Appendix F: Training and Testing Activities Matrices

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APPENDIX F TRAINING AND TESTING ACTIVITIES MATRICES

This appendix contains tables that help to describe each of the training and testing activities in terms of their component parts (Table F-1 and Table F-2) and the stressors associated with each activity (Table F-3 and Table F-4). In addition, Table F-5 provides all of the resources analyzed in the Northwest Training and Testing (NWTT) Environmental Impact Statement (EIS)/Overseas EIS (OEIS) and indicates the stressors that could impact each resource area. For a complete explanation of the stressors used in the analysis, see Section 3.0.5.3 (Identification of Stressors for Analysis) in the NWTT EIS/OEIS.

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F.1 COMPONENTS OF TRAINING ACTIVITIES

Table F-1: Components of Training Activities

Training Activity	Electromagnetic Devices	Aircraft Carriers	Surface Combatants	Amphibious Warfare Ships	Support Craft	Submarines	Towed Devices	Unmanned Surface or Underwater Vehicles	Non-Explosive Small-Caliber Projectiles	Non-Explosive Medium-Caliber Projectiles	Non-Explosive Large-Caliber Projectiles	Non-Explosive Bombs	Non-Explosive Missiles	Non-Explosive Torpedoes	Aircraft Stores or Ballast	Non-Explosive Rockets	Non-Explosive Sonobuoys	Parachutes	Chaff	Flares	High-Explosive Munitions	Targets	Seafloor Devices	Fixed-Wing Aircraft	Rotary-Wing Aircraft	Unmanned Aircraft Systems	Fiber Optic Wire	Guidance Wire
ANTI-AIR WARFARE (AAW)																												
Air Combat Maneuver (ACM)																								✓				
Missile Exercise (Air-to-Air)																					✓	✓		✓		✓		
Gunnery Exercise (Surface-to-Air)		✓	✓							✓	✓											✓		✓				
Missile Exercise (Surface-to-Air)		✓	✓										✓								✓	✓		✓		✓		
ANTI-SURFACE WARFARE (ASUW)																												
Gunnery Exercise (Surface-to-Surface) Ship			✓						✓	✓											✓	✓						
Gunnery Exercise (Surface-to-Surface) Boat					✓				✓													✓						
Missile Exercise (Air-to-Surface)													✓								✓	✓		✓	✓			
Bombing Exercise (Air-to-Surface)												✓									✓	✓		✓				
Sinking Exercise (SINKEX)[1]			✓			✓															✓	✓		✓	✓			✓
ANTI-SUBMARINE WARFARE (ASW)																												
Tracking Exercise – Submarine						✓	✓	✓														✓						
Tracking Exercise – Surface			✓			✓	✓	✓									✓	✓				✓						
Tracking Exercise – Helicopter						✓		✓									✓	✓				✓			✓			
Tracking Exercise – Maritime Patrol Aircraft						✓		✓						✓			✓	✓				✓		✓				
Tracking Exercise – Maritime Patrol (Extended Echo Ranging Sonobuoys)						✓		✓				✓					✓	✓			✓			✓				
ELECTRONIC WARFARE (EW)																												
Electronic Warfare Operations (EW Ops)		✓	✓			✓																		✓	✓			
MINE WARFARE (MIW)																												
Mine Neutralization – Explosive Ordnance Disposal (EOD)					✓																✓							
Submarine Mine Exercise						✓															✓		✓					
Civilian Port Defense	✓				✓		✓	✓													✓				✓		✓	

[1] SINKEX is proposed for the No Action Alternative only.

