reflect off objects and return to a receiver. By knowing the speed of sound in water and the time taken for the sound wave to travel to the object and back, active sonar systems can quickly calculate direction and distance from the sonar platform to the underwater object.

The Navy's anti-submarine warfare training plan, including the use of active sonar in at-sea training scenarios, includes multiple levels of training. Individual-level anti-submarine warfare training addresses basic skills such as detection and classification of contacts, distinguishing discrete acoustic signatures including those of ships, submarines, and marine life, and identifying the characteristics, functions, and effects of controlled jamming and evasion devices.

More advanced, integrated anti-submarine warfare training exercises involving active sonar are conducted in coordinated, at-sea operations during multi-dimensional training events involving submarines, ships, aircraft, and helicopters. This training integrates the full anti-submarine warfare continuum from detecting and tracking a submarine to attacking a target using either exercise torpedoes or simulated weapons. Training events include detection and tracking exercises against "enemy" submarine contacts; torpedo employment exercises against the target; and exercising command and control tasks in a multi-dimensional battle space.

A.1.3.1 Tracking Exercise – Submarine

Activity Name	Activity Description	
Anti-Submarine Warfare		
Tracking Exercise – Submarine	**Short Description:** Submarine crews search for, track, and detect submarines.	
Long Description	The anti-submarine warfare tracking exercise-submarine involves a submarine employing hull mounted and/or towed array sonar against an anti-submarine warfare target such as a MK-39 Expendable Mobile Anti-Submarine Warfare Training Target, a MK-30, or another submarine. During this event, passive sonar is used almost exclusively; active sonar use is restricted because it would reveal the tracking submarine's presence to the target submarine. The preferred type of range for this exercise is an instrumented underwater training range with the capability to track the locations of submarines and targets, to enhance the after-action learning component of the training. This exercise may involve a single submarine, or be undertaken in the context of a coordinated larger exercise involving multiple aircraft, ships, and submarines, including a major range event.	
Information Typical to the Event	**Platform:** Submarines **Systems:** Mid-frequency (primarily passive) and high-frequency sonar **Ordnance/Munitions:** None **Targets:** Submarine MK-30, MK-39 Expendable Mobile Anti-Submarine Warfare Training Target **Duration:** 8 hours	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Submarine high-frequency navigation and mine hunting sonar (e.g., HF1), Portable Underwater Tracking Range (e.g., HF6 and P2), submarine sonar (BQQ-10) (e.g., MF3) **Energy:** None **Physical Disturbance and Strike:** Vessel and in-water device strike **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	Expendable Mobile Anti-Submarine Warfare Training Target (MK-39); MK-30 targets are recovered	
Assumptions Used for Analysis	Each activity includes vessel noise stressor	

A.1.3.2 Tracking Exercise – Surface

Activity Name	Activity Description	
Anti-Submarine Warfare		
Tracking Exercise – Surface	**Short Description:** Surface vessel crews search for, track, and detect submarines.	
Long Description	Surface ships search, detect, and track threat submarines to determine a firing position to launch a simulated torpedo and attack the submarine. A surface vessel operates at slow speeds while employing hull mounted and/or towed array sonar. Passive or active sonar is employed depending on the type of threat submarine, the tactical situation, and environmental conditions. The target for this exercise is a MK-39 Expendable Mobile Anti-Submarine Warfare Training Target, MK-30 Recoverable Training Target, or a submarine. Tracking exercise – surface could occur anywhere throughout the Offshore Area. This exercise may involve a single ship. The preferred range for this exercise is an instrumented underwater range, but it may be conducted in any part of the Pacific Northwest Surface/Subsurface Operations Area depending on training requirements and available assets.	
Information Typical to the Event	**Platform:** Surface vessels **Systems:** Mid-frequency sonar, Nixie (countermeasure system) **Ordnance/Munitions:** None **Targets:** Submarine MK-30 or MK-39 Expendable Mobile Anti-Submarine Warfare Training Target **Duration:** 2–4 hours	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** SLQ-25A Nixie, Portable Undersea Tracking Range (e.g., HF6, P2), surface ship sonar (SQS-53C) (e.g., MF1), mid-frequency projector (e.g., MF11), surface ship sonar (SQS-56) (e.g., MF2), vessel noise **Energy:** None **Physical Disturbance and Strike:** Vessel and in-water device strike; military expended materials strike **Entanglement:** None **Ingestion:** Torpedo accessories, target fragments	
Detailed Military Expended Materials Information	MK-39 Expendable Mobile Anti-Submarine Warfare Training Target One Expendable Mobile Anti-Submarine Warfare Training Target (MK-39); MK-30 are recovered	
Assumptions Used for Analysis	Tracking exercise can occur in all locations in the Pacific Northwest Surface/Subsurface Operations Area. Submarines may provide service as the target.	

A.1.3.3 Tracking Exercise – Helicopter

Activity Name	Activity Description	
Anti-Submarine Warfare (ASW)		
Tracking Exercise – Helicopter	**Short Description:** Helicopter crews search for, track, and detect submarines.	
Long Description	This exercise involves helicopters using sonobuoys and dipping sonar to search for, detect, classify, localize, and track a simulated threat submarine with the goal of determining a firing solution that could be used to launch a simulated torpedo and destroy the submarine. Sonobuoys are typically employed by a helicopter operating at altitudes below 3,000 feet (ft.) (914 meters [m]). Sonobuoys are deployed in specific patterns based on the expected threat submarine and specific water conditions. These patterns will cover many different size areas, depending on these two factors. Both passive and active sonobuoys are employed. For certain sonobuoys, tactical parameters of use may be classified. The dipping sonar is employed from an altitude of about 50 ft. (15 m) after the search area has been narrowed based on the sonobuoy search. Both passive and active sonar are employed. As the location of the submarine is further narrowed, a Magnetic Anomaly Detector may be used by the MH-60R to further confirm and localize the target's location. The anti-submarine warfare target used for this exercise may be a MK-39 Expendable Mobile Anti-Submarine Warfare Training Target, a MK-30 target, or a submarine and may be either non-evading and assigned to a specified track, or fully evasive depending on the state of training of the helicopter. This exercise may involve a single aircraft. The preferred range for this exercise is an instrumented underwater range, but it may be conducted in any part of the Pacific Northwest Surface/Subsurface Operations Area depending on training requirements and available assets.	
Information Typical to the Event	**Platform:** One or more helicopters, other aircraft, one or more surface ships **Systems:** Mid-frequency helicopter dipping sonar, sonobuoys **Ordnance/Munitions:** None **Targets:** MK-30, MK-39, submarine **Duration:** 1–2 hours	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Helicopter dipping sonar (AQS-22) (e.g., MF4), Active sonobuoy (SSQ-62 DICASS) (e.g., MF5) **Energy:** None **Physical Disturbance and Strike:** helicopter strike (birds), MK-30 strike, military expended materials bottom disturbance **Entanglement:** parachutes/decelerators **Ingestion:** parachutes/decelerators	
Detailed Military Expended Materials Information	MK-39 Expendable Mobile Anti-Submarine Warfare Training Target Expended sonobuoys with decelerator/parachutes	
Assumptions Used for Analysis	None	

A.1.3.4 Tracking Exercise – Maritime Patrol Aircraft

Activity Name	Activity Description	
Anti-Submarine Warfare		
Tracking Exercise – Maritime Patrol Aircraft	**Short Description:** Maritime patrol aircraft crews search for, detect, and track submarines.	
Long Description	This exercise involves fixed-wing maritime patrol aircraft employing sonobuoys to search for, detect, classify, localize, and track a simulated threat submarine with the goal of determining a firing solution that could be used to launch a simulated torpedo and destroy the submarine. Sonobuoys are typically employed by a maritime patrol aircraft operating at altitudes below 3,000 feet (ft.) (914 meters); however, sonobuoys may be released at higher altitudes. Sonobuoys are deployed in specific patterns based on the expected threat submarine and specific water conditions. Depending on these two factors, these patterns will cover many different size areas. Both passive and active sonobuoys are employed. For certain sonobuoys, tactical parameters of use may be classified. The anti-submarine warfare target used for this exercise may be a MK-39 Expendable Mobile Anti-Submarine Warfare Training Target, a MK-30 target, or a submarine. This exercise may involve a single aircraft. The preferred range for this exercise is an instrumented underwater range, but it may be conducted in any part of the Pacific Northwest Surface/Subsurface Operations Area depending on training requirements and available assets.	
Information Typical to the Event	**Platform:** Maritime Patrol Aircraft (e.g., P-3C Orion or P-8A Poseidon), manned or unmanned fixed-wing aircraft **Systems:** Sonobuoys **Ordnance/Munitions:** None **Targets:** MK-39 Expendable Mobile Anti-Submarine Warfare Training Target, a MK-30 recoverable target, or a live submarine **Duration:** 2–8 hours	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Active sonobuoy (e.g., SSQ-62 DICASS) (e.g., MF5), vessel noise, aircraft noise **Energy:** Radar in periscope detection mode **Physical Disturbance and Strike:** Aircraft strike (seabirds only), vessel and in-water device strike, Military expended materials strike **Entanglement:** Decelerator/parachutes **Ingestion:** Decelerator/parachutes	
Detailed Military Expended Materials Information	One Expendable Mobile Anti-Submarine Warfare Training Target (MK-39); MK-30 are recovered Expended sonobuoys with decelerator/parachutes	
Assumptions Used for Analysis	Tracking exercise can occur in all locations of the Pacific Northwest Surface/Subsurface Operations Area. Submarine may provide service as the target. If target is air-dropped, one parachute per target Altitudes are below 3,000 ft.; can be 400 ft. or lower.	

A.1.3.5 Tracking Exercise – Maritime Patrol Aircraft (Extended Echo Ranging Sonobuoys)

Activity Name	Activity Description	
Anti-Submarine Warfare		
Tracking Exercise – Maritime Patrol (Extended Echo Ranging Sonobuoys)	**Short Description:** Maritime patrol aircraft crews search, detect and track submarines using extended echo ranging and multistatic active coherent sonobuoys.	
Long Description	This exercise involves fixed-wing maritime patrol aircraft employing Improved Extended Echo Ranging and Multistatic Active Coherent sonobuoy systems to search for, detect, classify, localize, and track a simulated threat submarine with the goal of determining a firing solution that could be used to launch a simulated torpedo and destroy the submarine. The Improved Extended Echo Ranging events use the SSQ-110A sonobuoy as an impulse source, while the Multistatic Active Coherent events utilize the SSQ-125 sonobuoy as a tonal source. Each exercise would include the use of approximately 10 SSQ-110A or SSQ-125 sonobuoys. The anti-submarine warfare target used for this exercise may be a MK-39 Expendable Mobile Anti-Submarine Warfare Training Target, a MK-30 target, or a submarine. This exercise may involve single or multiple aircraft.	
Information Typical to the Event	**Platform:** Maritime Patrol Aircraft **Systems:** Improved Extended Echo Ranging and multistatic active coherent sonobuoy systems **Ordnance/Munitions:** None **Targets:** MK-39 Expendable Mobile Anti-Submarine Warfare Training Target, a MK-30 recoverable target, or a submarine **Duration:** 2–8 hours	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** SSQ-125 Multistatic Acoustic Coherent (e.g., ASW2), underwater explosions, aircraft noise **Energy:** None **Physical Disturbance and Strike:** Aircraft strike (seabirds only), military expended materials strike **Entanglement:** Decelerator/parachutes **Ingestion:** Decelerator/parachutes	
Detailed Military Expended Materials Information	One Expendable Mobile Anti-Submarine Warfare Training Target (MK-39); MK-30 are recovered Expended sonobuoys with decelerator/parachutes	
Assumptions Used for Analysis	If target is air-dropped, one parachute per target Altitudes for this activity can be as low as 400 feet	

A.1.4 ELECTRONIC WARFARE TRAINING

Electronic warfare is the mission area of naval warfare that aims to control use of the electromagnetic spectrum and to deny its use by an adversary. Typical electronic warfare activities include threat avoidance training, signals analysis for intelligence purposes, and use of airborne and surface electronic jamming devices to defeat tracking systems.

