Appendix A Navy Activities Descriptions

Gulf of Alaska Navy Training Activities

Draft Supplemental Environmental Impact Statement/

Overseas Environmental Impact Statement

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Appendix A Navy Activities Descriptions

A.1 Training Activities

The U.S. Department of the Navy's (Navy's) training activities are organized generally into five primary mission areas and a miscellaneous category (Support Operations) in this Supplemental Environmental Impact Statement (SEIS)/Overseas Environmental Impact Statement (OEIS) that includes those activities that do not fall within a primary mission area but are an essential part of Navy training. Since the 1990s, the Navy has participated in Exercise Northern Edge, a major joint training exercise in Alaska and off the Alaskan coast that involves the Departments of the Navy, Army, Air Force, and Coast Guard participants reporting to a unified or joint commander. The commander then coordinates the activities planned to demonstrate and evaluate the ability of the services to engage in a regional conflict and carry out plans in response to a threat to national security. The tempo and types of training activities have fluctuated within the Gulf of Alaska (GOA) Temporary Maritime Activities Area (TMAA) Study Area (referred to as the "TMAA") due to evolving requirements, the introduction of new technologies, the dynamic nature of international events, advances in warfighting doctrine and procedures, and force structure changes. Training conducted in the TMAA is considered a major training exercise but is broken out into the individual warfare areas that could be part of the Northern Edge Exercise, or future Commander, United States Indo-Pacific Command high-end, multi-domain exercises. The exercise itself may vary by year and has flexibility based on assigned forces involved in the exercise for a particular year. The Proposed Action would occur over a maximum time period of up to 21 consecutive days during the months of April-October.

Descriptions of sonar, ordnance/munitions, targets, and other systems were provided in the 2011 GOA Final Environmental Impact Statement (EIS)/OEIS (Chapter 2, Description of Proposed Action and Alternatives, and Appendix H, Acoustic Systems Descriptions). Though the types of activities and level of events in the Proposed Action are the same as in the previous documents (Alternative 1 in both the 2011 GOA Final EIS/OEIS and 2016 GOA Final SEIS/OEIS), there have been changes in the platforms and systems used as part of those activities. Consistent with the previous analysis for Alternative 1, the sinking exercise activity will not be part of the Proposed Action for this SEIS/OEIS. The Navy has reduced the number or type of explosives used in the TMAA because unlike the analysis in the 2011 GOA Final EIS/OEIS and 2016 GOA Final SEIS/OEIS, this SEIS/OEIS does not include an "Alternative 2" that covers sinking exercise activities.

A.1.1 Air Warfare Training

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

A.1.1.1 Air Combat Maneuver

Air Warfare					
Air Combat Ma	neuver				
Short	Fixed-wing aircrews aggress	ively maneuver agains	t Typi	ical Duration	
Description	threat aircraft to gain a tactical advantage. 1–2 hours				
Long	Basic flight maneuvers in wh	nich fixed-wing aircrev	engage	in offensive and defensive maneuvering	
Description	against each other. During air combat maneuver engagements, no ordnance is fired. These				
	maneuvers typically involve	two aircraft; however	, based ι	upon the training requirement, air	
	combat maneuver exercises	may involve over a do	zen airc	raft.	
Typical	Platforms: Fixed-wing aircra	oft			
Components	Targets: None				
Standard	Aircraft safety	Typical Locations			
Operating	1	At high altitude abov	o the TN	ΛΔΔ	
Procedures	1	At high attitude above	e the m	VICA	
(Section 2.13)					
Stressors to	Acoustic:	Physical Disturbanc	e and St		
Biological	Aircraft noise	Aircraft		In-air electromagnetic	
Resources				devices	
	Explosive:	Ingestion: None		Entanglement:	
Character	None			None	
Stressors to Physical	Air Quality:	Seain Metal		d Water Quality:	
Resources	Criteria air pollutants Habitats:	ivietai	5		
Resources	None				
Stressors to	Cultural Resources:	Socioeconomic R	esources	s: Public Health and Safety:	
Human	None	Accessibility	csources	None	
Resources		Airborne acoustic	S		
		Physical disturba	nce and s	strike	
Military	Ingestible Material:	Milita		None	
Expended	None	Recove	rable		
Material		Mater	al		
	Non-Ingestible Material:				
	None				
Sonar and	None				
Other					
Transducer					
Bins					
In-Water	None				
Explosive Bins					
Procedural	None				
Mitigation	NOTE				
Measures					
Assumptions	No munitions fired Flare a	nd chaff may be used	All flare	and chaff accounted for in Counter	
Used for	Targeting Chaff Exercise—A				
Analysis	rangeting chair Exercise—F	merant events and Lie	CCI OTTIC V	TAITAIC ENCIOISC.	
, and 19515	<u> </u>				

A.1.1.2 Air Defense Exercise

Air Warfare					
Air Defense Ex	ercise				
Short	Aircrew and ship crews cor	nduct defensive	Typical Dura	ition	
Description	measures against threat aircraft or simulated missiles. 1–4 hours				
Long Description	Fixed-wing aircrew and ship personnel perform measures designed to defend against attacking threat aircraft or missiles or reduce the effectiveness of such attack. This exercise involves full detection through engagement sequence. Aircraft operate at varying altitudes and speeds. During this exercise, no ordnance is fired, however, countermeasures such as chaff and flares may be used.				
	fixed-wing aircraft, or at la	nd-based locations use s reat aircraft, and to eng	search radars t age exercises v	where personnel on ships use	
Typical	Platforms: Fixed-wing aircr	aft, surface combatant			
Components	Targets: Aircraft, Air target	:S			
Standard	Vessel safety	Typical Locations			
Operating	Aircraft safety	TMAA			
Procedures		TIVICAC			
(Section 2.13)					
Stressors to	Acoustic:	Physical Disturbance		Energy:	
Biological	Aircraft noise	Aircraft and aerial tar	_	In-air electromagnetic	
Resources	Vessel noise	Vessels and in-water	devices	devices	
	Explosive:	Ingestion:		Entanglement:	
	None	None		None	
Stressors to	Air Quality:	Sedimer	nts and Water	Quality:	
Physical	Criteria air pollutants	None			
Resources					
	Habitats:				
	None				
Stressors to	Cultural Resources:	Socioeconomic Res	ources:	Public Health and Safety:	
Human	None	Accessibility		None	
Resources		Airborne acoustics Physical disturbanc	a and strike		
Military	Ingestible Material:	Military	None		
Expended	None	Recovera			
Material	Non-Ingestible Material:	Material			
	None				
Sonar and	None	•			
Other					
Transducer					
Bins					
In-Water	None				
Explosive					
Bins					

Air Warfare	Air Warfare				
Air Defense Ex	ercise				
Procedural	Physical Disturbance and Strike: (Section 5.3.4)				
Mitigation	Vessel movement				
Measures					
Assumptions	All flare and chaff accounted for in flare exercise and chaff exercise events.				
Used for	No munitions are fired.				
Analysis					

A.1.1.3 Surface-to-Air Gunnery Exercise

Air Warfare						
	Gunnery Exercise					
Short	Surface ship crews fire larg	ze-caliher or		Tyni	cal Dura	ation
Description	medium-caliber guns at ai	_	ŀ		hours	
Long	An event involves one ship and a simulated threat aircraft or missile that is detected by the					
Description	-					
2000pto	ship's radar. Large-caliber or medium-caliber guns fire non-explosive projectiles to disable or destroy the threat before it reaches the ship. The target is towed by a contract air services jet.					
Typical						aircraft, surface combatant
Components	Targets: Towed Air targets	=		.,,		, a
Standard	Vessel safety	Typical Loc	ations			
Operating	Aircraft safety					
Procedures	Weapons firing	TMAA				
(Section	procedures					
2.13)	·					
Stressors to	Acoustic:	Physical D	isturbance	and S	trike:	Energy:
Biological	Aircraft noise	-	d aerial tar			In-air electromagnetic
Resources	Vessel noise	Vessels an	d in-water	device	es.	devices
	Weapons noise	Military ex	pended ma	aterial	s	
	Explosive:	Ingestion:				Entanglement:
	None	•	pended ma	aterial	s —	None
		munitio	ns			
Stressors to	Air Quality:		Sedimen	its and	d Water	· Quality:
Physical	Criteria air pollutants		Metals			
Resources	Habitats:					
	Physical disturbance and s					
_	military expended mate					
Stressors to	Cultural Resources:		onomic Res	ource	s:	Public Health and Safety:
Human	None	Accessib	· ·			Physical interactions
Resources			acoustics	a and	c+rileo	
B 4:11:4	to an attal a Banka state	Priysical	disturbanc	e and		
Military	Ingestible Material:		Military Recovera	la la	None	
Expended Material	Large-caliber projectile fra	gments	Material	bie		
iviateriai	Non-Ingestible Material:		iviateriai			
	None					
Sonar and	None					
Other	None					
Transducer						
Bins						
In-Water	None					
Explosive						
Bins						
Procedural	Acoustic Stressors: (Sectio	n 5.3.2)		Physi	cal Dist	urbance and Strike Stressors:
Mitigation	Weapon firing noise	/			ection 5	
Measures	, , , , , , , , , , , , , , , , , , , ,				l move	-
Assumptions	The target is a fiberglass fir	nned target t	hat is towe			
Used for	behind the towing aircraft.	_				,
Analysis	All projectiles are non-expl					
•	p. ejestiles are non expi					