Table F-1: Components of Training Activities (continued)

Training Activity	Electromagnetic Devices	Aircraft Carriers	Surface Combatants	Amphibious Warfare Ships	Support Craft	Submarines	Towed Devices	Unmanned Surface or Underwater Vehicles	Non-Explosive Small-Caliber Projectiles	Non-Explosive Medium-Caliber Projectiles	Non-Explosive Large-Caliber Projectiles	Non-Explosive Bombs	Non-Explosive Missiles	Non-Explosive Torpedoes	Aircraft Stores or Ballast	Non-Explosive Rockets	Non-Explosive Sonobuoys	Parachutes	Chaff	Flares	High-Explosive Munitions	Targets	Seafloor Devices	Fixed-Wing Aircraft	Rotary-Wing Aircraft	Unmanned Aircraft Systems	Fiber Optic Wire	Guidance Wire
NAVAL SPECIAL WARFARE (NSW)																												
Personnel Insertion/Extraction – Submarine					✓	✓																						
Personnel Insertion/Extraction – Non-submarine					✓																			✓	✓			
OTHER TRAINING EXERCISES																												
Small Boat Attack					✓				Note 1	Note 1																		
Intelligence, Surveillance, Reconnaissance (ISR)																								✓				
Search and Rescue																									✓			
Surface Ship Sonar Maintenance			✓																									
Submarine Sonar Maintenance						✓																						

Note 1: "Blank" rounds only

F.2 COMPONENTS OF TESTING ACTIVITIES

Table F-2: Components of Testing Activities

Testing Activity	Electromagnetic Devices	Aircraft Carriers	Surface Combatants	Amphibious Warfare Ships	Support Craft	Submarines	Towed Devices	Unmanned Surface or Underwater Vehicles	Non-Explosive Small-Caliber Projectiles	Non-Explosive Medium-Caliber Projectiles	Non-Explosive Large-Caliber Projectiles	Non-Explosive Bombs	Non-Explosive Missiles	Non-Explosive Torpedoes	Aircraft Stores or Ballast	Non-Explosive Rockets	Non-Explosive Sonobuoys	Parachutes	Chaff	Flares	High-Explosive Munitions	Targets	Seafloor Devices	Fixed-Wing Aircraft	Rotary-Wing Aircraft	Unmanned Aircraft Systems	Fiber Optic Wire	Guidance Wire
Naval Sea Systems Command																												
TORPEDO TESTING																												
Torpedo Non-Explosive Testing					✓	✓		✓									✓					✓		✓				✓
AUTONOMOUS AND NON-AUTONOMOUS VEHICLES																												
Unmanned Underwater Vehicle Testing					✓		✓	✓																				
Unmanned Aircraft System								✓																		✓		
Unmanned Surface Vehicle					✓			✓																				
FLEET TRAINING/SUPPORT																												
Cold Water Training					✓																							
Post-Refit Sea Trial					✓	✓	✓																					
Anti-Submarine Warfare (ASW) Testing			✓			✓	✓										✓	✓				✓			✓			
MAINTENANCE AND MISCELLANEOUS																												
Side Scan/Multibeam Sonar					✓		✓															✓						
Non-Acoustic Tests					✓																							
ACOUSTIC COMPONENT TEST																												
Countermeasures Testing					✓	✓	✓	✓																				
Acoustic Test Facility																												
Pierside Integrated Swimmer Defense					✓																		✓					
SYSTEM, SUBSYSTEM, AND COMPONENT TESTING																												
Pierside Acoustic Testing					✓		✓	✓																				
Performance Testing At Sea					✓		✓	✓																				
Development Training and Testing					✓		✓	✓																				
PROOF-OF-CONCEPT TESTING																												
Proof-of-Concept Testing					✓		✓	✓																				

Table F-2: Components of Testing Activities (continued)