A.1.4.1 Electronic Warfare Operations

Activity Name	Activity Description	
Electronic Warfare		
Electronic Warfare Operations	**Short Description:** Aircraft, surface vessel, and submarine personnel attempt to control portions of the electromagnetic spectrum used by enemy systems to degrade or deny the enemy's ability to take defensive actions.	
Long Description	Aircraft, surface ship, and submarine personnel attempt to control critical portions of the electromagnetic spectrum used by enemy systems to degrade or deny their ability to defend its forces from attack or recognize an emerging threat early enough to take defensive actions. Electronic Warfare Operations can be active or passive, offensive or defensive. Fixed wing aircraft employ active jamming and deception against enemy search radars to mask the friendly inbound strike aircraft mission. Surface vessels and submarines detect and evaluate enemy electronic signals from enemy aircraft or missile radars, evaluate courses of action concerning the use of passive or active countermeasures, then use vessel maneuvers and either chaff, flares, active electronic countermeasures, or a combination of them to defeat the threat.	
Information Typical to the Event	**Platform:** Fixed and rotary wing aircraft, surface combatant vessels, and submarines **Systems:** None **Ordnance/Munitions:** None **Targets:** Land based fixed/mobile threat emitters **Duration:** 1–2 hours	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Vessel noise, aircraft noise **Energy:** None **Physical Disturbance and Strike:** Vessel strike, aircraft strike (seabirds only) **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	Chaff and Flares	
Assumptions Used for Analysis	All chaff and flares involved in this event are covered under Chaff exercise and Flare exercises, respectively	

A.1.5 MINE WARFARE TRAINING

Mine warfare training is the naval warfare area involving the detection, avoidance, and neutralization of mines to protect Navy ships and submarines, and offensive mine laying in naval operations. Mine warfare training includes mine detection and neutralization exercises.

A.1.5.1 Mine Neutralization – Explosive Ordnance Disposal

Activity Name	Activity Description	
Mine Warfare		
Mine Neutralization – Explosive Ordnance Disposal	**Short Description:** Personnel disable threat mines. Explosive charges are used.	
Long Description	Navy divers, typically explosive ordnance disposal personnel, disable threat mines with explosive charges to create a safe channel for friendly vessels to transit. Personnel detect, identify, evaluate, and neutralize mines in the water with an explosive device and may involve detonation of one or more explosive charges from 15 gram explosive charge (Shock Wave Action Generator) to 2.5 pounds of trinitrotoluene (TNT) equivalent. These operations are normally conducted during daylight hours for safety reasons.	
Information Typical to the Event	**Platform:** Rotary wing aircraft, Small boats **Systems:** None **Ordnance/Munitions:** Underwater detonation charges **Targets:** Mine shapes **Duration:** Up to 4 hours	**Location:** Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Under water explosions (e.g., E3), aircraft noise, vessel noise **Energy:** None **Physical Disturbance and Strike:** Seafloor **Entanglement:** None **Ingestion:** Target fragments	
Detailed Military Expended Materials Information	Target fragments	
Assumptions Used for Analysis	Charge placed anywhere in water column, including bottom Mine shapes will be recovered	

A.1.5.2 Submarine Mine Exercise

Activity Name	Activity Description	
Mine Warfare		
Submarine Mine Exercise	**Short Description:** Submarine crews practice detecting mines in a designated area.	
Long Description	Submarine crews use active sonar to detect and avoid mines or other underwater hazardous objects, while navigating restricted areas or channels, such as while entering or leaving port. This event trains submarine crews to detect and avoid mines. Training utilizes simulated minefields constructed of moored or bottom mine shapes, or instrumented mines that can record effectiveness of mine detection efforts. In a typical training exercise, submarine crews will use submarine high-frequency active sonar to locate and avoid the mine shapes. Each mine avoidance exercise involves one submarine operating submarine high-frequency active sonar for 6 hours to navigate through the training minefield. During mine warfare exercises submarines will expend several submarine launched expendable bathythermographs to determine water conditions affecting sonar performance.	
Information Typical to the Event	**Platform:** Submarine **Systems:** Submarine high-frequency active sonar **Ordnance/Munitions:** None **Targets:** Mine shapes **Duration:** 6 hours	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Submarine high-frequency navigation and mine hunting sonar (e.g., HF1) **Energy:** None **Physical Disturbance and Strike:** Vessel and in-water device strikes; seafloor device strike (bottom placed mine shapes) **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	Bathythermograph buoys	
Assumptions Used for Analysis	Assume three bathythermograph buoys per event	

A.1.5.3 Maritime Homeland Defense/Security Mine Countermeasures Integrated Exercise

Activity Name	Activity Description	
Mine Warfare		
Maritime Homeland Defense/Security Mine Countermeasures Integrated Exercise	**Short Description:** Maritime homeland defense/security mine countermeasures are naval mine warfare activities conducted at various ports and harbors, in support of maritime homeland defense/security.	
Long Description	Naval forces provide Mine Warfare capabilities to Department of Homeland Security led event. The three pillars of Mine Warfare, Airborne (helicopter), Surface (ships and unmanned vehicles), and Undersea (divers and unmanned vehicles) mine countermeasures will be brought to bear in order to ensure strategic U.S. ports remain free of mine threats. Various Mine Warfare sensors, which utilize active acoustics, will be employed in the detection, classification, and neutralization of mines. Along with traditional Mine Warfare techniques, such as helicopter towed mine countermeasures, new technologies (unmanned vehicles) will be utilized. Event locations and scenarios will vary according to Department of Homeland Security strategic goals and evolving world events.	
Information Typical to the Event	**Platform:** Surface combatant vessels, Small boats, Rotary wing aircraft **Systems:** Unmanned underwater and surface vehicles, various mine detection sensors (AN/AQS-20, AN/AQS-24) **Ordnance/Munitions:** Shock Wave Action Generator **Targets:** Temporary mine shapes **Duration:** Multiple days	**Location:** Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Vessel noise; aircraft noise (e.g., AN/SQQ 32, Unmanned underwater vehicle, MK 18 Swordfish, AN/PQS 2A, Marine Mammal Systems bottlenose dolphin bio-sonar), high-frequency mine hunting sonar (e.g., HF4) **Energy:** Magnetic influence mine sweeping **Physical Disturbance and Strike:** Vessel and in-water device strikes; seafloor device strike (bottom placed mine shapes); aircraft strike (seabirds only) **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	Non-permanent mine shapes will be laid in various places on the bottom of Puget Sound. Shapes are varied, from about 1 meter (m) circular to about 2.5 m long by 1 m wide. They will be recovered using normal assets, with diver involvement. Programmatic analysis for acoustic effects only. For Air Quality, assumed 24 hours of helicopter, 24 hours of small boat, and 24 hours of surface combatant (destroyer) Operation.	

A.1.6 NAVAL SPECIAL WARFARE TRAINING

Naval special warfare and other Navy forces train to conduct military operations in five Special Operations mission areas: unconventional warfare, direct action, special reconnaissance, foreign internal defense, and counterterrorism. Naval special warfare training involves specialized tactics, techniques, and procedures, employed in training events that include: insertion/extraction operations using parachutes rubber boats, or helicopters; boat-to-shore and boat-to-boat gunnery; underwater demolition training; reconnaissance; and small arms training.

A.1.6.1 Personnel Insertion/Extraction – Submersible

Activity Name	Activity Description	
Naval Special Warfare		
Personnel Insertion/Extraction – Submersible	**Short Description:** Military personnel train for covert insertion and extraction into target areas using submersibles.	
Long Description	Military personnel train for covert insertion and extraction into target areas using submersibles. Often, an undersea delivery vehicle, similar to a "mini-sub," may be used to transfer the personnel to their objective near shore. These operations will vary in length depending on the transportation method and systems being used. Training may include navigation runs in Puget Sound that may be conducted in coordination with other training activities.	
Information Typical to the Event	**Platform:** Sea, Air, Land Delivery Vehicle **Systems:** None **Ordnance/Munitions:** None **Targets:** None **Duration:** 2–8 hours	**Location:** Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** None **Energy:** None **Physical Disturbance and Strike:** None **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	None	

A.1.6.2 Personnel Insertion/Extraction – Non-Submersible

Activity Name	Activity Description	
Naval Special Warfare		
Personnel Insertion/Extraction – Non-Submersible	**Short Description:** Military personnel train for covert insertion and extraction into target areas using rotary wing aircraft, fixed-wing aircraft (insertion only), or small boats.	
Long Description	Personnel train to approach or depart an objective area using various transportation methods and tactics. These operations train forces to insert and extract personnel and equipment day or night. Tactics and techniques employed include insertion from aircraft by parachute, by rope, or from low, slow-flying helicopters from which personnel jump into the water. Parachute training is required to be conducted on surveyed drop zones to enhance safety. Insertion and extraction methods also employ small inflatable boats.	
Information Typical to the Event	**Platform:** Fixed and rotary wing aircraft **Systems:** None **Ordnance/Munitions:** None **Targets:** None **Duration:** 2–8 hours	**Location:** Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** None **Energy:** None **Physical Disturbance and Strike:** None **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	None	

A.1.7 OTHER TRAINING

A.1.7.1 Precision Anchoring

Activity Name	Activity Description	
Other Training		
Precision Anchoring	**Short Description:** Releasing of anchors in designated locations.	
Long Description	Vessels navigate to a pre-planned position and deploy the anchor. The vessel uses all means available to determine its position when anchor is dropped to demonstrate calculating and plotting the anchor's position within 100 yards of center of planned anchorage.	
Information Typical to the Event	**Platform:** All surface vessels **Systems:** None **Ordnance/Munitions:** None **Targets:** None **Duration:** Up to 1 hour	**Location:** Inland Waters (Naval Station Everett anchorage area, Indian Island anchorage area)
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** None **Energy:** None **Physical Disturbance and Strike:** Vessel strike, seafloor device strike (anchor) **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Material Information	None	
Assumptions Used for Analysis	None	

A.1.7.2 Small Boat Attack

Activity Name	Activity Description	
Other		
Small Boat Attack	**Short Description:** Small boat crews engage pierside surface targets with small-caliber weapons. Only blank rounds are fired.	
Long Description	A single activity consists of multiple days of training. For analysis in this EIS, a 3-day scenario is assumed. On the first day, blanks will be fired from a small-caliber machine gun, mounted on a high-speed boat used by Navy security forces. The second day will consist of test firing multiple crew-serve and hand-held small-caliber weapons, all with blank ammunition. Some rounds will be fired from both the high-speed boat and from a Navy surface ship moored at a Navy pier. The third day will be the full training exercise. This consists of a high-speed attack vessel running directly at the Navy pier where the simulated target surface ship is moored. Duration of firing will be approximately 2 hours with a total of 1,000 rounds fired the first day, and a duration of 1.5 hours with a total of 1,000 rounds fired the second day. The final day will have a duration of approximately 30 minutes, with 1,000 rounds fired. Typical firing patterns are 3–30 round bursts, assess target, and then fire again. Multiple crew members will be given a chance to fire the weapons.	
Information Typical to the Event	**Platform:** Small boats or watercraft **Systems:** **Ordnance/Munitions:** Small-caliber (non-explosive) **Targets:** High-performance small boats **Duration:** Varies	**Location:** Inland Waters (Naval Station Everett, Naval Base [NAVBASE] Kitsap Bangor, NAVBASE Kitsap Bremerton)
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Airborne noise from small arms fire **Energy:** None **Physical Disturbance and Strike:** Vessel strike, military expended material strike (casings) **Entanglement:** None **Ingestion:** Casings	
Detailed Military Expended Material Information	Casings	
Assumptions Used for Analysis	At locations where a security barrier is present, and sea lions may be hauled out on the barrier, the security barrier will be pulled fully open to remove haul out opportunities. During Day 1 training, all firing will occur at least 250 feet away from the security barrier.	