A.1.1.4 Air-to-Air Missile Exercise

Air Warfare						
Air-to-Air Miss	ile Exercise					
Short	Fixed-wing aircrews fire air	-to-air missiles at	air Typ	ical Duration		
Description	targets or simulate firing a missile. 1–2 hours					
Long				target. Missiles are either high-explosive		
Description		_		air training missiles with nothing		
			-	captive air training missiles. The target is		
	an unmanned aerial target	drone, a tactical a	air-launched	decoy, or a parachute suspended		
	illumination flare. Target dr	rones deploy para	achutes and	are recovered by small boat or		
			-	ımination flares are expended and not		
	recovered. These events ty					
Typical	Platforms: Fixed-wing aircr	raft; rotary-wing a	aircraft; sma	III boat		
Components	Targets: Air targets, flares					
Standard	Vessel safety	Typical Location	ns			
Operating	Aircraft safety	TMAA				
Procedures	Weapons firing	114000				
(Section 2.13)	procedures					
	Unmanned Aerial Vehicle					
	Procedures	DI : 15: 1		N. 11		
Stressors to	Acoustic:	Physical Distur		- -		
Biological Resources	Aircraft noise Vessel noise	Aircraft and ae	_	In-air electromagnetic es devices		
Resources	Weapons noise	Military expend				
	weapons noise	ivilitary experit	aeu matena	13		
	Explosive:	Ingestion:		Entanglement:		
	In-air explosives	Military expend	ded materia	-		
	r	munitions		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
		Military expended materials – other				
		than munition	ons			
Stressors to	Air Quality:	Se	ediments an	d Water Quality:		
Physical	Criteria air pollutants		Chemicals	5		
Resources	Habitats:	M	1etals	Other materials		
	Physical disturbance and st					
	military expended mate					
Stressors to	Cultural Resources:	Socioeconon	nic Resource			
Human	None Accessibility Physical interactions					
Resources		Airborne aco				
		Physical distu				
Military	Ingestible Material:		ilitary	Undamaged targets, large or		
Expended Material	Target and missile (explosive) fragments Recoverable extra-large parachutes (recovered with drones)					
Material	iraginents	IVI	ateriai	with drones)		
	Non-Ingestible Material:					
	Medium parachutes (from					
	illumination flares)					
Sonar and	None			1		
Other						
Transducer						
Bins						

Air Warfare	
Air-to-Air Miss	ile Exercise
In-Water	None
Explosive	
Bins	
Procedural	Physical Disturbance and Strike: (Section 5.3.4)
Mitigation	Vessel movement
Measures	
Assumptions	Assumes that all missiles are explosive, although non-explosive practice munitions may be
Used for	used. All missiles explode at high altitudes.
Analysis	All propellants and explosives are consumed.
	Assume 1.5 flares per Missile Exercise event.

A.1.1.5 Surface-to-Air Missile Exercise

Air Warfare						
Surface-to-Air	Missile Exercise					
Short	Surface ship crews fire surf	face-to-air mis	siles at	Турі	cal Duration	
Description	air targets.			1–2 hours		
Long	Surface ship crews defend a	against threat	missiles ar	nd aird	craft with ship-launched surface-to-air	
Description	missiles.					
	The event involves a simula	ated threat air	craft. anti-	shin n	nissile, or land-attack missile, which is	
				-	r missiles are fired (explosive) to disable	
	•	-			ntrolled drone, launched from a ship.	
					mall boat or rotary-wing aircraft; when	
	used, tactical air-launched	•				
Typical	Platforms: Aircraft carrier,	-	-	o, surf	face combatant	
Components	Targets: Air targets, unmar					
Standard Operating	Vessel safety Aircraft safety	Typical Loca	tions			
Procedures	Weapons firing	TMAA				
(Section 2.13)	procedures					
	Unmanned aerial vehicle					
	procedures					
Stressors to	Acoustic:	Physical Dis			 -	
Biological	Aircraft noise	Aircraft and Vessels and	-		In-air electromagnetic	
Resources	Vessel noise Weapons noise	Military exp				
	weapons noise	willtary exp	ienueu ma	terrais	5	
	Explosive:	Ingestion:			Entanglement:	
	In-air explosives	Military exp	ended ma	terials	=	
		munition	ıs			
		Military exp		terials	s – other	
		than mu				
Stressors to	Air Quality:				d Water Quality:	
Physical Resources	Criteria air pollutants Habitats:		Chen Metals	nicals	Other materials	
Resources	Physical disturbance and st	rike –	ivictais		Other materials	
	military expended mate					
Stressors to	Cultural Resources:		nomic Res	ource	s: Public Health and Safety:	
Human	None	Accessibil	lity		Physical interactions	
Resources	Airborne acoustics					
		Physical c	disturbance	and:		
Military	Ingestible Material:		Military		Undamaged targets, large or extra-	
Expended	Target and missile (explosive) Recove			ble	large parachutes (recovered with	
Material	fragments		Material		drones)	
	Non-Ingestible Material:					
	Target launch rockets					
Sonar and	None					
Other						
Transducer						
Bins						

Air Warfare	Air Warfare				
Surface-to-Air	Missile Exercise				
In-Water	None				
Explosive					
Bins					
Procedural	Physical Disturbance and Strike: (Section 5.3.4)				
Mitigation	Vessel movement				
Measures					
Assumptions	Assumes that all surface-to-air missiles are high-explosive. The missile explodes at least				
Used for	33 feet above the surface. All explosives and propellants are consumed.				
Analysis					

A.1.2 Surface Warfare Training

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 small boats. The aircraft-to-surface component of surface warfare is conducted by long-range attacks using air-launched cruise missiles, precision-guided munitions, or aircraft guns and rockets. Surface warfare also is conducted by warships employing naval guns, and surface-to-surface missiles. Submarines attack surface ships using submarine-launched, anti-ship cruise missiles. Training in surface warfare includes surface-to-surface gunnery and missile exercises, air-to-surface gunnery and missile exercises, and submarine missile launch events. Gunnery and missile training generally involves the expenditure of ordnance against a towed surface target. Explosive missiles are not used on surface targets.