Testing Activity	Electromagnetic Devices	Aircraft Carriers	Surface Combatants	Amphibious Warfare Ships	Support Craft	Submarines	Towed Devices	Unmanned Surface or Underwater Vehicles	Non-Explosive Small-Caliber Projectiles	Non-Explosive Medium-Caliber Projectiles	Non-Explosive Large-Caliber Projectiles	Non-Explosive Bombs	Non-Explosive Missiles	Non-Explosive Torpedoes	Aircraft Stores or Ballast	Non-Explosive Rockets	Non-Explosive Sonobuoys	Parachutes	Chaff	Flares	High-Explosive Munitions	Targets	Seafloor Devices	Fixed-Wing Aircraft	Rotary-Wing Aircraft	Unmanned Aircraft Systems	Fiber Optic Wire	Guidance Wire
ACOUSTIC MEASUREMENT TESTS																												
Surface Vessel Acoustic Measurement			✓		✓																							
Underwater Vessel Acoustic Measurement					✓	✓																						
Underwater Vessel Hydrodynamic Performance Measurement					✓	✓																						
Cold Water Training					✓	✓																						
Component System Testing					✓	✓																						
Countermeasures Testing					✓	✓																						
Electromagnetic Measurement					✓	✓																						
Measurement System Repair & Replacement					✓																							
Project Operations (POPS)			✓		✓	✓																						
Target Strength Trial					✓																							
LIFE CYCLE ACTIVITIES																												
Pierside Sonar Testing																												
SHIPBOARD PROTECTION SYSTEMS AND SWIMMER DEFENSE TESTING																												
Pierside Integrated Swimmer Defense					✓																		✓					
UNMANNED VEHICLE TESTING																												
Unmanned Vehicle Development and Payload Testing					✓			✓																				
ANTI-SURFACE WARFARE (ASUW)/ANTI-SUBMARINE WARFARE (ASW) TESTING																												
Torpedo (Explosive) Testing			✓			✓		✓													✓	✓		✓	✓			✓
Torpedo (Non-explosive) Testing			✓			✓		✓									✓					✓		✓				✓
Countermeasure Testing			✓		✓		✓	✓																				
NEW SHIP CONSTRUCTION																												
Anti-Submarine Warfare (ASW) Mission Package Testing			✓					✓									✓				✓	✓	✓		✓			

Table F-2: Components of Testing Activities (continued)

Testing Activity	Electromagnetic Devices	Aircraft Carriers	Surface Combatants	Amphibious Warfare Ships	Support Craft	Submarines	Towed Devices	Unmanned Surface or Underwater Vehicles	Non-Explosive Small-Caliber Projectiles	Non-Explosive Medium-Caliber Projectiles	Non-Explosive Large-Caliber Projectiles	Non-Explosive Bombs	Non-Explosive Missiles	Non-Explosive Torpedoes	Aircraft Stores or Ballast	Non-Explosive Rockets	Non-Explosive Sonobuoys	Parachutes	Chaff	Flares	High-Explosive Munitions	Targets	Seafloor Devices	Fixed-Wing Aircraft	Rotary-Wing Aircraft	Unmanned Aircraft Systems	Fiber Optic Wire	Guidance Wire
Naval Air Systems Command																												
ANTI-SUBMARINE WARFARE (ASW)																												
Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft (Directional Command Activated Sonobuoy System [DICASS])			✓			✓		✓									✓	✓				✓		✓				
Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft (Multistatic Active Coherent [MAC])			✓			✓		✓									✓	✓				✓		✓				
Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft (Sound Underwater Signal [SUS])			✓			✓											✓	✓			✓			✓				
Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft (Improved Extended Echo Ranging [IEER])			✓			✓		✓									✓	✓			✓	✓		✓				
Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft (High Duty Cycle [HDC])			✓			✓		✓									✓	✓				✓		✓				
ELECTRONIC WARFARE (EW)																												
Flare Test																				✓				✓				