A.1.7.3 Intelligence, Surveillance, Reconnaissance

Activity Name	Activity Description	
Other Training Exercises		
Intelligence, Surveillance, Reconnaissance (ISR)	**Short Description:** Maritime patrol aircraft (MPA) use all available sensors to collect data on threat vessels.	
Long Description	MPA use all available sensors to collect data on threat vessels. Passive sonobuoys are used to collect and analyze acoustic data, and photographic equipment is used to document the vessel with visual information.	
Information Typical to the Event	**Platform:** P-3, EP-3, P-8, EA-18G, EA-6B **Systems:** Fixed wing aircraft **Ordnance/Munitions:** None **Targets:** Targets of Opportunity **Duration:** 2–8 hours	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Aircraft noise **Energy:** None **Physical Disturbance and Strike:** Aircraft strike (birds only) **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	ISR training is conducted by MPA in Warning Area 237 and the Pacific Northwest Operating Area. Activities typically last 6 hours. P-3 aircrews use a variety of intelligence gathering and surveillance methods, including visual, infrared, electronic, radar, and acoustic. EP-3, EA-18G, and EA-6B crews conduct ISR training as well, but to a lesser extent than P-3C crews. P-8 aircraft are the P-3 replacement MPA.	

A.1.7.4 Search and Rescue

Activity Name	Activity Description	
Other Training Exercises		
Search and Rescue	**Short Description:** Helicopter crews rescue military personnel at sea.	
Long Description	Helicopter crews rescue military personnel at sea. Helicopters fly below 3,000 feet and locate personnel to be rescued. Flares are expended during training.	
Information Typical to the Event	**Platform:** Helicopters (H-60); small boats **Systems:** None **Ordnance/Munitions:** Flares **Targets:** None **Duration:** 2–3 hours	**Location:** Offshore Area Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Vessel noise, aircraft noise **Energy:** None **Physical Disturbance and Strike:** Vessel strike, aircraft strike (birds only) **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	Expended flares	
Assumptions Used for Analysis	This activity involves a helicopter landing and simulated extraction of a survivor (typically one of the helicopter crewmembers). The search and rescue helicopter, an H-60, approaches the survivor, hovers, recovers the survivor, and then departs the area with the survivor onboard.	

A.1.7.5 Surface Ship Sonar Maintenance

Activity Name	Activity Description	
Other		
Surface Ship Sonar Maintenance	**Short Description:** Pierside and at-sea maintenance of sonar systems.	
Long Description	This scenario consists of surface combatant vessels performing periodic maintenance to the AN/SQS-53 or AN/SQS-56 sonar while in port or at sea. This maintenance takes up to 4 hours. Surface vessels operate active sonar systems for maintenance while pierside however, sonar maintenance will occur pierside or at-sea in the open ocean.	
Information Typical to the Event	**Platform:** Surface combatant vessels **Systems:** Hull mounted sonar systems (AN/SQS-53 or AN/SQS-56) **Ordnance/Munitions:** None **Targets:** None **Duration:** Up to 4 hours	**Location:** Offshore Area Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Surface ship sonar (SQS-53C, SQS-56) (e.g., MF1, MF2), Vessel noise **Energy:** None **Physical Disturbance and Strike:** Vessel strike **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	None	

A.1.7.6 Submarine Sonar Maintenance

Activity Name	Activity Description	
Other-Maintenance		
Submarine Sonar Maintenance	**Short Description:** Pierside and at-sea maintenance of sonar systems.	
Long Description	A submarine performs periodic maintenance on the mid-frequency and high-frequency sonar systems while in port or at sea. Submarines conduct maintenance to their sonar systems in shallow water near their homeport however, sonar maintenance could occur anywhere as the system‘s performance may warrant	
Information Typical to the Event	**Platform:** Submarines **Systems:** Mid- and high-frequency submarine sonar system **Ordnance/Munitions:** None **Targets:** None **Duration:** 45 minutes–1 hour	**Location:** Offshore Area Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Submarine sonar (e.g., MF3, HF1) **Energy:** None **Physical Disturbance and Strike:** Vessel strike **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	None	

A.2 NAVAL UNDERSEA WARFARE CENTER DIVISION, KEYPORT TESTING ACTIVITIES

Naval Undersea Warfare Center (NUWC) Division, Keyport testing activities are aligned with its mission of providing test and evaluation services and expertise to support the Navy's evolving manned and unmanned vehicle program activities. NUWC Division, Keyport has historically provided facilities and capabilities to support testing of torpedoes, other unmanned vehicles, submarine readiness, diver training, and similar activities that are critical to the success of undersea warfare. Each major category of NUWC Division, Keyport activities is described below.

A.2.1 TORPEDO TESTING

A.2.1.1 Torpedo Non-Explosive Testing

Activity Name	Activity Description	
Torpedo Testing		
Torpedo Non-Explosive Testing	**Short Description:** Test of a non-explosive torpedo against a target.	
Long Description	Torpedoes are the primary undersea warfare weapons used by surface ships, aircraft, and submarines. The guidance systems of these weapons may be autonomous or controlled from the launch platform through a variety of 'links' (e.g., electric, fiber optic, acoustic). The autonomous guidance systems use either 'passive' acoustics, detecting the sound energy emitted from the target, or 'active' acoustics, finding the target with sonar and using the received echoes for guidance. Torpedoes tested in this activity contain no explosives. Propulsion Systems include thermal, electrical, or chemical propulsions systems. Thermal propulsion systems are powered by motors that use different types of fuels (e.g., Otto Fuel II, rocket, diesel, jet fuels) that exhaust combustion products into the water column; other closed cycle thermal propulsion systems produce only heat emissions. Electric propulsion systems are powered by closed cycle motors using batteries (e.g., lithium thionyl, lithium ion, lead acid, silver zinc, and nickel hydride); only heat emissions are produced. Chemical propulsion systems are usually based on a lithium boiler that is a closed cycle system; only heat energy is transferred into the environment. The torpedo test vehicle is deployed by a support craft or other means. The vehicle searches for its intended target, or runs a planned geometry. Each test, including set up and retrieval may last several hours. The vehicle run time may be 10 minutes. Following the test, the vehicle is retrieved for post-test analysis. Most targets are retrieved, while some may be expended. The objective is to retrieve all vehicles, targets and related materials.	
Information Typical to the Event	**Platform:** Support craft/other **Systems:** Sonar, torpedoes, range tracking pingers, AUV/ROV/UUVs, submersible, concepts and prototypes (including experimental vehicles) **Ordnance/Munitions:** Torpedoes (non-explosive) **Targets:** EMATT, MK-30, submarine, or surface combatant **Duration:** Assume 8 hours for all torpedo tests	**Location:** Offshore Area Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Torpedo (e.g., TORP1, TORP2), Mid-frequency sonar (e.g., ASW3, ASW4, MF5, MF10), vessel noise (support craft) **Energy:** None **Physical Disturbance and Strike:** Vessel strike, in-water device strike **Entanglement:** Torpedo guidance wire, flex hose **Ingestion:** None	
Detailed Military Expended Materials Information	Torpedo guidance wire, flex hose, aluminum doors, lead dropper weights, fiber optic guidance wire, expendable targets, nose cap, release wire	
Assumptions Used for Analysis	All torpedo vehicles will be recovered. Support craft are on site and usually stationary during the test, running for 30 percent of the entire 8-hour scenario including transit.	

A.2.2 AUTONOMOUS AND NON-AUTONOMOUS VEHICLES

A.2.2.1 Unmanned Underwater Vehicle Testing

Activity Name	Activity Description	
Autonomous and Non-Autonomous Vehicles		
Unmanned Underwater Vehicle Testing	**Short Description:** Unmanned underwater vehicles are autonomous or remotely operated vehicles with a variety of different payloads used for various purposes.	
Long Description	Autonomous underwater vehicle launch and retrieval methods are highly variable because of the differences in autonomous vehicle technology involved and of the variety of autonomous vehicle uses. Non-autonomous or remotely controlled vehicles are also used and tested. These may be tethered like remotely operated vehicles (ROVs) or remotely controlled vehicles that have radio links. Some vehicles may be used to transport personnel (whether inside or outside the vehicle). They may have both manual and autonomous control capabilities. Many autonomous vehicles have multiple test objectives or payloads (such as cameras and side-scan or multibeam sonar) onboard so that numerous tests can be run during a single test activity. UUV sensors may be tested to ensure they can detect, classify, and localize non-explosive mine shapes among rocky outcrops or non-mine shapes. These sensors may also be associated with a vessel, or placed before a single non-explosive mine shape or mine field is put in place. The mine shapes themselves may be tested to ensure they deploy as required and fleet operators may be trained in mine field placement. Propulsion Systems include thermal, electrical, or chemical propulsions systems as described above under A.2.1.1 (Torpedo Non-Explosive Testing). The UUV test vehicle is lowered into or onto the water from a support craft or from a pier. The vehicle will propel itself through the water or by crawling across the bottom to complete the test objectives, which could include deployment or recovery of a payload, sonar or other sensor use, or completion of a propulsion test.	
Information Typical to the Event	**Platform:** Unmanned vehicles, support craft/other **Systems:** Sonar, underwater communications **Ordnance/Munitions:** none **Targets:** Include but not limited to mobile, or Fleet vessel **Duration:** Assume 8 hours for all UUV tests, though tests may continue for up to 40 hours, and infrequently some may operate continuously for multiple months	**Location:** Offshore Area Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Synthetic aperture sonar (e.g., SAS2), acoustic modems (e.g., M3) **Energy:** None **Physical Disturbance and Strike:** In-water device strike **Entanglement:** Torpedo guidance wire **Ingestion:** None	
Detailed Military Expended Materials Information	Torpedo guidance wire, flex hose, aluminum doors, lead dropper weights, fiber optic guidance wire, expendable targets, nose cap, release wire	
Assumptions Used for Analysis	All test systems will be recovered. Support craft include two rigid-hull inflatable boats, running at 50 percent power for the entire 8-hour scenario.	
Scenarios covered	General and Experimental Test Vehicle, Low Frequency Broad Band Testing, UUV Operations (various), Mine Detections Operations	

A.2.2.2 Unmanned Aircraft System

Activity Name	Activity Description	
Autonomous and Non-Autonomous Vehicles		
Unmanned Aircraft System	**Short Description:** Unmanned aircraft systems (UASs) are remotely piloted or self-piloted (i.e., preprogrammed flight pattern) aircraft that include fixed wing, rotary-wing, and other vertical takeoff vehicles. They can carry cameras, sensors, communications equipment, or other payloads.	
Long Description	UASs are remotely piloted or self-piloted (i.e., preprogrammed flight pattern) aircraft that include fixed wing, rotary-wing, and other vertical takeoff vehicles. They can carry cameras, sensors, communications equipment, or other payloads. UASs can vary in size up to approximately 10 feet (ft.) (3 meters) in length, with gross vehicle weights of a couple hundred pounds. Propulsion types can range from traditional turbofans, turboprops, and piston engine-driven propellers, to electric motor-driven propellers powered by rechargeable batteries (lead-acid, nickel-cadmium, and lithium ion), photovoltaic cells, and/or hydrogen fuel cells. The UAS test vehicle is deployed by a support craft or other means from a ship or from shore, flying within the test area in accordance with Federal Aviation Administration (FAA) regulations over a duration of 2–8 hours. The UAS usually flies at altitudes less than 3,000 ft. in accordance with FAA regulations.	
Information Typical to the Event	**Platform:** Unmanned aerial vehicles **Systems:** None **Ordnance/Munitions:** None **Targets:** None **Duration:** 2–8 hours	**Location:** Offshore Area Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** None **Energy:** None **Physical Disturbance and Strike:** Aircraft strike **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	The UAS may spend 25 percent of its flight time above 3,000 ft. and 25 percent of its time outside 3 nautical miles of the coastline.	