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 Visit, Board, Search, and Seizure

Surface Warfa	·e					
	earch, and Seizure					
Short	Military personnel from sh	ips and aircraft	board	Typi	cal Dura	tion
Description	suspect vessels, potentially conditions.	Up to 3 hours				
Long Description	Military personnel from ships and aircraft board suspect vessels, potentially under hostile conditions. These activities involve training of boarding parties delivered by helicopters and surface ships to surface vessels for the purpose of simulating vessel search and seizure operations. Various training scenarios are employed and may include small arms with non-explosive blanks and surveillance or reconnaissance unmanned surface and aerial vehicles. The entire exercise may last 2–3 hours.					
Typical	Platforms: Rotary-wing air	craft, surface c	ombatant	, smal	l boat	
Components	Targets: Surface targets					
Standard	Vessel safety	Typical Locat	ions			
Operating Procedures	Aircraft safety	TMAA				
(Section 2.13)	Laser safety Unmanned Aerial Vehicle					
(30001011 2.13)	Procedures					
	Unmanned Surface					
	Vehicle and					
	Unmanned					
	Underwater Vehicle					
	Procedures					
Stressors to	Acoustic:	Physical Dist	turbance a	and St	rike:	Energy:
Biological	Aircraft noise	Aircraft	:	ا مداد ما	_	In-air electromagnetic
Resources	Vessel noise Weapons noise	Vessels and i Military expe				devices
	weapons noise	willitary expe	ended ma	teriais	1	
	Explosive:	Ingestion:				Entanglement:
	None	Military expe	ended ma	terials	· —	None
		munitions	S			
		Military expe		terials	– other	
		than mun				
Stressors to	Habitats:	1-	Air Quali	-		
Physical Resources	Military expended material	IS	Criteria a	•		Ovelite.
Resources		Sediments and Water Quality: Metals Other materials				
Stressors to	Cultural Resources:	Socioecon		ource		Public Health and Safety:
Human	None	Accessibili				Physical interactions
Resources	Airborne acoustics					
		Physical di	isturbance	and s	strike	
Military	Ingestible Material:		Military		None	
Expended Material	Small-caliber projectile (cas compression pad or plast endcap, flare O-ring	0 ,,,	Recovera Material	ble		
	Non-Ingestible Material: Marine marker					

Surface Warfa	re
Visit, Board, Se	earch, and Seizure
Sonar and	None
Other	
Transducer	
Bins	
In-Water	None
Explosive	
Bins	
Procedural	Physical Disturbance and Strike Stressors:
Mitigation	(Section 5.3.4)
Measures	Vessel movement
Assumptions	None
Used for	
Analysis	

A.1.2.2 Air-to-Surface Bombing Exercise

Surface Warfa	re					
	Bombing Exercise					
Short	Fixed-wing aircrews deliver	r hombs agair	nst	Typical Dur	ation	
Description	surface targets.	DOMING AGAM	130	1 hour		
Long Description	Fixed-wing aircraft conduct smoke buoy), towed target	ixed-wing aircraft conduct bombing exercises against stationary floating targets (e.g., MK-58 moke buoy), towed targets, or maneuvering targets. An aircraft clears the area, deploys a moke buoy, and then delivers high-explosive or non-explosive practice munitions bombs on				
	•				red or maneuvering targets for	
	Exercises for strike fighters typically involve a flight of two aircraft delivering unguided or guided munitions that may be either high-explosive or non-explosive. The following munitions may be employed by strike fighter aircraft in the course of bombing exercise: Unguided munitions include non-explosive subscale bombs (MK-76 and BDU-45), explosive and non-explosive general-purpose bombs (MK-80 series). Precision-guided munitions include laser-guided bombs (explosive, non-explosive), laser-guided training rounds (non-explosive),					
Typical	Joint Direct Attack Munitio Platforms: Fixed-wing aircr			ive).		
Typical Components	Targets: Surface targets	art, support t	lait			
Standard	Vessel safety	Typical Loca	ations			
Operating	Aircraft safety					
Procedures	Weapons firing	TMAA (Use of explosives will not occur in the Portlock Bank				
(Section 2.13)	procedures	Mitigation Area.)				
Stressors to	Acoustic:	Physical Di	sturbance	and Strike:	Energy:	
Biological	Aircraft noise	Aircraft			In-air electromagnetic	
Resources	Vessel noise	Vessels and	l in-water o	levices	devices	
	Weapons noise	Military exp	oended ma	terials		
	Explosive:	Ingestion:			Entanglement:	
	Detonations at or near	Military exp	oended ma	terials –	Decelerators/parachutes	
	the surface	munitio			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
		Military exp	oended ma	terials – othe	er	
		than mu	ınitions			
Stressors to	Air Quality:		Sedimen	ts and Wate	r Quality:	
Physical	Criteria air pollutants		Explosive	es l	Metals	
Resources	Habitats:					
	Physical disturbance and st					
	military expended mate				- III II I	
Stressors to	Cultural Resources:	Socioeco Accessibi	nomic Res	ources:	Public Health and Safety:	
Human Resources	None		acoustics		In-water energy In-air energy	
ive 30 di Ce 3				e and strike	Physical interactions	
Military	Ingestible Material:	, 5	Military		ce targets (mobile)	
Expended	Small decelerators/parachu	utes, target	Recovera			
Material	fragments, bomb fragme	_	Material			
	Non-Ingestible Material: Mark 58 marine marker					

Surface Warfai	fare	
Air-to-Surface	ee Bombing Exercise	
Sonar and	None	
Other		
Transducer		
Bins		
In-Water	E9 E10 E12	
Explosive		
Bins		
Procedural	Explosive Stressors: (Section 5.3.3) Physical Disturbance	and Strike Stressors:
Mitigation	Explosive bombs (Section 5.3.4)	
Measures	Vessel movement	
	Non-explosive bomb	and mine shapes
Assumptions	Approximately 90 percent of non-explosive bombs are the sub-scale bo	mbs such as the MK-76
Used for	and BDU-48.	
Analysis	Use of explosives will not occur in the North Pacific Right Whale Mitiga	tion Area from June 1 to
	September 30 or in the Portlock Bank area.	

A.1.2.3 Air-to-Surface Gunnery Exercise

Surface Warfare						
Air-to-Surface Gun	nery Exercise					
Short Fix	ked-wing, helicopter, and	tilt-rotor aircrews	Typical Durati	on		
•	fire small-caliber or medium-caliber inert rounds at surface targets.		1 hour			
Description en	Helicopters and tilt-rotor aircraft conduct attacks against an at-sea target. Targets simulate enemy ships, boats, and floating/near-surface mines. Each platform will engage the target with small-caliber weapons. Targets range from a smoke float or an empty steel drum to high-speed remote-controlled boats and jet-skis.					
sir de co me	Fixed-wing and helicopter aircrew, engage surface targets with medium-caliber guns. Targets simulate enemy ships, boats, swimmers, and floating/near- surface mines. Fixed-wing aircraft descend on a target firing medium-caliber non-explosive practice munitions. Helicopters will conduct attacks against an at-sea target. Aircrew will engage the target with small-caliber and medium-caliber non-explosive practice munitions. Targets range from a smoke float or an empty steel drum to high-speed remote-controlled boats and jet-skis.					
Typical Pla	atforms: Fixed-wing aircr	aft, rotary-wing aircraft	, tilt-rotor aircra	ft		
Components Ta	rgets: Surface targets (e.	g., MK 58 marine marke	r, empty steel d	Irum, high-speed		
re	mote-controlled boats ar	nd jet-skis				
	ssel safety	Typical Locations				
Operating Air	craft safety	TMAA				
Procedures We	eapons firing	TIVIAA				
(Section 2.13)	procedures					
Stressors to Ac	oustic:	Physical Disturbance	and Strike:	Energy:		
Biological Air	rcraft noise	Aircraft		In-air electromagnetic		
Resources Ve	ssel noise	Vessels and in-water of	devices	devices		
We	eapons noise	Military expended ma	terials			
Ex	plosive:	Ingestion:		Entanglement:		
	one	Military expended ma munitions		Decelerators/parachutes		
		Military expended ma than munitions	terials – other			
Stressors to Air	r Quality:	Sedimen	ts and Water Q	uality:		
Physical Cri Resources	iteria air pollutants	Metals				
Ha	bitats:					
Ph	ysical disturbance and sti	rike –				
	military expended mate					
Stressors to Cu	Itural Resources:	Socioeconomic Res	ources:	Public Health and Safety:		
Human No	one	Accessibility		Physical interactions		
Resources		Airborne acoustics		-		
		Physical disturbance	e and strike			

Surface Warfa	Surface Warfare				
Air-to-Surface	Gunnery Exercise				
Military	Ingestible Material:	Military	Surface targets (mobile)		
Expended	Small decelerators/parachutes,	Recoverable			
Material	Projectiles, projectile casings, target	Material			
	fragments				
	Non-Ingestible Material:				
	MK 58 marine marker, surface target				
	(stationary)				
Sonar and	None				
Other					
Transducer					
Bins					
In-Water	None				
Explosive					
Bins					
Procedural	Physical Disturbance and Strike Stressors:				
Mitigation	(Section 5.3.4, Section 5.3.4.1)				
Measures	Vessel movement				
	Small- and medium-caliber non-explosive				
	practice munitions				
Assumptions	Fixed-wing casings remain with aircraft,	and helicopter sl	nell casings are expended into the		
Used for	water.	-\	ton (400 novembre) non optimite		
Analysis	Two fixed-wing aircraft (300 rounds each	-			
	One target used per event: expendable or remote-controlled target (5 perce		percent), stationary target (45 percent),		
	or remote-controlled target (5 perce	iicj.			