A.2.2.3 Unmanned Surface Vehicle Testing

Activity Name	Activity Description	
Autonomous and Non-Autonomous Vehicles		
Unmanned Surface Vehicle Testing	**Short Description:** Unmanned surface vehicles are primarily autonomous systems designed to augment current and future platforms to help deter maritime threats. They employ a variety of sensors designed to extend the reach of manned ships.	
Long Description	Unmanned surface vehicles (USV) can include remotely operated craft (semi-submersible, plane hull, semi-plane hull, etc.) and test vehicles. During testing, they can operate autonomously, semi-autonomously, or non-autonomously. Non-autonomous or remotely controlled vehicles may be tethered like remotely operated vehicles (ROVs) or remotely controlled via radio link. USVs may have multiple test objectives and/or payloads (such as cameras and sonar) onboard so that numerous tests can be executed during a single testing activity. USVs may be used in conjunction with UUVs and UAVs to meet test objectives. USV launch and retrieval methods are highly variable because of the differences in vehicle type and size. USV test vehicle launch methods include, lowering onto the water from a support craft or pier, deploying from another craft, or launching from a boat ramp. The vehicle will propel itself through the water to complete the test objectives, which could include deployment and/or recovery of a payload, sonar or other sensor use, or completion of a propulsion test.	
Information Typical to the Event	**Platform:** Unmanned vehicles, support craft/other **Systems:** Sonar, electronic surveillance, infrared **Ordnance/Munitions:** none **Targets:** Include but not limited to mobile, or Fleet vessel **Duration:** Assume 8 hours for all USV tests, though tests may continue for up to 40 hours, and infrequently some may operate continuously for multiple months	**Location:** Offshore Area Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Synthetic aperture sonar (e.g., SAS2), acoustic modems (e.g., M3) **Energy:** None **Physical Disturbance and Strike:** In-water device strike **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	All test systems will be recovered. Support craft include two rigid-hull inflatable boats, running at 50 percent power for the entire 8-hour scenario.	
Scenarios covered	General and Experimental Test Vehicle, Low Frequency Broad Band Testing, USV Operations (various), Mine Detections Operations	

A.2.3 FLEET TRAINING/SUPPORT

A.2.3.1 Cold Water Training

Activity Name	Activity Description	
Fleet Training/Support		
Cold Water Training	**Short Description:** Fleet training for divers in a cold water environment and other diver training related to Navy divers supporting range operations.	
Long Description	Fleet training for divers in a cold water environment and other diver training related to Navy divers supporting range operations. Acoustic systems may be used in diver training. These fleet activities in the Naval Sea Systems Command Naval Undersea Warfare Center Division, Keyport Range Complex are non-acoustic and do not include the use of submarine hull-mounted active sonar.	
Information Typical to the Event	**Platform:** Support craft **Systems:** None **Ordnance/Munitions:** None **Targets:** None **Duration:** Assume 8 hours for all events, though they may continue for up to 40 hours, and infrequently some may operate intermittently for multiple consecutive months	**Location:** Offshore Area Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** None **Energy:** None **Physical Disturbance and Strike:** None **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	If used, support craft may run for 100 percent of an 8-hour event.	

A.2.3.2 Post-Refit Sea Trial

Activity Name	Activity Description	
Fleet Training/Support		
Post-Refit Sea Trial	**Short Description:** Following periodic maintenance periods or repairs, sea trials are conducted to evaluate submarine propulsion, sonar systems, and other mechanical tests.	
Long Description	Testing activities are conducted throughout the life of a Navy submarine to verify performance and mission capabilities. Sea trials are conducted following periodic maintenance or repairs. A typical test may include a submarine operating at full power and subjected to high-speed runs, steering tests, and other mechanical tests.	
Information Typical to the Event	**Platform:** Submarine, support craft **Systems:** All internal submarine systems **Ordnance/Munitions:** None **Targets:** None **Duration:** Typically 8 hours	**Location:** Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Mid-frequency active sources (e.g., MF10), acoustic modems (e.g., M3) **Energy:** None **Physical Disturbance and Strike:** None **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	One submarine	

A.2.3.3 Anti-Submarine Warfare Testing

Activity Name	Activity Description	
Fleet Training/Support		
Anti-Submarine Warfare (ASW) Testing	**Short Description:** Ships and their supporting platforms (e.g., helicopters, unmanned aerial vehicles) detect, localize, and prosecute submarines or other training targets.	
Long Description	Fleet activities that occur within the Range Complex may involve the use of ships. Such activities provide sailors the opportunity to train with actual Naval assets in a controlled range environment. Surface ships are outfitted with navigation tracking systems so that their location on the instrumented range can be very accurately determined. A typical activity involves surface ships and the range use of active acoustics to support navigation (tracking, depth sensors, etc.), detection, classification, and localization of underwater targets (submarines or submarine simulators) in a realistic environment.	
Information Typical to the Event	**Platform:** Surface combatants, submarines **Systems:** Active sonar, tracking, underwater communications **Ordnance/Munitions:** Sonobuoys **Targets:** Include but not limited to stationary, mobile, or Fleet vessel **Duration:** Assume 16 hours for all events, though they may continue for up to 48 hours, and infrequently some may operate intermittently for multiple consecutive weeks	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Mid-frequency sources (e.g., MF10), mid-frequency high duty-cycle sources (e.g., MF11), vessel and simulated vessel noise **Energy:** None **Physical Disturbance and Strike:** Vessel and in-water device strikes **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	None	

A.2.4 MAINTENANCE AND MISCELLANEOUS

A.2.4.1 Side Scan/Multibeam

Activity Name	Activity Description	
Maintenance and Miscellaneous		
Side Scan/ Multibeam Sonar	**Short Description:** Side Scan/Multibeam systems associated with a vessel or unmanned undersea vehicle (UUV) are tested to ensure they can detect, classify, and localize targets in a real world environment.	
Long Description	Side-scan and multibeam sonar can be used for mapping, as well as detection, classification, and localization of items on the sea floor such as cabling, shipwrecks, and mine shapes. It is typically very high frequency using multiple frequencies at one time with a very directional focus. Side-scan and multibeam sonar systems may be towed or mounted on a test vehicle or ship. Inert mines themselves may be tested to ensure they deploy as required and Fleet operators may be trained in mine field placement. During inert mine detection, classification, and localization activities an inert mine shape may be temporarily deployed. This may include one shape or a field of shapes. All mine targets in the proposed range extension areas would be temporary; they would not be permanently mounted on the bottom and could be removed when they were no longer necessary for testing activities, which could be up to 2 years. Several target shapes may be deployed in the surf-zone test area in water greater than 10 feet (ft.) (3 meters) deep; additional targets would be placed in depths of less than 10 ft. (3 m). Inert mine shapes may be made of many composite materials and are often put on the bottom or float in the water column above an anchor, often in groups. A series of inert mine fields can be laid to test the detection, classification, and localization capability of the system under test.	
Information Typical to the Event	**Platform:** UUV, surface vessel **Systems:** Very high frequency sonar **Ordnance/Munitions:** None **Targets:** Including but not limited to bottom, moored, and floating targets. **Duration:** Assume 8 hours for all events, though they may continue for up to 40 hours, and infrequently some may operate intermittently for multiple consecutive months	**Location:** Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** None **Energy:** None **Physical Disturbance and Strike:** None **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	None	

A.2.4.2 Non-Acoustic Tests

Activity Name	Activity Description	
Maintenance and Miscellaneous		
Non-Acoustic Tests	**Short Description:** These tests involve non-acoustic sensors. Non-acoustic sensors may also gather other forms of environmental data.	
Long Description	These tests involve non-acoustic sensors. Non-acoustic sensors may also gather other forms of environmental data. An example of a non-acoustic sensor is an oxygen sensor that detects the level of dissolved oxygen in the water with respect to depth. Sensors for conductivity and temperature with respect to depth are used frequently to improve tracking with updated sound velocity profiles from raw data. Magnetic sensors are non-acoustic sensors that can be placed on the bottom to detect passing vessels. Non-acoustic sensors may also be put on an unmanned undersea vehicle as a payload.	
Information Typical to the Event	**Platform:** Various **Systems:** Various non-acoustic systems **Ordnance/Munitions:** None **Targets:** None **Duration:** Assume 8 hours for all events, though they may continue for up to 40 hours, and infrequently some may operate intermittently for multiple consecutive months	**Location:** Offshore Area Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** None **Energy:** None **Physical Disturbance and Strike:** None **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	None	

A.2.5 ACOUSTIC COMPONENT TEST

A.2.5.1 Countermeasures Testing

Activity Name	Activity Description	
Acoustic Component Test		
Countermeasures Testing	**Short Description:** Includes testing of two types of countermeasures: those that emit active acoustic energy of varying frequencies into the water to mimic the characteristics of a target so that the actual threat or target remains undetected; and those that would detect, localize, track, and attack incoming weapons.	
Long Description	Countermeasures, which may take many different forms and represent a range of tactics, attempt to disrupt an attack intended for a target. Underwater, a countermeasure may emit sound that is louder than the target or in a different location that is similar to the target, causing the attacker to detour away from the target. Additionally, it could be something that looks like a threat or mimics the magnetic characteristics of a target, so that the actual threat or target remains undetected. By design, countermeasures emit active acoustic energy of varying frequencies into the water.	
Information Typical to the Event	**Platform:** Submarine **Systems:** Acoustic countermeasures **Ordnance/Munitions:** None **Targets:** Various **Duration:** Assume 8 hours for all events, though they may continue for up to 40 hours, and infrequently some may operate intermittently for multiple consecutive months	**Location:** Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Mid-frequency acoustic device countermeasures (ASW4) **Energy:** None **Physical Disturbance and Strike:** None **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	Expendable acoustic countermeasures	
Assumptions Used for Analysis	None	

A.2.5.2 Acoustic Test Facility

Activity Name	Activity Description	
Acoustic Component Test		
Acoustic Test Facility	**Short Description:** Various acoustic component testing and calibration is conducted in a controlled experimental environment based on periodicity and is also conducted on modified, upgraded, and experimental devices.	
Long Description	Acoustic Test Facility is used to calibrate and characterize transducers and hydrophones, and conduct performance testing of modified, upgraded, and experimental acoustic devices in a controlled yet realistic environment. Calibration and testing is also conducted for maintenance purposes based on periodicity.	
Information Typical to the Event	**Platform:** Various **Systems:** Various acoustic systems **Ordnance/Munitions:** None **Targets:** None **Duration:** Assume 8 hours for all tests; some may last 10 minutes, while others may continue intermittently for several days.	**Location:** Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Low-frequency sources (LF4), mid-frequency sources (MF9), high-frequency sources (HF6), very high-frequency sources (VHF2) **Energy:** None **Physical Disturbance and Strike:** None **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	None	

A.2.5.3 Pierside Integrated Swimmer Defense

Activity Name	Activity Description	
Acoustic Component Test		
Pierside Integrated Swimmer Defense	**Short Description:** Swimmer defense testing ensures that systems can effectively detect, characterize, verify, and engage swimmer and diver threats in harbor environments.	
Long Description	Swimmer defense testing includes testing of systems to determine if they can effectively detect, characterize, verify, and engage swimmer/diver threats in harbor environments. Swimmer and diver threats are detected with high-frequency sonar. The threats are then warned to exit the water through the use of underwater voice communications. Under operational conditions, if the threat does not comply, non-lethal diver deterrent air guns are used against the threat; however, airguns would not be used under proposed testing conditions. Surface loudhailers are also used during the test. Event duration is 14 days, with intermittent periods of use for each system during this time.	
Information Typical to the Event	**Platform:** None **Systems:** High-frequency sonar; surface loudhailers **Ordnance/Munitions:** None **Targets:** None **Duration:** 14 days	**Location:** Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Low-frequency sonar (L4), mid-frequency sonar (MF8), swimmer detection sonar (SD1) **Energy:** None **Physical Disturbance and Strike:** None **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	**Other Sensors:** Surface ship protection systems (e.g., communications systems, loudhailers, swimmer deterrents)	

A.3 NAVAL SURFACE WARFARE CENTER, CARDEROCK DIVISION DETACHMENT PUGET SOUND TESTING ACTIVITIES

The Naval Sea Systems Command, Naval Surface Warfare Center, Carderock Division (NSWCCD) Detachment Puget Sound testing activities are aligned with its mission to provide research, development, test and evaluation, analysis, acquisition support, in-service engineering, logistics and integration of surface and undersea vehicles and associated systems; develop and apply science and technology associated with naval architecture and marine engineering; and provide support to the maritime industry. Carderock is the Navy's center of excellence for ships and ship systems. Carderock is the full-spectrum research and development, test and evaluation, engineering, and Fleet support organization for the Navy's ships, submarine, military watercraft, and unmanned vehicles.

NSWCCD Detachment Puget Sound is located in the NAVBASE Kitsap Bangor. Its activities are conducted in the Hood Canal within the parameters of the Dabob Bay Range Complex Site and alternately as required in Carr Inlet. Activities and support include engineering, technical, operations, diving, and logistics required for the RDT&E associated with: Advanced Technology Concepts, Engineering and Proofing, Experimental Underwater Vehicles, Systems, Subsystems and Components Specialized Underwater Systems, Equipment, Tools and Hardware Acoustic Data Acquisition, Analysis and Measurement Systems (required to measure U.S. Navy Acoustic Signatures). These activities can be broken down into two major testing categories to include System, Subsystem and Component Acoustic Testing (with three variants) and Proof of Concept Testing. Typical RDT&E activity descriptions for each major category and variant are provided below.

A.3.1 SYSTEM, SUBSYSTEM AND COMPONENT TESTING

A.3.1.1 Pierside Acoustic Testing

Activity Name	Activity Description	
System, Subsystem, and Component Testing		
Pierside Acoustic Testing	**Short Description:** Operating autonomous underwater vehicle (AUV), remotely operated vehicle (ROV), unmanned undersea vehicle (UUV), submersibles/Concepts and Prototypes (including experimental vehicles, systems, equipment, tools and hardware) underwater in a static or dynamic condition within 500 yards (yd.) of an instrumented platform moored pierside.	
Long Description	Operating AUV, ROV, UUV, submersibles/Concepts and Prototypes (including experimental vehicles, systems, equipment, tools and hardware) underwater in a static or dynamic condition within 500 yd. of an instrumented platform moored pierside. The instrumented platform will have onboard acoustic measurement data acquisition and analysis systems, and onboard/over-the-side hydrophones (some sitting on the sea floor), and surface tracking vessels. Systems will be exercised to obtain static and short distance operational and acoustic measurements of all subsystems and components including motors, controllers, actuators, communication and devices, and forward, side and bottom looking sonar used for navigation and mission objectives. A separate tracking boat and multiple boats may be used as required for tracking, observation and safety. Diving services may be required.	
Information Typical to the Event	**Platform:** Support craft, barge, pierside (only at Naval Base Kitsap Bangor) **Systems:** AUV, ROV, UUV, submersibles **Ordnance/Munitions:** None **Targets:** Targets will remain installed on the bottom until test period is completed and will be recovered. **Duration:** Varies, dependent on test parameters.	**Location:** Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Mid-frequency projector (e.g., MF10), low-frequency projectors (e.g., LF5) **Energy:** None **Physical Disturbance and Strike:** None **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	Targets will remain installed on the bottom until test period is completed and will be recovered.	
Assumptions Used for Analysis	Varies dependent on equipment tested.	

A.3.1.2 Performance Testing at Sea

Activity Name	Activity Description	
System, Subsystem and Component Testing		
Performance Testing at Sea	**Short Description:** Operating autonomous underwater vehicle (AUV), remotely operated vehicle (ROV), unmanned undersea vehicle (UUV), submersibles/Concepts and Prototypes underwater at sea. Systems will be exercised to obtain operational performance measurements of all subsystems and components used for navigation and mission objectives.	
Long Description	Operating AUV, ROV, UUV, submersibles/Concepts and Prototypes (including experimental vehicles, systems, equipment, tools and hardware) underwater in a static or dynamic condition while underway in Puget Sound. The instrumented platform will have onboard acoustic measurement data acquisition and analysis systems, onboard/over-the-side hydrophones (some sitting on the sea floor), and surface tracking vessels. Systems will be exercised to obtain operational performance measurements of all subsystems and components including motors, controllers, actuators, communication and devices, and forward, side and bottom looking sonar used for navigation and mission objectives. A separate tracking boat and multiple boats may be used as required for tracking, observation and safety. Diving services may be required.	
Information Typical to the Event	**Platform:** Support craft, barge **Systems:** AUV, ROV, UUV, submersibles **Ordnance/Munitions:** None **Targets:** Targets will remain installed on the bottom until test period is completed and will be recovered. **Duration:** Varies, dependent on test parameters.	**Location:** Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Acoustic modems (e.g., M3), synthetic aperture sonar (e.g., SAS2) **Energy:** None **Physical Disturbance and Strike:** Vessel and in-water device strikes **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	Targets will remain installed on the bottom until test period is completed and will be recovered.	
Assumptions Used for Analysis	Varies, dependent on equipment tested.	

A.3.1.3 Development Training and Testing

Activity Name	Activity Description	
System, Subsystem and Component Testing		
Development Training and Testing	**Short Description:** Operating autonomous underwater vehicle (AUV), remotely operated vehicle (ROV), unmanned undersea vehicle (UUV), submersibles/Concepts and Prototypes underwater at sea. Systems will be exercised to validate development and to provide operator familiarization and training with all subsystems and components used for navigation and mission objectives.	
Long Description	Operating AUV, ROV, UUV, submersibles/Concepts and Prototypes (including experimental vehicles, systems, equipment, tools and hardware) underwater in a static or dynamic condition at-sea. The instrumented platform will have onboard acoustic measurement data acquisition and analysis systems, and onboard/over-the-side hydrophones (some sitting on the sea floor), and surface tracking vessels. Systems will be exercised to validate development and to provide operator familiarization and training with all subsystems and components including motors, controllers, actuators, communication and devices, and forward, side and bottom looking sonar used for navigation and mission objectives. A separate tracking boat and multiple boats may be used as required for tracking, observation and safety. Diving services may be required.	
Information Typical to the Event	**Platform:** Support craft, barge **Systems:** AUV, ROV, UUV, submersibles **Ordnance/Munitions:** None **Targets:** Targets will remain installed on the bottom until test period is completed and will be recovered. **Duration:** Varies, dependent on test parameters.	**Location:** Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** High-frequency projectors (e.g., HF6), acoustic modems (e.g., M3) **Energy:** None **Physical Disturbance and Strike:** Vessel and in-water device strikes **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	Targets will remain installed on the bottom until test period is completed and will be recovered.	
Assumptions Used for Analysis	Varies, dependent on equipment tested.	

A.3.2 PROOF OF CONCEPT TESTING

A.3.2.1 Proof-of-Concept Testing

Activity Name	Activity Description	
Proof-of-Concept Testing		
Proof-of-Concept Testing	**Short Description:** Design, fabrication and installation of unique hardware and towing configurations in support of various surface and underwater demonstrations as proof-of-concept.	
Long Description	Design, fabrication and installation of unique hardware and towing configurations in support of various surface and underwater demonstrations as proof-of-concept. Example: Adapt a fixture to a test platform which will simulate a dry-deck shelter, at 40 feet depth, and prove something can be safely deployed and recovered as it and the test platform moves through the water at slow speed. The instrumented platform may have a suite of Shipboard Deployed Equipment which will be used for monitoring, communication and control of the deployed systems. Can involve use of autonomous underwater vehicles (AUVs)/ remotely operated vehicles (ROVs)/unmanned undersea vehicles (UUVs), submersibles, Concepts and Prototypes (including experimental vehicles, systems, equipment, tools and hardware). Systems will be exercised to prove concept(s) and integrate with all required subsystems and components including motors, controllers, actuators, communication and devices, and forward, side and bottom looking sonar used for navigation and mission objectives. A separate tracking boat and multiple boats will be used for tracking, observation and safety. Diving services may be required.	
Information Typical to the Event	**Platform:** Support craft (usually a tug boat), barges, and other support boats as required **Systems:** Various such as AUV/ROV/UUVs, submersible, Concepts and Prototypes (including experimental vehicles, systems, equipment, tools and hardware.) **Ordnance/Munitions:** None **Targets:** Targets maybe required to be installed in the testing area **Duration:** Varies	**Location:** Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** High-frequency projector (e.g., HF6), acoustic modem (e.g., M3), synthetic aperture sonar (e.g. SAS2) **Energy:** None **Physical Disturbance and Strike:** None **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	Targets will remain installed on the bottom until test period is completed (up to 36 months) and will be recovered.	
Assumptions Used for Analysis	Varies dependent on equipment tested.	

A.4 NAVAL SURFACE WARFARE CENTER, CARDEROCK DIVISION, SOUTHEAST ALASKA ACOUSTIC MEASUREMENT FACILITY TESTING ACTIVITIES

The Southeast Alaska Acoustic Measurement Facility (SEAFAC) is the Navy's only west coast asset for making high fidelity passive acoustic signature measurements. SEAFAC includes directive line arrays, data collection and processing systems for real-time data analysis and signature evaluation.

As the Navy's primary acoustic engineering measurement facility in the Pacific, SEAFAC provides the capability to perform RDT&E evaluations to determine the sources of radiated acoustic noise, to assess vulnerability, and to develop quieting measures.

The facility consists of a site to collect acoustic signatures of submerged submarines and surface vessels underway, and a unique static site to measure acoustic signatures of motionless (static) submerged submarines with various onboard machinery secured or under unloaded operation.