A.1.2.4 Surface-to-Surface Gunnery Exercise

Surface Warfa	re					
	face Gunnery Exercise					
Short	Surface ship crews fire small-caliber, medium-	Typical Duration				
Description	caliber, or large-caliber guns at surface targets.					
•	Or small boat crews fire small-caliber or	1 hour				
	medium-caliber guns at surface targets.	Up to 3 hours				
Long	Small boat crews fire small-caliber or medium-calil	oer guns at surface targets. Boat crews may				
Description	use high or low speeds to approach and engage targets simulating other boats, swimmers, floating mines, or near shore land targets with small-caliber (up to and including .50-caliber) or medium-caliber (up to and including 40 millimeter [mm]) weapons. A number of different types of boats are used depending on the unit using the boat and the training objective. Boats are most used to protect high-value units, such as aircraft carriers, nuclear submarines, liquid natural gas tankers, etc. while entering and leaving ports, as well as to conduct riverine operations, and various naval special warfare operations. The boats used by these units include small riverine craft, combat rubber raiding craft, rigid-hull inflatable boats, patrol craft, as well as other versions of these types of boats. These boats can be inboard or outboard, with diesel, or gasoline engines driving either propeller or water jet propulsion.					
	marksmanship, typically against high-speed mobile (a 10-foot-diameter inflatable red balloon ["Killer l	face ship crews fire small-caliber or medium-caliber weapons to practice defensive rksmanship, typically against high-speed mobile targets or a stationary floating target .0-foot-diameter inflatable red balloon ["Killer Tomato"]), a 50-gallon steel drum, or another ilable target, such as a biodegradable cardboard box. Some targets are expended during the croise and are not recovered.				
	projectiles fired during these events will be expend	crew qualifications conducted at sea employ stationary targets on deck. Small-caliber ectiles fired during these events will be expended in the water. Shipboard protection ems (Close-In Weapon System) utilizing small-caliber or medium-caliber projectiles would against high-speed mobile targets.				
	main battery large-caliber (typically 57 millimeter high-speed maneuverable surface target or a spec	exercises also involve ships' gun crews engaging surface targets at sea with their large-caliber (typically 57 millimeter [mm], and 5-inch) guns. Targets include a naneuverable surface target or a specially configured remote-controlled one targets are expended during the exercise and are not recovered.				
	The exercise proceeds with the target boat approach approach approach and the target is tracked by radar and when within a plarge-caliber "warning shots." As threats get closer threat. This exercise may involve a single firing ship coordinated larger exercise involving multiple ship Large-caliber guns will also be fired during weapon weapon maintenance. With the exception of some other rounds would be non-explosive. High-explos for detonation on impact (with water surface or tardetonation).	redetermined range, it is engaged first with rall weapons may be used to disable the p, or be undertaken in the context of a s, including a major training exercise. In certification events and in conjunction with the high-explosive large-caliber rounds, all ive large-caliber rounds can either be fused urget), or for proximity to the target (in air				
Typical Components	Platforms: Small boat, patrol combatant, surface of warship Targets: Surface targets (e.g., stationary floating to Tomato, 50-gallon steel drum, cardboard box, high or a specially configured remote-controlled water	arget, seaborne powered target, Killer a speed maneuverable/mobile surface target,				

Surface Warfa	re					
Surface-to-Sur	face Gunnery Exercise					
Standard	Vessel safety	Typical L	ocations			
Operating	Weapons firing procedures	TMAA				
Procedures						
(Section						
2.13)						
Stressors to	Acoustic:	Physical Di	sturbance and S	trike: Energy:		
Biological	Vessel noise	Vessels and	d in-water device	es In-air electromagnetic		
Resources	Weapons noise	Military ex	pended materials	s devices		
	Explosive:	Ingestion:		Entanglement:		
	Detonation of large-	_	pended materials	-		
	caliber rounds at or	munitio				
	near the surface	Military ex	pended materials	s – other		
		than mu	unitions			
Stressors to	Habitats:		Air Quality:			
Physical	Physical disturbance and stri	ke –	Criteria air pol	llutants		
Resources	military expended mater	ials				
	In-water explosives			d Water Quality:		
		Explosives Metals				
			Chemicals	Other materials		
Stressors to	Cultural Resources:	Socioeconomic Resources: Public Health and Safety:				
Human	None	Accessib	=	In-water energy		
Resources			acoustics	Physical interactions		
		Physical	disturbance and			
Military	Ingestible Material:		Military	Surface target (mobile)		
Expended	Projectile casings, non-explo		Recoverable			
Material	small-caliber and medium projectiles	-caliber	Material			
	Target fragments Large-calib	or				
	projectile fragments	iCi				
	projectile tragments					
	Non-Ingestible Material:					
	Surface targets (stationary)					
Sonar and	None					
Other						
Transducer						
Bins						
In-Water	E5					
Explosive						
Bins						
Procedural	Acoustic Stressors: (Section :	5.3.2)	_	al Disturbance and Strike Stressors:		
Mitigation	Weapons firing noise			ction 5.3.4)		
Measures		5 0 0°		movement		
	Explosive Stressors: (Section			medium-, and large-caliber		
	Explosive medium-caliber an	d large-calit	oer nor	n-explosive practice munitions		
	projectiles			ating a visit by AMV 200, 400 at 1111		
Assumptions				ning with MK 203 40-millimeter		
Used for	_	t used per e	event, typically a	stationary target such as a 50-gallon		
Analysis	steel drum.					

Surface Warfare

Surface-to-Surface Gunnery Exercise

- For small-caliber ship events, small-caliber gun rounds per event: 1,000 to 3,000 non-explosive practice munitions.
- For medium-caliber ship events, one target used per event. Approximately 50 percent of targets are "Killer Tomatoes" (usually recovered). Approximately 35 percent are high-speed maneuvering targets, which are intended to be recovered. Approximately 15 percent of targets are other stationary targets such as a steel drum.
- All explosive rounds detonating at or near the surface are modeled in the acoustic effects analysis as if the detonation occurs fully underwater, and assuming all.

A.1.2.5 Maritime Interdiction

Surface Warfar	re					
Maritime Inter	diction					
Short	Helicopters, surface ships, and small boat crews	Typical Duration				
Description	conduct a suite of maritime security operations at sea, including maritime interdiction operations, force protection, and anti-piracy operations. Up to 3 hours					
Long	Helicopter and surface ship crews conduct a suite of	of maritime security operations				
Description	(e.g., maritime interdiction operations, force prote These activities involve training of boarding parties ships to surface vessels for the purpose of simulati operations. Various training scenarios are employe non-explosive blanks and surveillance or reconnais vehicles. The entire exercise may last 2–3 hours. M term used to describe activities intended train nave protect naval vessels from small boat attack, count (maritime interdiction operations and visit, board, infrastructure (e.g., oil platforms). Maritime securit naval forces need to be able to tailor training event Maritime Security Operations events typically do n maritime security operations events involve vessel speed (naval vessels maneuvering to overtake suspiciosing in and maneuvering around naval vessels) and boarding parties. Maritime security operations proximate to naval homeports (TMAA) including deas well as during major training exercises.	ction, and anti-piracy operations). Is delivered by helicopters and surface on the vessel search and seizure and and may include small arms with sance unmanned surface and aerial staritime Security Operations is a broad all forces in the skills necessary to the search, and seizure), and protect key try operations need to remain broad as the to respond to emergent threats. The vestel of the security operations are things are the security operations need to remain broad as the treatment of the security operations. All movement, sometimes at high rates of security operations are conducted.				
	Maritime Interdiction Operations: Ships and aircraft train in pursuing, intercepting, and ultimately detaining suspect vessels.					
	Maritime Infrastructure Protection and Harbor Def oil platforms, similar at sea structures, harbors, pie	·				
	Warning Shot/Disabling Fire: Naval personnel train threatening small boats (typically operating at high	· -				
	Ship Force Protection: Ship crews train in tracking assessing threat potential, and communicating ameensure ships are protected against attack.					
	Anti-Piracy Training: Naval personnel train in deter includes large vessels (pirate "mother ships"), and					
Typical Components	Platforms: Rotary-wing aircraft, surface combatan Targets: Surface targets	t, small boat				

Surface Warfa	re				
Maritime Inter	diction				
Standard	Vessel safety	Typical Loca	ations		
Operating	Aircraft safety	TNAAA			
Procedures	Laser safety	TMAA			
(Section 2.13)	Unmanned Aerial Vehicle				
	Procedures				
	Unmanned Surface				
	Vehicle and				
	Unmanned				
	Underwater Vehicle				
	Procedures				
Stressors to	Acoustic:	Physical Di	sturbance and St	trike:	Energy:
Biological	Aircraft noise	Aircraft			In-air electromagnetic
Resources	Vessel noise		d in-water device		devices
	Weapons noise	Military ex	pended materials	5	
	Fordaction				Fotosclessont
	Explosive:	Ingestion:		_	Entanglement:
	None	munitio	pended materials	5 –	None
			-	othor	
		than mu	pended materials	s – otner	
Stressors to	Habitats:	than me	Air Quality:		
Physical	Military expended materials	5	Criteria air pol	lutants	
Resources	ivilitary experiaca materials	•	Sediments and		Quality:
nesources			Metals		her materials
Stressors to	Cultural Resources:	Socioeco	onomic Resource	s:	Public Health and Safety:
Human	None	Accessib			Physical interactions
Resources			acoustics		,
		Physical	disturbance and	strike	
Military	Ingestible Material:		Military	None	
Expended	Small-caliber projectile (cas	ing only),	Recoverable		
Material	compression pad or plast	ic piston,	Material		
	endcap, flare O-ring				
	Non-Ingestible Material:				
	Marine marker				
Sonar and	None				
Other					
Transducer					
Bins					
In-Water	None				
Explosive					
Bins					
Procedural	Physical Disturbance and St	trike Stresso	rs:		
Mitigation	(Section 5.3.4)				
Measures	Vessel movement				
Assumptions	None				
Used for					
Analysis					

A.1.2.6 Air-to-Surface Missile Exercise

Surface Warfa	·e						
Air-to-Surface	Missile Exercise						
Short	Fixed-wing aircrews simula	te firing prec	ision-	Турі	cal Duration		
Description	guided missiles, using capti	ve air trainin	g	1 h a			
	missiles against surface tar	nissiles against surface targets.					
Long	Fighter, Electronic Attack, n	naritime patr	ol aircraft a	aircrev	vs fire precision-guided missiles		
Description	against surface targets. Airc		-				
					ne patrol aircraft) approach an at-sea		
		titude and lau	unch precis	ion gu	ided missiles. Occurs year round,		
	daytime only.						
Typical	Platforms: Fixed-wing aircr				J		
Components				towed	d), remotely operated target		
Standard	Vessel safety	Typical Loca	ations				
Operating Procedures	Aircraft safety	TMAA					
(Section 2.13)	Laser procedures						
(360001 2.13)	Weapons firing procedures						
Stressors to	Acoustic:	Physical Di	cturbanca	and St	riko: Enorgy:		
Biological	Aircraft noise	Physical Di Aircraft	stui parice	anu si	rike: Energy: In-air electromagnetic		
Resources	Vessel noise	Vessels and	l in-water o	device			
Resources	Weapons noise	Military ex					
	Weapons noise	ivilitai y ex	periaca ma	ceriais	•		
	Explosive:	Ingestion:			Entanglement:		
	None	Military ex	pended ma	terials	-		
		munitio	ns				
		Military ex	pended ma	terials	s – other		
		than mu	ınitions				
Stressors to	Air Quality:		Sedimen	its and	d Water Quality:		
Physical	Criteria air pollutants		Metals				
Resources	Habitats:						
	Physical disturbance and st						
	military expended mate						
Stressors to	Cultural Resources:		nomic Res	ource			
Human	None	Accessib	-		Physical interactions		
Resources			acoustics disturbance	o and	striko		
Military	Ingestible Material:	Filysical	Military	e and	Surface targets (mobile)		
Expended	Small decelerators/parachu	ıtos	Recovera	hla	Surface targets (mobile)		
Material	Non-Ingestible Material:	1103	Material	i Di C			
	Missiles (non-explosive), su	ırface					
	target (stationary)						
Sonar and	None						
Other							
Transducer							
Bins							
In-Water	None						
Explosive							
Bins							

Surface Warfa	re		
Air-to-Surface Missile Exercise			
Procedural	Physical Disturbance and Strike Stressors:		
Mitigation	(Section 5.3.4, Section 5.3.4.1)		
Measures	Vessel movement		
	Non-Explosive Missiles		
Assumptions	Assume one target per event.		
Used for			
Analysis			

A.1.2.7 Sea Surface Control

Surface Warfar	re					
Sea Surface Co	ntrol					
Short	Aircraft, unmanned aerial s	systems, ship	s, and	Турі	cal Durati	on
Description	submarines use all available sensors to collect			2–8 hours		
	data on threat vessels.			2-0	nours	
Long	Aircraft, unmanned aerial systems operators, ships, and submarines use all available sensors to					
Description	collect data on threat vessels. Passive sonobuoys are used to collect and analyze acoustic data,					
	and photographic equipme	ent is used to	document	the ve	essel with	visual information. Occurs
	year round, daytime only.					
Typical	Platforms: Aircraft, unman	ned aerial sys	stem, ships	, subn	narines	
Components	Targets: None					
Standard	Aircraft safety	Typical Loca	ations			
Operating Procedures	Unmanned aircraft	TMAA				
(Section 2.13)	system procedures					
	Vessel safety	DhustI D'	-4ls	and C	huil. a .	Francis
Stressors to Biological	Acoustic: Aircraft noise	Physical Di			сгіке:	Energy:
Resources	Vessel noise	Aircraft and		_	_	In-air electromagnetic
Resources	Explosive:	Military expended materials devices Vessel and in-water devices Entanglement:				Entanglement:
	None	Ingestion:	iii-watei u	EVICES		Wires and cables
	None	Military ex	nended ma	terial	s – other	wires and cables
		than mu		iteriai.	other	
Stressors to	Air Quality:		Sedimen	ts and	d Water Q	ualitv:
Physical	Criteria air pollutants		None			
Resources	·					
Stressors to	Cultural Resources:	Socioeco	nomic Res	ource	s: F	Public Health and Safety:
Human	None	None			1	None
Resources						
Military	Ingestible Material:		Military		None	
Expended	Small decelerators/parachu	ıtes	Recovera	ble		
Material			Material			
	Non-Ingestible Material:					
	Sonobuoys, sonobuoy wire	S				
Sonar and	None					
Otner Transducer						
Bins						
In-Water	None					
Explosive	None					
Bins						
Procedural	None					
Mitigation						
Measures						
Assumptions						wing aircraft and unmanned
Used for	aerial systems. Aircrews us					surveillance methods,
Analysis	including visual, infrared, e	lectronic, rac	lar, and acc	oustic.		

A.1.3 Anti-Submarine Warfare Training

Anti-submarine warfare (ASW) involves helicopters and maritime patrol aircraft, ships, and submarines. These units operate alone or in coordination to locate, track, and neutralize submarines. Controlling the undersea battlespace is a unique naval capability and a vital aspect of sea control. Undersea battlespace dominance requires proficiency in ASW. Every deploying strike group and most individual surface combatants must possess this capability.

Various types of active and passive sonar are used by the Navy to determine water depth 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 detect the presence, character, and indicate the movement of submarines. Passive sonar provides only a bearing (direction) to a sound-emitting source; it does not provide an immediately accurate range (distance) to the source. Active sonar is needed to immediately locate objects because active sonar provides both bearing and range to the detected contact (such as an enemy submarine).