A.4.1 NAVAL SURFACE WARFARE CENTER, CARDEROCK DIVISION, SOUTHEAST ALASKA ACOUSTIC FACILITY

A.4.1.1 Surface Vessel Acoustic Measurement

Activity Name	Activity Description	
Research, Development, Test, and Evaluation		
Surface Vessel Acoustic Measurement	**Short Description:** Conduct new construction acoustic trial measurements.	
Long Description	The assessment of surface ship acoustic signatures involves the measurement of radiated noise from surface ships within the Southeast Alaska Acoustic Measurement Facility's underway site. During the acoustic trial, the surface ship traverses the underway site in alternate directions, passing above the measurement arrays under a variety of operating conditions and speeds. Sensors on the arrays detect acoustic noise in the water and transmit it to shore facilities where the data is processed by computers. Scientists and engineers analyze the results, and the characteristics and the source of the noise emanating from the ship are determined. These operations typically run for 24 hours a day over the test period.	
Information Typical to the Event	**Platform:** Surface vessel **Systems:** Various **Ordnance/Munitions:** None **Targets:** None **Duration:** 3–4 days	**Location:** Western Behm Canal, Alaska
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** High-frequency projectors (e.g., HF3), mid-frequency projectors (e.g., MF9, MF10) **Energy:** None **Physical Disturbance and Strike:** Vessel strike **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	None	

A.4.1.2 Underwater Vessel Acoustic Measurement

Activity Name	Activity Description	
Research, Development, Test, and Evaluation		
Underwater Vessel Acoustic Measurement	**Short Description:** Conduct acoustic trial measurements of underwater vessels.	
Long Description	Conduct new construction and post shakedown availability acoustic trial measurements. The primary purpose of the acoustic trial measurement is to identify any acoustic signals emanating from the vessel. The assessment of underwater acoustic signatures involves the measurement of radiated noise from underwater vessels (typically submarines) within the Southeast Alaska Acoustic Measurement Facility's underway and/or static site. During static tests, the submarine is positioned between two permanently moored barges and lowered on cables to the appropriate depth where acoustic measurements are taken during operation of various submarine systems. During the underway portion of the acoustic trial, the submarine traverses the site in alternate directions, passing between the measurement arrays under a variety of operating conditions, speeds, and depths. Sensors on the arrays detect acoustic noise in the water and transmit it to shore facilities where the data is processed by computers. Scientists and engineers analyze the results, and the characteristics and the source of the noise emanating from the submarine are determined. These operations typically run for 24 hours a day over the test period.	
Information Typical to the Event	**Platform:** Submarine **Systems:** Various **Ordnance/Munitions:** None **Targets:** None **Duration:** 1–2 weeks	**Location:** Western Behm Canal, Alaska
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Mid-frequency projectors (e.g., MF9, MF10), high-frequency projectors (e.g., HF3), low-frequency projectors (e.g., LF5) **Energy:** None **Physical Disturbance and Strike:** Vessel strike **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	None	

A.4.1.3 Underwater Vessel Hydrodynamic Performance Measurement

Activity Name	Activity Description	
Research, Development, Test, and Evaluation		
Underwater Vessel Hydrodynamic Performance Measurement	**Short Description:** Conduct hydrodynamic performance trial measurements	
Long Description	The Southeast Alaska Acoustic Measurement Facility (SEAFAC) is used periodically to verify the accuracy of the navigational equipment used on subsurface vessels. The tracking features within SEAFAC's site are used to compare and calibrate on-vessel navigation systems. Typically, these operations occur once per year over a 2-day timeframe. In addition to calibration of navigation systems, the hydrodynamic performance of the submarine is tested and verified on the instrumented underway site.	
Information Typical to the Event	**Platform:** Submarine **Systems:** Various **Ordnance/Munitions:** None **Targets:** None **Duration:** 2 days	**Location:** Western Behm Canal, Alaska
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** None **Energy:** None **Physical Disturbance and Strike:** Vessel strike **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	None	

A.4.1.4 Cold Water Training

Activity Name	Activity Description	
Miscellaneous Tests		
Cold Water Training	**Short Description:** Involves Navy personnel conducting insertion training in cold-water conditions. The training may include ingress and egress from subsurface vessels and small surface craft.	
Long Description	Fleet training for divers in a cold water environment and other diver training related to Navy divers supporting range operations. Acoustic systems may be used in diver training. The training may include ingress and egress from subsurface vessels positioned at the static site, and operations from small surface craft.	
Information Typical to the Event	**Platform:** Vessel, pierside, or shore **Systems:** Various **Ordnance/Munitions:** None **Targets:** None **Duration:** TBD	**Location:** Western Behm Canal, Alaska
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** High-frequency projector (e.g., HF6), mid-frequency projector (e.g., MF9, MF10) **Energy:** None **Physical Disturbance and Strike:** None **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	None	

A.4.1.5 Component System Testing

Activity Name	Activity Description	
Research, Development, Test, and Evaluation		
Component System Testing	**Short Description:** Conduct testing on individual components of new defense acquisition systems	
Long Description	The Navy may develop or have developed new systems that require a measurement of the acoustic radiated signature. The Southeast Alaska Acoustic Measurement Facility will create tests such that the component system can be properly evaluated either at the underway site or the static site, dependent upon the requirements. Test varies depending on the specific system tested. Typical test involves acoustic measurement of system under operation. Duration of the testing is determined by the type of testing required and the complexity.	
Information Typical to the Event	**Platform:** Various **Systems:** Various **Ordnance/Munitions:** None **Targets:** None **Duration:** 1–2 weeks	**Location:** Western Behm Canal, Alaska
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** High-frequency projectors (e.g., HF6), mid-frequency projectors (e.g., MF9, MF10) **Energy:** None **Physical Disturbance and Strike:** Vessel strike **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	None	

A.4.1.6 Countermeasures Testing

Activity Name	Activity Description	
Research, Development, Test, and Evaluation		
Countermeasures Testing	**Short Description:** Countermeasures emit active acoustic energy of varying frequencies into the water to mimic the acoustic characteristics of a target so that the actual threat or target remains undetected.	
Long Description	Countermeasures, which may take many different forms and represent a range of tactics, attempt to disrupt an attack intended for a target. Underwater, a countermeasure may emit sound that is louder than the target or in a different location that is similar to the target, causing the attacker to detour away from the target. Additionally, it could be something that looks like a threat or mimics the acoustic characteristics of a target, so that the actual threat or target remains undetected. By design, countermeasures emit active acoustic energy of varying frequencies into the water. The Southeast Alaska Acoustic Measurement Facility will deploy these countermeasures to measure and validate performance for engineering tests or acceptance testing.	
Information Typical to the Event	**Platform:** Various **Systems:** Various **Ordnance/Munitions:** None **Targets:** None **Duration:** 3–4 days	**Location:** Western Behm Canal, Alaska
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** None **Energy:** None **Physical Disturbance and Strike:** Vessel strike **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	None	

A.4.1.7 Electromagnetic Measurement

Activity Name	Activity Description	
Research, Development, Test, and Evaluation		
Electromagnetic Measurement	**Short Description:** Conduct new construction, post shakedown availability, and life cycle electromagnetic measurements.	
Long Description	Vessels require measurement to determine their electromagnetic characteristics on a regular basis. The measurements at the Southeast Alaska Acoustic Measurement Facility will provide this data to the Fleet.	
Information Typical to the Event	**Platform:** Various **Systems:** Various **Ordnance/Munitions:** None **Targets:** None **Duration:** 1–2 weeks	**Location:** Western Behm Canal, Alaska
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Mid-frequency projectors (e.g., MF9, MF10) **Energy:** None **Physical Disturbance and Strike:** Vessel strike **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	None	

A.4.1.8 Measurement System Repair and Replacement

Activity Name	Activity Description	
Research, Development, Test, and Evaluation		
Measurement System Repair and Replacement	**Short Description:** Conduct repairs, replacements, and calibration of acoustic measurement systems.	
Long Description	The Southeast Alaska Acoustic Measurement Facility (SEAFAC) has many in-water assets that are used to make measurements and track vessels. Occasionally, these assets require repair or replacement. The SEAFAC crew will recover, repair, and then re-install the assets. This event occurs as needed and of varying duration based upon complexity and scope. Following the repairs, testing and validation of the equipment is needed to insure proper operation.	
Information Typical to the Event	**Platform:** Various **Systems:** Various **Ordnance/Munitions:** None **Targets:** None **Duration:** 1–2 weeks	**Location:** Western Behm Canal, Alaska
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Mid-frequency projectors (e.g., MF9, MF10) **Energy:** None **Physical Disturbance and Strike:** Vessel strike **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	None	

A.4.1.9 Project Operations

Activity Name	Activity Description	
Research, Development, Test, and Evaluation		
Project Operations	**Short Description:** Support testing and training of fleet assets.	
Long Description	Prior to deployment overseas, every Navy ship conducts training and testing to prove they are ready for the deployment. The Southeast Alaska Acoustic Measurement Facility will be made available for this testing and training for submarines and possibly surface ships.	
Information Typical to the Event	**Platform:** Various **Systems:** Various **Ordnance/Munitions:** None **Targets:** None **Duration:** 1–2 weeks	**Location:** Western Behm Canal, Alaska
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** High-frequency projectors (e.g., HF6), mid-frequency projectors (e.g., MF9, MF10) **Energy:** None **Physical Disturbance and Strike:** Vessel strike **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	None	

A.4.1.10 Target Strength Trial

Activity Name	Activity Description	
Research, Development, Test, and Evaluation		
Target Strength Trial	**Short Description:** Asset moored to static site. Acoustic projectors and receive arrays will be rotated around asset. Broadband waveforms will be transmitted. Underwater tracking system will be utilized to monitor relative positions.	
Long Description	Submarines require measurement to determine their target strength if subjected to active sonar. This testing procedure allows the Southeast Alaska Acoustic Measurement Facility to measure the target strength of a submarine while moored in the static site. A source is deployed and moved around the submarine to make this measurement.	
Information Typical to the Event	**Platform:** Various **Systems:** Various **Ordnance/Munitions:** None **Targets:** None **Duration:** 3–4 days	**Location:** Western Behm Canal, Alaska
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** High-frequency projectors (e.g., HF6) **Energy:** None **Physical Disturbance and Strike:** Vessel strike **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	None	

A.5 NAVAL SEA SYSTEMS COMMAND PROGRAM OFFICE SPONSORED TESTING ACTIVITIES

Naval Sea Systems Command also conducts tests that are sponsored by various program offices. Some of these activities are conducted in conjunction with fleet activities in the Offshore Area off the coast of Washington, Oregon, and northern California, and some occur in Puget Sound and at Navy piers at Naval Base (NAVBASE) Kitsap Bremerton, NAVBASE Kitsap Bangor, and Naval Station Everett. Tests within this category include, but are not limited to, anti-surface warfare, anti-submarine warfare, mine warfare, and force protection (maintaining security of Navy facilities, ships, submarines, and aircraft).

A.5.1 LIFE CYCLE ACTIVITIES

A.5.1.1 Pierside Sonar Testing

Activity Name	Activity Description	
Life Cycle Activities		
Pierside Sonar Testing	**Short Description:** Pierside testing of submarine and surface ship sonar systems occurs periodically following major maintenance periods and for routine maintenance.	
Long Description	Following major and routine maintenance periods and prior to deployment at-sea, pierside testing and maintenance of sonar systems is required. Multiple systems with active and passive acoustic sources such as tactical sonar, navigation systems, fathometers, underwater communications systems, underwater distress beacons, range finders, and other similar systems, would be tested.	
Information Typical to the Event	**Platform:** Submarines, surface ships **Systems:** Surface ship and submarine sonar, fathometers, pingers, underwater communication **Ordnance/Munitions:** None **Targets:** None **Duration:** Event duration for each test can be up to 3 weeks, with intermittent use of active sonar.	**Location:** Inland Waters: Naval Base (NAVBASE) Kitsap Bangor NAVBASE Kitsap Bremerton Naval Station Everett
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Sources such as submarine and surface ship sonar (e.g., ASW3, MF3, MF9, HF1, HF3), underwater communications (e.g., M3) **Energy:** None **Physical Disturbance and Strike Potential:** None **Entanglement Potential:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	Sonar would not be continuously active for the duration of the test	