The Navy's ASW training plan, including the use of active sonar in at-sea training scenarios, includes multiple levels of training. Individual-level ASW training addresses basic skills such as search plans, 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 ASW training exercises involving active sonar are conducted in coordinated, at-sea operations during training events involving submarines, ships, aircraft, and helicopters. This training integrates the full anti-submarine warfare continuum from passive detection and tracking a submarine to active sonar transition for attacking a target using simulated weapons. Training events include detection and tracking exercises against "enemy" submarine contacts and exercising command and control tasks in a multi-dimensional battlespace.

A.1.3.1 Tracking Exercise—Helicopter

Anti-Submarin	e Warfare					
Anti-Submarin	e Warfare Tracking Exercise	- Helicopter				
Short	Helicopter crews search for	r, track, and detect	Typical Durati	on		
Description	submarines.		2–4 hours			
Long Description	Helicopters using sonobuoy a simulated threat submari used to launch a torpedo; r	ne with the goal of dete	rmining a firing			
	Sonobuoys (both passive ar altitudes below 3,000 feet. altitude of about 50 feet bothe sonobuoy search.	Dipping sonar (both pas	sive and active)	is employed from an		
	The anti-submarine warfar recoverable ASW target, or occur during a coordinated major range event. The prebe conducted without instrassets.	a live submarine. This e larger exercise involvin ferred range for this ex	exercise may inv g multiple aircra ercise is an instr	oft and ships, including a umented range, but it may		
Typical	Platforms: Rotary-wing air	craft, submarines				
Components	Targets: Sub-surface target					
Standard	Aircraft safety	Typical Locations				
Operating Procedures (Section 2.13)	Unmanned Surface Vehicle and Unmanned Underwater Vehicle Procedures	TMAA				
Stressors to Biological Resources	Acoustic: Sonar and other transducers Aircraft noise Vessel noise	Physical Disturbance Aircraft Vessels and in-water of Military expended ma	devices	Energy: In-air electromagnetic devices		
	Explosive: None	Ingestion: Military expended ma munitions Military expended ma than munitions		Entanglement: Decelerators/parachutes		
Stressors to	Air Quality:	Sedimer	its and Water Q	uality:		
Physical Resources	Criteria air pollutants	Chemica Metals	•	ner materials		
	Habitats: Physical disturbance and st military expended mate					
Stressors to Human Resources	Cultural Resources: None	Socioeconomic Res Accessibility Airborne acoustics Physical disturbance	 	Public Health and Safety: In-water energy Physical interactions		

Anti-Submarine Warfare					
Anti-Submarine Warfare Tracking Exercise - Helicopter					
Military Expended Material	Ingestible Material: Small decelerators/parachutes Non-Ingestible Material: Sonobuoys (non-explosive), sonobuoy wires, expendable sub-surface targets, marine marker	Military Recoverable Material	None		
Sonar and Other Transducer Bins	Mid-Frequency: MF4 MF5 MF6				
In-Water Explosive Bins	None				
Procedural Mitigation Measures	Acoustic Stressors: (Section 5.3.2) Active sonar (Section 5.3.4) Vessel movement				
Assumptions Used for Analysis	Submarines may provide service as the	target.			

A.1.3.2 Tracking Exercise—Maritime Patrol Aircraft

Anti-Submarin	e Warfare						
Anti-Submarin	e Warfare Tracking Exercise-	-Maritime Pa	atrol Aircra	ıft			
Short	Maritime patrol aircraft cre	ews search for	r, track,	Typi	cal Durat	ion	
Description	and detect submarines.	etect submarines.			2–8 hours		
Long	Fixed-wing maritime patrol aircraft employ sonobuoys to search for, detect, classify,						
Description	localize, and track a simulated threat submarine with the goal of determining a firing						
	solution that could be used to launch a torpedo and destroy the submarine.						
	Sonobuoys (both passive and active) are typically employed by a maritime patrol aircraft operating at altitudes below 3,000 feet. 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. For certain sonobuoys, tactical parameters of use may be classified. The anti-submarine warfare target used for this exercise may be an expendable ASW training target, a recoverable ASW training target, or a live submarine. This exercise may involve a single aircraft, or be undertaken in the context of a larger coordinated scenario involving multiple aircraft and vessels.						
Typical	Platforms: Fixed-wing aircr	aft, submarin	es				
Components	Targets: Sub-surface target	ts					
Standard	Vessel safety	Typical Loca	itions				
Operating	Aircraft safety	TMAA					
Procedures							
(Section 2.13)							
Stressors to	Acoustic:	Physical Dis	sturbance a	and St	rike:	Energy:	
Biological	Sonar and other	Aircraft		l a: a a .	_	In-air electromagnetic	
Resources	transducers	Vessels and				devices	
	Aircraft noise Vessel noise	Military expended materials					
	vessei noise						
	Explosive:	Ingestion:				Entanglement:	
	None	Military exp	ended ma	terials	: -	Decelerators/parachutes	s
	110110	munition		ceriais		Decererators, paracriates	
		Military expended materials – other					
		than mu					
Stressors to	Air Quality:	Sediments and Water Quality:					
Physical	Criteria air pollutants	Chemicals					
Resources	Habitats:	Metals Other materials					
	Physical disturbance and st	strike –					
	military expended mate	erial					
Stressors to	Cultural Resources:	Socioeconomic Resources: Public Health and Safety:					
Human	None	Accessibility In-water energy					
Resources		Airborne				Physical interactions	
DAILL -	Physical disturbance and strike						
Military	Ingestible Material:	Military None					
Expended Material	Small decelerators/parachu						
iviateriai	Non-Ingestible Material: Sonobuoys, Expendable AS	W/ Training	Material				
	Targets, expendable	vv Hallillig					
	bathythermographs						
	Datifythermographs						

Anti-Submarin	e Warfare						
Anti-Submarin	Anti-Submarine Warfare Tracking Exercise—Maritime Patrol Aircraft						
Sonar and	Mid-Frequency:	Anti-Subm	Anti-Submarine Warfare:				
Other	MF5	ASW2					
Transducer	MF6						
Bins							
In-Water	None						
Explosive							
Bins							
Procedural	Acoustic Stressors: (Sec	tion 5.3.2)	Physical Disturbance and Strike Stressors:				
Mitigation	Active Sonar		(Section 5.3.4)				
Measures			Vessel movement				
Assumptions	A submarine may provid	de service as the tar	get.				
Used for	If a target is air-dropped, one parachute per target.						
Analysis			-				

A.1.3.3 Tracking Exercise—Submarine

Anti-Submarine	e Warfare						
	e Warfare Tracking Exercise-	-Submarine					
Short	-			cal Duration			
Description	Submarine crews search for submarines.	, track, and t					
-		submarines. 8 hours Submarine crews search for, detect, and track a threat submarine to develop a firing position					
Long Description		r, detect, and	track a threat st	ibmarine to develop a firing position			
Description	to launch a torpedo.						
	_	omarine operates at slow speeds and various depths while using its track a threat submarine. Passive sonar is used almost exclusively. The is either an expendable ASW training target, recoverable ASW training					
	hull-mounted sonar to track						
	target for this exercise is eit						
	target, or live submarine.						
	This exercise could occur ar	nywhere thro	ughout the TMA	A. This exercise may involve a single			
		•	_	pordinated scenario involving multiple			
	aircraft, ships, and submari		control a langer of				
Typical	Platforms: Submarines						
Components	Targets: Sub-surface target	is					
Standard	Vessel safety	Typical Loca	ations				
Operating	·	T. 4.4.4					
Procedures		TMAA					
(Section 2.13)							
Stressors to	Acoustic:	Physical Di	sturbance and S	trike: Energy:			
Biological	Sonar and other	Aircraft, Ve	essels and in-wate	er None			
Resources	transducers	devices					
	Vessel noise	Military expended materials					
	Explosive:	Ingestion:		Entanglement:			
Church and he	None	None	Cadinantana	None			
Stressors to	Air Quality:			d Water Quality:			
Physical Resources	None		Metals				
Resources	Habitats:						
	Physical disturbance and st	rike –					
	military expended mate						
Stressors to	Cultural Resources:		nomic Resource	s: Public Health and Safety:			
Human	None	Physical disturbance and strike In-water energy					
Resources		-	acoustics	Physical interactions			
Military	Ingestible Material:		Military	None			
Expended	None		Recoverable				
Material	Non-Ingestible Material:						
	Acoustic countermeasures						
Sonar and	Mid-Frequency:	Anti-Sul	omarine Warfare	e:			
Other	MF3	ASW4					
Transducer							
Bins	High-Frequency:						
	HF1						
In-Water	None						
Explosive							
Bins							

Anti-Submarine Warfare						
Anti-Submarine Warfare Tracking Exercise—Submarine						
Procedural	Acoustic Stressors: (Section 5.3.2)	Physical Disturbance and Strike Stressors:				
Mitigation	Active sonar	(Section 5.3.4)				
Measures		Vessel movement				
Assumptions	ASW training targets can either be expendable, recoverable, or live submarine.					
Used for						
Analysis						

A.1.3.4 Tracking Exercise—Ship

Anti-Submarin	e Warfare					
	e Warfare Tracking Exercise	Chin				
		-			ation.	
Short	Surface ship crews search for, track, and detect Typical Dura			ation		
Description .		bmarines. 2–4 hours rface ships search for, detect, and track threat submarines to determine a firing position				
Long	· · · · · · · · · · · · · · · · · · ·	etect, and trac	ck threat subm	narines to (determine a firing position	
Description	to launch a torpedo.					
	A surface ship operates at s	slow speeds w	hile employir	ng sonobud	oys, hull-mounted sonar, or	
	towed array sonar. Passive	or active son	ar is employed	d dependin	ng on the type of threat	
	submarine, the tactical situ	ation, and en	vironmental c	onditions.	The target for this exercise	
	is either an expendable AS\	W training tar	get, a recover	able ASW	training target, or a live	
	submarine.					
	ΔSW Tracking evercise—Sh	in could occu	r anvwhere th	roughout t	the TMAA. This exercise may	
	=	•	-	_	coordinated scenario involving	
	multiple aircraft, ships, and		Tine context (or a larger v	coordinated section involving	
Typical	Platforms: Surface combat		ne			
Components	Targets: ASW training target	-				
Standard	Vessel	Typical Loca	ations			
Operating	Towed in-water device					
Procedures	safety	TMAA				
(Section 2.13)	•					
Stressors to	Acoustic:	Physical Di	sturbance and	d Strike:	Energy:	
Biological	Sonar and other	Vessels and	l in-water dev	ices	In-water electromagnetic	
Resources	transducers	Military exp	oended mater	ials	devices	
	Vessel noise					
					_	
	Explosive:	Ingestion:			Entanglement:	
	None	None			Wires and cables	
Stressors to	Air Quality:		Sediments	and Water	Quality:	
Physical Resources	Criteria air pollutants		Metals Chemicals			
Resources	Habitats:		Other mate	rialc		
	Physical disturbance and st	riko —	Other mate	11015		
	military expended mate					
Stressors to	Cultural Resources:		nomic Resou	rces.	Public Health and Safety:	
Human	None				In-water energy	
Resources		,			Physical interactions	
		Physical disturbance and strike				
Military	Ingestible Material:		Military	None		
Expended	None		Recoverable	2		
Material			Material			
	Non-Ingestible Material:					
	Sonobuoy (non-explosive),					
	wires					
Sonar and	Mid-Frequency:		omarine Warf	are:		
Other	MF1	ASW1				
Transducer	MF11	ASW3				
Bins	MF12					

Anti-Submarin	e Warfare						
Anti-Submarine Warfare Tracking Exercise—Ship							
In-Water	None						
Explosive							
Bins							
Procedural	Acoustic Stressors: (Section 5.3.2)	Physical Disturbance and Strike Stressors:					
Mitigation	Active sonar	(Section 5.3.4)					
Measures		Vessel movement					
		Towed in-water devices					
Assumptions	A Submarine may provide service as the target.						
Used for							
Analysis							

A.1.4 Electronic Warfare

Electronic warfare is the mission area of naval warfare that aims to control the 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 Counter Targeting Exercise

Electronic War	fare						
Counter Target	ing Exercise						
Short	Ships and aircraft conduct	jamming and deploy	Typical Durat	tion			
Description	chaff to disrupt threat targ guidance radars.	eting and missile	1–2 hours				
Long Description	A Counter Targeting exercise is a coordinated, defensive activity utilizing surface and air assets, that attempts to use jamming and chaff to show a false force presentation to inbound surface-to-surface platforms. During these exercises, electronic warfare jamming aircraft will position itself between the carrier strike group assets and the threat and jam the radar systems of potential hostile surface units. Carrier strike group ships will launch chaff to create false targets that saturate the threat radars return, thus masking their true position. These activities occur within the TMAA.						
Typical	Platforms: Fixed-wing aircr	aft, rotary-wing aircraft	, surface comb	atants			
Components	Targets: None						
Standard	Aircraft safety	Typical Locations					
Operating	Vessel safety	TMAA					
Procedures		TIVIAA					
(Section 2.13)							
Stressors to	Acoustic:	Physical Disturbance		Energy:			
Biological	Aircraft noise	Vessels and in-water	devices	In-air electromagnetic			
Resources	Vessel noise	Aircraft		devices			
	Explosive: None	Ingestion: Military expended manunitions Military expended mathemathemathemathemathemathemathemathe		Entanglement: None			
Stressors to	Air Quality:	Sedimer	nts and Water (Quality:			
Physical	Criteria air pollutants	Metals					
Resources	Habitats:	Chemica					
	Physical disturbance and st		aterials				
	military expended mate						
Stressors to	Cultural Resources:	Socioeconomic Res	ources:	Public Health and Safety:			
Human	None	Accessibility		Physical interactions			
Resources		Airborne acoustics					

Electronic War	Electronic Warfare						
Counter Target	ting Exercise						
Military Expended Material	Ingestible Material: Expended components of chaff-ship (chaff-ship fibers) Per aircraft flare cartridge: one silicone rubber compression pad OR one plastic piston Per aircraft chaff: chaff-air fibers, one chaff plastic endcap, one compression pad; OR one plastic piston, one plastic endcap Non-Ingestible Material: MK 53 decoy, chaff-ship cartridges Per flare cartridge: flare (typically consumed), one plastic endcap, O-ring (rubber, nitrile)	Military Recoverable Material	None				
Sonar and Other Transducer Bins	None						
In-Water Explosive Bins	None						
Procedural Mitigation Measures	Physical Disturbance and Strike Stresso (Section 5.3.4) Vessel movement	rs:					
Assumptions Used for Analysis	None						

A.1.4.2 Chaff Exercise

Electronic War	favo					
Chaff Exercise	rare					
	0 ()	1 66 . 1:		Touris al Dou		
Short	Surface ship crews deploy		pt threat	Typical Dui	ration	
Description	targeting and missile guida			1–2 hours		
Long Description	Surface ship crews deploy chaff to disrupt threat targeting and missile guidance radars to defend against an attack.					
	Surface ship crews detect electronic targeting signals from threat radars or missiles, dispense chaff, and immediately maneuver to defeat the threat. The chaff cloud deceives the inbound missile and the vessel clears away from the threat. The typical event duration is approximately one and one-half hours.					
	Chaff is a radar reflector material made of thin, narrow, metallic strips cut in various length elicit frequency responses, which deceive enemy radars. Chaff is employed to create a targethat will lure enemy radar and weapons systems away from the actual friendly platform. Ships may also train with advanced countermeasure systems, such as the MK 53 Decoy Launching System (Nulka).					
Typical	Platforms: Surface combat	ants, amphib	ious warfar	e ships, fixed	d-wing aircraft, rotary-wing	3
Components	aircraft					
	Targets: None					
Standard	Vessel safety	Typical Loca	ations			
Operating	Aircraft safety	T. 4.4.4				
Procedures		TMAA				
(Section 2.13)						
Stressors to	Acoustic:	Physical Di	sturbance a	nd Strike:	Energy:	
Biological	Vessel noise	Vessels and	l in-water d	evices	In-air electromagneti	ic
Resources	Aircraft noise	Aircraft			devices	
	Explosive:	Ingestion:			Entanglement:	
	None	Military ex	oended ma	terials –	None	
		munitio				
		Military exp	pended ma	terials – othe	er	
		than mu				
Stressors to	Air Quality:		Sedimen	ts and Wate	r Quality:	
Physical	Criteria air pollutants		Metals			
Resources			Chemical	S		
	Habitats:		Other ma	iterials		
	Physical disturbance and st	rike –				
	military expended mate	erial				
Stressors to	Cultural Resources:	Socioeco	nomic Res	ources:	Public Health and Safet	y:
Human	None	Accessib	•		Physical interactions	
Resources		Airborne	acoustics			
Military	Ingestible Material:		Military	None	<u> </u>	
Expended	Expended components of o	chaff-ship	Recovera	ble		
Material	(chaff-ship fibers)		Material			
	Non-Ingestible Material:					
	MK 53 decoy, chaff-ship ca	rtridges				
Sonar and	None					
Other						
Transducer						
Bins						