A.5.2 SHIPBOARD PROTECTION SYSTEMS AND SWIMMER DEFENSE TESTING

A.5.2.1 Pierside Integrated Swimmer Defense

Activity Name	Activity Description	
Shipboard Protection Systems and Swimmer Defense Testing		
Pierside Integrated Swimmer Defense	**Short Description:** Swimmer defense testing ensures that systems can effectively detect, characterize, verify, and engage swimmer/diver threats in harbor environments.	
Long Description	Swimmer defense testing includes testing of systems to determine if they can effectively detect, characterize, verify, and engage swimmer/diver threats in harbor environments. Swimmer and diver threats are detected with high-frequency sonar. The threats are then warned to exit the water through the use of underwater voice communications. Under operational conditions, if the threat does not comply, non-lethal diver deterrent air guns are used against the threat; however, airguns would not be used under proposed testing conditions. Surface loudhailers are also used during the test. Event duration is 14 days, with intermittent periods of use for each system during this time.	
Information Typical to the Event	**Platform:** None **Systems:** High-frequency sonar; surface loudhailers **Ordnance/Munitions:** None **Targets:** None **Duration:** 14 days	**Location:** Inland Waters: Naval Base Kitsap Bangor
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Swimmer defense sonar (e.g., SD1, MF8, LF4) **Energy:** None **Physical Disturbance and Strike:** None **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	**Other Sensors:** Surface ship protection systems (e.g., communications systems, loudhailers, swimmer deterrents)	

A.5.3 UNMANNED VEHICLE TESTING

A.5.3.1 Unmanned Vehicle Development and Payload Testing

Activity Name	Activity Description	
Unmanned Vehicle Testing		
Unmanned Vehicle Development & Payload Testing	**Short Description:** Vehicle development involves the production and upgrade of new unmanned platforms on which to attach various payloads used for different purposes.	
Long Description	Vehicle development involves the production and upgrade of new unmanned underwater platforms on which to attach various payloads used for different purposes. Platforms can include unmanned underwater vehicles. Payload testing assesses various systems that can be incorporated onto unmanned platforms for mine warfare, bottom mapping, etc. Tests range from basic remote control and autonomous navigation tests to deployment and activation of onboard systems which may include hydrodynamic instruments, launchers, and recovery capabilities. These vehicles are capable of expanding the communication and surveillance capabilities of submarines, surface vessels, and terrestrial commands. Event duration for unmanned vehicles with traditional propulsion typically lasts up to 40 hours. Some propulsion systems (e.g., gliders) could operate continuously for multiple months.	
Information Typical to the Event	**Platform:** Support craft, pierside or shore **Systems:** Various **Ordnance/Munitions:** None **Targets:** None **Duration:** Tests may be from 10 minutes to 40 hours; some could operate for multiple days or months	**Location:** Offshore Area Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Unmanned vehicle sonar systems (e.g., MF9) **Energy:** None **Physical Disturbance and Strike:** In-water device strike, bottom crawling vehicles **Entanglement:** None **Ingestion:** None	
Detailed Military Expended Materials Information	None	
Assumptions Used for Analysis	None	

A.5.4 ANTI-SURFACE WARFARE/ANTI-SUBMARINE WARFARE TESTING

A.5.4.1 Torpedo (Explosive) Testing

Activity Name	Activity Description	
Anti-Surface Warfare (ASUW)/Anti-Submarine Warfare (ASW) Testing		
Torpedo (Explosive) Testing	**Short Description:** Air, surface, or submarine crews employ explosive torpedoes against artificial targets.	
Long Description	Non-explosive and explosive torpedoes (carrying a warhead) would be launched at a suspended target by a submarine and fixed- or rotary-winged aircraft or surface combatants. Torpedoes would detonate on an artificial target located at a depth between 200 and 700 feet below the water's surface. Event duration is 1–2 days during daylight hours. Only 1 heavyweight torpedo test could occur in 1 day; 2 heavyweight torpedo tests could occur on consecutive days. Two lightweight torpedo tests could occur in a single day.	
Information Typical to the Event	**Platform:** Submarine; surface ship; fixed- and rotary–wing aircraft **Systems:** None **Ordnance/Munitions:** Torpedoes (heavyweight and lightweight) – high-explosive (HE) and non-explosive practice munitions (NEPM) **Targets:** Stationary Artificial Targets (e.g., MK 28) **Duration:** 1–2 days during daylight hours	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Underwater explosion (e.g., E8, E11), torpedo sonar (e.g., TORP1, TORP2) **Energy:** None **Physical Disturbance and Strike:** Vessel strike, In-water device strike **Entanglement:** decelerator/parachutes (sonobuoy and torpedo), guidance wire **Ingestion:** target and torpedo fragments, decelerator/parachutes (sonobuoy and torpedo), torpedo launch accessories	

Detailed Military Expended Materials Information	• 4 HE torpedoes and associated launch accessories/event
	• 6 non-explosive torpedo accessories/event
	• Torpedo launch accessories
	  o Lightweight torpedo accessories (dependent upon launch platform/delivery):
	  ▪ Air-launched: nose cap, suspension bands, air stabilizer, sway brace pad, arming wire, fahnstock clip
	  ▪ High Altitude ASW Weapons Capability: all of above plus wing kit
	  ▪ Vertical launch accessories: air-launched accessories plus rocket booster, airframe, parachute
	  ▪ MK 46 exercise torpedo will drop two lead weights
	• Heavyweight torpedo accessories: guidance wire, flex hose	

Assumptions Used for Analysis	One guidance wire and one flex hose for each heavyweight torpedo fired (HE or NEPM). Two fahnstock clips, one of each other item per air-launched torpedo (HE or NEPM). Lead weights are associated with the NEPM MK 46 torpedo only.	

A.5.4.2 Torpedo (Non-Explosive) Testing

Activity Name	Activity Description	
Anti-Surface Warfare (ASUW)/Anti-Submarine Warfare (ASW) Testing		
Torpedo (Non-explosive) Testing	**Short Description:** Air, surface, or submarine crews employ non-explosive torpedoes against submarines or surface vessels.	
Long Description	Aerial, surface, and subsurface assets fire exercise torpedoes against surface or subsurface targets. Torpedo testing evaluates the performance and the effectiveness of hardware and software upgrades of heavyweight and/or lightweight torpedoes. Event duration is dependent on number of torpedoes fired. Events can last up to 2 weeks. Typically, no more than 8 torpedoes are fired per day during daylight hours.	
Information Typical to the Event	**Platform:** Submarines, surface ships, fixed- and rotary–wing aircraft **Systems:** Surface ship and submarine sonar, sonobuoys, dipping sonar **Ordnance/Munitions:** Lightweight torpedoes, heavyweight torpedoes **Targets:** Submarines, surface ships, Motorized Autonomous Targets (e.g., Expendable Mobile Anti-Submarine Warfare Training Target), Stationary Artificial Targets (e.g., Fleet Training Target) **Duration:** Up to 2 weeks	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Submarine and surface ship sonar (e.g., ASW3, MF10), active sonobuoys (e.g., MF5), torpedo sonar (e.g., TORP1, TORP2), acoustic decoys (e.g., ASW4) **Energy:** None **Physical Disturbance and Strike:** non-explosive practice munition strike **Entanglement:** decelerator/parachutes (sonobuoy and torpedo), guidance wire **Ingestion:** decelerator/parachutes (sonobuoy and torpedo), torpedo launch accessories	

Detailed Military Expended Material Information	• Sonobuoys
	• Expendable targets
	• Acoustic countermeasures
	• Torpedo launch accessories
	  o Lightweight torpedo accessories (dependent upon launch platform/delivery):
	  ▪ Air-launched: nose cap, suspension bands, air stabilizer, sway brace pad, arming wire, fahnstock clip
	  ▪ High Altitude ASW Weapons Capability: all of above plus wing kit
	  ▪ Vertical launch accessories: air-launched accessories plus rocket booster, airframe, parachute
	  ▪ MK 46 torpedo will drop two lead weights
	  o Heavyweight torpedo accessories: guidance wire, flex hose	

Assumptions Used for Analysis	All torpedoes are recovered One guidance wire and one flex hose for each heavyweight torpedo fired. Two fahnstock clips, one of each other item per air-launched torpedo.	

A.5.4.3 Countermeasure Testing

Activity Name	Activity Description	
Anti-Surface Warfare (ASUW)/Anti-Submarine Warfare (ASW) Testing		
Countermeasure Testing	**Short Description:** Countermeasure testing involves the testing of systems that would detect, localize, track, and attack incoming weapons.	
Long Description	Countermeasure testing involves the testing of systems that would detect, localize, track, and sometimes attack incoming weapons. Countermeasure defense systems testing involves the launch of non-explosive torpedoes at incoming weapons. Acoustic systems testing includes towed arrays. Event duration is up to 10 days with a maximum of 40 anti-torpedo torpedoes fired (up to 10 shots occurring per day), whereas towed array countermeasure tests can be as short as 4 hours.	
Information Typical to the Event	**Platform:** Surface ships **Systems:** Anti-torpedo torpedo defense systems, towed arrays (e.g., NIXIE) **Ordnance/Munitions:** Lightweight torpedoes (non-explosive practice munitions [NEPM]) **Targets:** Torpedo emulators **Duration:** 4 hours–10 days	**Location:** Offshore Area Inland Waters
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Surface ship sonar (e.g., ASW3), high-frequency sources (e.g., HF5), torpedo sonar (e.g., TORP1) **Energy:** None **Physical Disturbance and Strike:** NEPM strike **Entanglement:** None **Ingestion:** Torpedo launch accessories	
Detailed Military Expended Material Information	Torpedo launch accessories	
Assumptions Used for Analysis	None	

A.5.5 NEW SHIP CONSTRUCTION

A.5.5.1 Anti-Submarine Warfare Mission Package Testing

Activity Name	Activity Description	
New Ship Construction		
Anti-Submarine Warfare (ASW) Mission Package Testing	**Short Description:** Ships and their supporting platforms (e.g., helicopters, unmanned aerial vehicles) detect, localize, and prosecute submarines.	
Long Description	Littoral combat ships conduct detect-to-engage operations against modern diesel-electric and nuclear submarines using airborne and surface assets (both manned and unmanned). Active and passive acoustic systems are used to detect and track submarine targets, culminating in the deployment of lightweight torpedoes to engage the threat.	
Information Typical to the Event	**Platform:** Littoral Combat Ship; rotary wing aircraft **Systems:** Surface ship sonar, helicopter-deployed sonar, active sonobuoys, torpedo sonar **Ordnance/Munitions:** Non-explosive torpedoes **Targets:** None **Duration:** Event duration is approximately 1–2 weeks, with 4–8 hours of active sonar use with intervals of non-activity in between.	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Surface ship sonar (e.g., ASW1, ASW3, MF12), helicopter-deployed sonar (e.g., MF4), active sonobuoys (e.g., MF5), torpedo sonar (e.g., TORP1) **Energy:** None **Physical Disturbance and Strike:** Vessel strike; towed device strike **Entanglement:** Decelerator/parachutes **Ingestion:** Decelerator/parachutes	
Detailed Military Expended Material Information	Torpedo launch accessories, sonobuoys	
Assumptions Used for Analysis	None	

A.6 NAVAL AIR SYSTEMS COMMAND TESTING ACTIVITIES

Naval Air Systems Command testing events generally fall into the primary mission areas used by the Fleet and, in terms of their potential environmental effects, Naval Air Systems Command testing events are very similar to Fleet training events.

Platforms and systems tested by the Naval Air Systems Command are eventually transferred to the Fleet and used in Fleet training events. Those systems and platforms that are transferred to the Fleet within the timeframe of this document are analyzed in the training sections of this EIS/OEIS. The results of the analysis of platforms and systems used in training events may differ when the same platforms or systems are used during testing events because, for example, the location of the event may be different or the event may be conducted in a different manner. The following activity descriptions are specific to Naval Air Systems Command testing events.