Electronic War	fare
Chaff Exercise	
In-Water	None
Explosive	
Bins	
Procedural	Physical Disturbance and Strike Stressors:
Mitigation	(Section 5.3.4)
Measures	Vessel movement
Assumptions	None
Used for	
Analysis	

A.1.4.3 Electronic Warfare Exercise

Electronic War	fare						
Electronic War	fare Exercise						
Short	Aircraft and surface ship cr	ews control p	ortions	ypical Durati	on		
Description	of the electromagnetic spe	-		, i			
	systems to degrade or den			–2 hours			
	to take defensive actions.						
Long	Aircraft and surface ship cr	raft and surface ship crews control the electromagnetic spectrum used by enemy systems					
Description	to degrade or deny the ene	grade or deny the enemy's ability to take defensive actions. Electronic Warfare					
	Operations can be active of	r passive, offe	ensive, or defe	ensive. Fixed-	wing aircraft employ active		
	jamming and deception aga				•		
	aircraft mission. Surface sh	-		-	_		
	aircraft or missile radars, e			_			
	countermeasures, then use	-			s, active electronic		
	countermeasures, or a com			the threat.			
Typical	Platforms: Fixed-wing aircr						
Components	Targets: Air targets, electro		_				
Standard	Vessel safety	Typical Loca	ations				
Operating	Aircraft safety	TMAA					
Procedures							
(Section 2.13)	A	Dh		l Cuillia	F		
Stressors to	Acoustic: Aircraft noise	-	sturbance and		Energy:		
Biological Resources	Vessel noise		d aerial target d in-water dev		In-air electromagnetic devices		
Resources	vessel floise	vessels allo	i iii-watei uev	ices	uevices		
	Explosive:	Ingestion:			Entanglement:		
	None	_	oended mater	ials – other	None		
		than mu					
Stressors to	Air Quality:		Sediments a	and Water Q	uality:		
Physical	Criteria air pollutants		None		•		
Resources							
	Habitats:						
	None						
Stressors to	Cultural Resources:	Socioeco	nomic Resoui	rces: I	Public Health and Safety:		
Human	None	Accessibi	•	1	None		
Resources			acoustics				
		Physical	disturbance ar				
Military	Ingestible Material:		Military	None			
Expended	Expended components of c	chaff-ship	Recoverable	•			
Material	(chaff-ship fibers)		Material				
	Per flare cartridge: one silic						
	compression pad or one piston	piastic					
	μιστοιι						
	Non-Ingestible Material:						
	Chaff-ship cartridges						
	Per flare cartridge: flare (ty	pically					
	1 (1)	r,					
	consumed), one plastic e	ndcap.					
	consumed), one plastic e O-ring (rubber, nitrile)	ndcap,					

Electronic War	fare
Electronic War	fare Exercise
Sonar and	None
Other	
Transducer	
Bins	
In-Water	None
Explosive	
Bins	
Procedural	Physical Disturbance and Strike Stressors:
Mitigation	(Section 5.3.4)
Measures	Vessel movement
Assumptions	None
Used for	
Analysis	

A.1.5 Naval Special Warfare

Naval special warfare conducts military activities 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 could include insertion/extraction activities using parachutes, rubber boats, or helicopters and other equipment.

A.1.5.1 Special Warfare Operations

Naval Special \	Warfare					
Special Warfar	e Operations					
Short	Personnel are inserted into	and extracte	ed from	Typic	cal Dura	tion
Description	an objective area by aircra	ft, small boats	s, or	2_8 k	nours	
	subsurface platforms.					
Long	Utilizing aircraft, small surface platforms, and subsurface platforms, personnel are inserted in					
Description	the water. The insertion/e				d to in-v	vater training.
Typical	Platforms: Small boat, heli	copters, and	submersibl	les		
Components	Targets: None					
Standard	Vessel safety	Typical Loca	ations			
Operating	Aircraft safety	TMAA				
Procedures (Section 2.13)						
Stressors to	Acoustic:	Physical Di	cturhance	and St	riko	Energy:
Biological	Vessel noise	Vessels and				None
Resources	Aircraft noise	Aircraft and			•	None
nesources	7 iii di di ci ii di ci	, an orare arre	a acriai tai	Pc13		
	Explosive:	Ingestion:				Entanglement:
	None	None				None
Stressors to	Habitats:		Air Qual	ity:		
Physical	Physical disturbance and st	rike –	Criteria	air poll	utants	
Resources	military expended mate	erial	Sedimer	nts and	l Water	Quality:
			None			
Stressors to	Cultural Resources:	Socioeco	nomic Res	ources	s:	Public Health and Safety:
Human	None	None				None
Resources						
Military	Ingestible Material:		Military		None	
Expended	None		Recovera	able		
Material	Non-Ingestible Material:		Material			
	None					
Sonar and	None					
Other Transducer						
Bins						
In-Water	None					
Explosive	None					
Bins						
Procedural	Physical Disturbance and S	Strike Stresso	rs:			
Mitigation	(Section 5.3.4)					
Measures	Vessel movement					
Assumptions	None					
Used for						
Analysis						

A.1.6 Strike Warfare

Strike Warfare addresses combat (or interdiction) activities by air and surface forces against hostile land-based forces and assets. Strike warfare activities include training of fixed-wing fighter/attack aircraft in delivery of precision-guided munitions, nonguided munitions, rockets, and other ordnance against land targets in all weather and light conditions.

Training events typically involve a strike mission with a flight of four or more aircraft. The strike mission practices attacks on long-range targets (i.e., those geographically distant from friendly ground forces), or close air support of targets within close range of friendly ground forces. Some strike missions involve nodrop events in which prosecution of targets is practiced, but video footage is often obtained by onboard sensors. Strike exercises occur on the land and air training ranges outside the TMAA, and their impacts are covered under other environmental analysis. The Strike Warfare activity in the TMAA is limited to the launch and recovery of aircraft conducting the training in the land and air training ranges; therefore, no specific activity descriptions are provided.

A.1.7 Support Operations

Other training is conducted in the TMAA that falls outside of the primary mission areas, but supports overall readiness. Specifically, this includes Deck Landing Qualifications, which provides for helicopter crews to land on ships underway at sea.

A.1.7.1 Deck Landing Qualification

Support Opera	tions							
Deck Landing C								
Short	Ship's personnel launch an		-		cal Dura			
Description	to achieve qualifications ar	nd certification	ns.	Up t	o 12 hou	rs		
Long Description	Ship's personnel launch and recover helicopters to achieve qualifications and certifications.					s.		
Typical Components	Platforms: Small boats, Na Targets: None	vy vessels						
Standard	Vessel safety	Typical Locations						
Operating Procedures (Section 2.13)	Unmanned aerial, surface, and sub- surface vehicle safety	TMAA						
Stressors to Biological Resources	Acoustic: Vessel noise Aircraft noise Explosive: None	Physical Dis Vessels and Aircraft and Ingestion: None	in-water	device		Energy: None Entangl None		
Stressors to Physical Resources	Air Quality: Criteria air pollutants Habitats: None	Sediments and Water Quality: None						
Stressors to Human Resources	Cultural Resources: None	Socioeco None	nomic Res	ource	s:	Public Hea None	lth and Safet	y:
Military Expended Material	Ingestible Material: None Non-Ingestible Material: None		Military Recovera Material	ıble	None			
Sonar and Other Transducer Bins	None							
In-Water Explosive Bins	None							
Procedural Mitigation Measures	Physical Disturbance and S (Section 5.3.4) Vessel movement	trike Stressor	rs:					
Assumptions Used for Analysis	None							