A.6.1 ANTI-SUBMARINE WARFARE

A.6.1.1 Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft – Directional Command Activated Sonobuoy System

Activity Name	Activity Description	
Anti-Submarine Warfare		
Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft (Directional Command Activated Sonobuoy System [DICASS])	**Short Description:** This test evaluates the sensors and systems used by maritime patrol aircraft to detect and track submarines and to ensure that aircraft systems used to deploy the tracking systems perform to specifications and meet operational requirements.	
Long Description	Similar to Anti-Submarine Warfare Tracking Exercise – Maritime Patrol Aircraft, an Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft evaluates the sensors and systems used to detect and track submarines and to ensure that platform systems used to deploy the tracking systems perform to specifications and meet operational requirements. For this test event, P-3 or P-8A fixed-wing aircraft conduct anti-submarine warfare using passive and active sonobuoys (e.g., AN/SSQ-62 DICASS). This activity would be conducted in deep (typically beyond 100 ft.) waters and weapons testing could be initiated from a land base or surface ship. Some Anti-Submarine Warfare Maritime Patrol Aircraft Tracking Test – DICASS events could be conducted as part of a Coordinated Event with fleet training activities.	
Information Typical to the Event	**Platform:** Surface combatant, submarine, fixed wing aircraft **Systems:** Sonobuoys (AN/SSQ-62x DICASS and passive sonobuoys) **Ordnance/Munitions:** None **Targets:** None **Duration:** 6 flight hours/event	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Sonar, sonobuoys (e.g., MF5), aircraft noise **Energy:** None **Physical Disturbance and Strike:** Military expended materials strike, aircraft strike (seabirds only) **Entanglement:** Parachutes/decelerators **Ingestion:** Decelerator/parachutes	
Detailed Military Expended Materials Information	Sonobuoys, to include decelerator/parachutes, lead seawater batteries, lithium batteries (being phased out)	
Assumptions Used for Analysis	Assume one decelerator/parachute per sonobuoy	

A.6.1.2 Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft – Multistatic Active Coherent Sonobuoy System

Activity Name	Activity Description	
Anti-Submarine Warfare		
Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft (Multistatic Active Coherent [MAC])	**Short Description:** This test evaluates the sensors and systems used by maritime patrol aircraft to detect and track submarines and to ensure that aircraft systems used to deploy the tracking systems perform to specifications and meet operational requirements.	
Long Description	Similar to Anti-Submarine Warfare Tracking Exercise – Maritime Patrol Aircraft, an Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft evaluates the sensors and systems used to detect and track submarines and to ensure that platform systems used to deploy the tracking systems perform to specifications and meet operational requirements. For this test event, P-3 or P-8A fixed-wing aircraft conduct anti-submarine warfare using passive and active sonobuoys (e.g., AN/SSQ-125 MAC). This activity would be conducted in deep (typically beyond 100 feet) waters and weapons testing could be initiated from a land base or surface ship. Some Anti-Submarine Warfare Maritime Patrol Aircraft Tracking Test MAC events could be conducted as part of a Coordinated Event with fleet training activities.	
Information Typical to the Event	**Platform:** Surface combatant, submarine, fixed wing aircraft, rotary wing aircraft **Systems:** Sonobuoys (AN/SSQ-125 MAC and passive sonobuoys) **Ordnance/Munitions:** None **Targets:** None **Duration:** 6 flight hours/event	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Sonar, sonobuoys (e.g., ASW2), aircraft noise **Energy:** None **Physical Disturbance and Strike:** Military expended materials strike, aircraft strike (seabirds only) **Entanglement:** Decelerator/parachutes **Ingestion:** Decelerator/parachutes	
Detailed Military Expended Materials Information	Sonobuoys, to include decelerator/parachutes, lead seawater batteries, lithium batteries (being phased out)	
Assumptions Used for Analysis	Assume one decelerator/parachute per sonobuoy	

A.6.1.3 Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft – Signal, Underwater Sound Sonobuoys

Activity Name	Activity Description	
Anti-Submarine Warfare		
Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft (Signal, Underwater Sound [SUS])	**Short Description:** This test evaluates the sensors and systems used by maritime patrol aircraft to communicate with submarines using any of the family of SUS systems.	
Long Description	Similar to Anti-Submarine Warfare Tracking Exercise – Maritime Patrol Aircraft, an Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft evaluates the sensors and systems used to detect and track submarines and to ensure that platform systems used to deploy the tracking systems perform to specifications and meet operational requirements. For this test event, P-3 or P-8A fixed-wing aircraft conduct anti-submarine warfare using passive and active sonobuoys (i.e., MK-84 SUS) and explosive sonobuoys (i.e., MK-61 SUS, MK-64 SUS, and MK-82 SUS). This activity would be conducted in deep (typically beyond 100 feet) waters and weapons testing could be initiated from a land base or surface ship. Some Anti-Submarine Warfare Maritime Patrol Aircraft Tracking Test – SUS Sonobuoy events could be conducted as part of a Coordinated Event with fleet training activities.	
Information Typical to the Event	**Platform:** Surface combatant, submarine, fixed wing aircraft, rotary wing aircraft **Systems:** Sonobuoys (MK-61 SUS, MK-64 SUS, MK-82 SUS, MK-84 SUS, and passive sonobuoys) **Ordnance/Munitions:** High explosive sonobuoy systems described above **Targets:** None **Duration:** 6 flight hours/event	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Sonar, sonobuoys (e.g., MF6), underwater explosions (e.g., E3), aircraft noise **Energy:** None **Physical Disturbance and Strike:** Military expended materials strike, aircraft strike (seabirds only) **Entanglement:** Decelerator/parachutes **Ingestion:** Decelerator/parachutes, sonobuoy fragments	
Detailed Military Expended Materials Information	Sonobuoys, to include decelerator/parachutes, lead seawater batteries, lithium batteries (being phased out)	
Assumptions Used for Analysis	Assume one decelerator/parachute per sonobuoy	

A.6.1.4 Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft – Improved Extended Echo Ranging Sonobuoy System

Activity Name	Activity Description	
Anti-Submarine Warfare		
Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft (Improved Extended Echo Ranging [IEER])	**Short Description:** The test evaluations the sensors and systems used by maritime patrol aircraft to detect and track submarines and to ensure that aircraft systems used to deploy the tracking systems perform to specifications and meet operational requirements.	
Long Description	Similar to Anti-Submarine Warfare Tracking Exercise – Maritime Patrol Aircraft, an Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft evaluates the sensors and systems used to detect and track submarines and to ensure that platform systems used to deploy the tracking systems perform to specifications and meet operational requirements. For this test event, P-3 or P-8A fixed-wing aircraft conduct anti-submarine warfare using passive and explosive sonobuoys (i.e., AN/SSQ-110 IEER). This activity would be conducted in deep (typically beyond 100 feet) waters and weapons testing could be initiated from a land base or surface ship. Some Anti-Submarine Warfare Maritime Patrol Aircraft Tracking Test – IEER Sonobuoy events could be conducted as part of a Coordinated Event with fleet training activities.	
Information Typical to the Event	**Platform:** Surface combatant, submarine, fixed wing aircraft, rotary wing aircraft **Systems:** Sonobuoys (AN/SSQ-110x IEER and passive sonobuoys) **Ordnance/Munitions:** High explosive sonobuoy systems described above **Targets:** None **Duration:** 6 flight hours/event	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Underwater explosions (e.g., E4), aircraft noise **Energy:** None **Physical Disturbance and Strike:** Military expended materials strike, aircraft strike (seabirds only) **Entanglement:** Decelerator/parachutes **Ingestion:** Decelerator/parachutes, sonobuoy fragments	
Detailed Military Expended Materials Information	Sonobuoys, to include decelerator/parachutes, lead seawater batteries, lithium batteries (being phased out)	
Assumptions Used for Analysis	Assume one decelerator/parachute per sonobuoy	

A.6.1.5 Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft – High Duty Cycle Sonobuoy System

Activity Name	Activity Description	
Anti-Submarine Warfare		
Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft (High Duty Cycle [HDC])	**Short Description:** The test evaluations the sensors and systems used by maritime patrol aircraft to detect and track submarines and to ensure that aircraft systems used to deploy the tracking systems perform to specifications and meet operational requirements.	
Long Description	Similar to Anti-Submarine Warfare Tracking Exercise – Maritime Patrol Aircraft, an Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft evaluates the sensors and systems used to detect and track submarines and to ensure that platform systems used to deploy the tracking systems perform to specifications and meet operational requirements. For this test event, P-3 or P-8A fixed-wing aircraft conduct anti-submarine warfare using passive and active sonobuoys (i.e., HDC sonar). This activity would be conducted in deep (typically beyond 100 feet) waters and weapons testing could be initiated from a land base or surface ship. Some Anti-Submarine Warfare Maritime Patrol Aircraft Tracking Test – HDC Sonobuoy events could be conducted as part of a Coordinated Event with fleet training activities.	
Information Typical to the Event	**Platform:** Surface combatant, submarine, fixed wing aircraft, rotary wing aircraft **Systems:** Sonobuoys – HDC active and passive sonobuoys **Ordnance/Munitions:** None **Targets:** None **Duration:** 6 flight hours/event	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Sonar, sonobuoys (e.g., ASW2), aircraft noise **Energy:** None **Physical Disturbance and Strike:** Military expended materials strike, aircraft strike (seabirds only) **Entanglement:** Decelerator/parachutes **Ingestion:** Decelerator/parachutes	
Detailed Military Expended Materials Information	Sonobuoys, to include decelerator/parachutes, lead seawater batteries, lithium batteries (being phased out)	
Assumptions Used for Analysis	Assume one decelerator/parachute per sonobuoy	

A.6.2 ELECTRONIC WARFARE

A.6.2.1 Flare Test

Activity Name	Activity Description	
Electronic Warfare (EW)		
Flare Test	**Short Description:** Flare tests evaluate newly developed or enhanced flares, flare dispensing equipment, or modified aircraft systems against flare deployment. Tests may also train pilots and aircrew in the use of newly developed or modified flare deployment systems. Flare tests are often conducted with other test events, and are not typically conducted as standalone tests.	
Long Description	Flare tests are conducted to evaluate new flares, newly developed or modified flare deployment systems; to ensure that other newly enhanced aircraft systems are compatible with flare deployment; and to train pilots and aircrew in the use of newly developed or modified flare deployment systems. Flare tests are often conducted with other test events, and are not typically conducted as stand-alone tests. During a flare test, flares (and in some cases chaff) are deployed, but no weapons are typically fired. Fixed-wing aircraft deploy flares as a defensive tactic to disrupt the infrared missile guidance systems used by heat-seeking missiles, thereby causing the missile to lock onto the flare instead of onto the aircraft and enabling the aircraft to avoid the threat. In a typical scenario, an aircraft may detect the electronic targeting signals emitted from threat radars or missiles, or aircrew may visually identify a threat missile plume when a missile is launched. At a strategically appropriate time, the pilot dispenses flares and immediately maneuvers the aircraft to distract and defeat the threat. During a typical flare test, an aircraft will dispense flares 3,000 feet above mean sea level, and flares are completely consumed while in the air. Aircraft flares use a magnesium extruded flare grain. Flare types commonly deployed during Naval Air Systems Command testing activities include but are not limited to: MJU-57, MJU-49, and MJU-38 for high-speed aircraft and MJU-32 for low-speed aircraft.	
Information Typical to the Event	**Platform:** Fixed-wing aircraft **Systems:** Flares: MJU-57, MJU-49, and MJU-38 for high speed aircraft and MJU-32; Joint Allied Threat Assessment System/Common Infrared Countermeasures **Ordnance/Munitions:** None **Targets:** None **Duration:** 2–4 flight hours/event	**Location:** Offshore Area
Potential Impact Concerns *(Information regarding deconstruct categories and stressors)*	**Acoustic:** Aircraft noise **Energy:** None **Physical Disturbance and Strike:** Aircraft strike (birds only) **Entanglement:** None **Ingestion:** End caps	
Detailed Military Expended Materials Information	Flares (end caps and pistons), chaff	
Assumptions Used for Analysis	Flare use from all other events are captured under this activity. Estimated 60 flares and 60 chaff cartridges per event	