F.3 STRESSORS BY TRAINING ACTIVITY

Table F-3: Stressors by Training Activity

Northwest Training Activity	Biological Resources																Physical Resources						Human Resources							
	Acoustic Stressors							Energy Stressors		Physical Stressors				Entanglement Stressors		Ingestion Stressors	Air Quality Stressors		Sediment and Water Quality Stressors											
	Tactical Acoustic Sonar	Other Acoustic Devices	Underwater Explosions	In-air Explosions	Weapons Firing Noise	Aircraft Noise	Vessel and Simulated Vessel Noise	Electromagnetic	Lasers	Aircraft and Aerial Target Strikes	Vessel and In-water Device Strikes	Military Expended Materials	Seafloor Devices	Cables and Wires	Parachutes	Military Expended Materials	Criteria Air Pollutants	Hazardous Air Pollutants	Explosives	Metals	Chemicals	Other Materials	Acoustics[1]	Physical Disturbance[1]	Accessibility[2]	Airborne Acoustics[2]	Physical Disturbance and Strikes[2]	Underwater Energy[3]	In-Air Energy[3]	Physical Interactions[3]
ANTI-AIR WARFARE (AAW)																														
Air Combat Maneuver (ACM)						✓				✓						✓	✓	✓		✓		✓	✓			✓	✓			
Missile Exercise (Air-to-Air)				✓		✓				✓		✓			✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓			✓
Gunnery Exercise (Surface-to-Air)				✓	✓	✓	✓			✓	✓	✓				✓	✓	✓	✓	✓				✓	✓	✓	✓			✓
Missile Exercise (Surface-to-Air)				✓		✓	✓			✓	✓	✓				✓	✓	✓	✓	✓	✓			✓	✓	✓	✓			✓
ANTI-SURFACE WARFARE (ASUW)																														
Gunnery Exercise (Surface-to-Surface) Ship – Small-Caliber							✓				✓	✓				✓	✓	✓		✓					✓	✓	✓			✓
Gunnery Exercise (Surface-to-Surface) Ship – Medium and Large Caliber			✓		✓		✓				✓	✓				✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓		✓
Gunnery Exercise (Surface-to-Surface) Boat							✓				✓	✓					✓	✓						✓	✓	✓	✓			✓
Missile Exercise (Air-to-Surface)						✓				✓							✓	✓					✓	✓	✓		✓		✓	✓
Bombing Exercise (Air-to-Surface)			✓			✓				✓		✓				✓	✓	✓	✓	✓			✓	✓	✓		✓	✓	✓	✓
Sinking Exercise (SINKEX)[1]			✓		✓	✓	✓			✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓
ANTI-SUBMARINE WARFARE (ASW)																														
Tracking Exercise – Submarine	✓						✓				✓													✓			✓	✓		✓
Tracking Exercise – Surface	✓						✓				✓						✓	✓						✓	✓		✓	✓		✓
Tracking Exercise – Helicopter	✓					✓	✓			✓	✓	✓			✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓		✓
Tracking Exercise – Maritime Patrol Aircraft	✓					✓	✓			✓	✓	✓			✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓		✓
Tracking Exercise – Maritime Patrol (Extended Echo Ranging Sonobuoys)	✓		✓			✓				✓		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓

[1] SINKEX is proposed for the No Action Alternative only.

Table F-3: Stressors by Training Activity (continued)

Northwest Training Activity	Biological Resources																Physical Resources						Human Resources							
	Acoustic Stressors							Energy Stressors		Physical Stressors				Entanglement Stressors		Ingestion Stressors	Air Quality Stressors		Sediment and Water Quality Stressors											
	Tactical Acoustic Sonar	Other Acoustic Devices	Underwater Explosions	In-air Explosions	Weapons Firing Noise	Aircraft Noise	Vessel and Simulated Vessel Noise	Electromagnetic	Lasers	Aircraft and Aerial Target Strikes	Vessel and In-water Device Strikes	Military Expended Materials	Seafloor Devices	Cables and Wires	Parachutes	Military Expended Materials	Criteria Air Pollutants	Hazardous Air Pollutants	Explosives	Metals	Chemicals	Other Materials	Acoustics[1]	Physical Disturbance[1]	Accessibility[2]	Airborne Acoustics[2]	Physical Disturbance and Strikes[2]	Underwater Energy[3]	In-Air Energy[3]	Physical Interactions[3]
ELECTRONIC WARFARE (EW)																														
Electronic Warfare Operations (EW Ops)						✓	✓			✓	✓						✓	✓							✓	✓	✓			✓
MINE WARFARE (MIW)																														
Mine Neutralization – Explosive Ordnance Disposal (EOD)			✓			✓	✓			✓	✓	✓	✓			✓	✓	✓	✓				✓	✓	✓	✓	✓	✓		✓
Submarine Mine Exercise											✓	✓	✓															✓		✓
Civilian Port Defense	✓		✓			✓	✓	✓		✓	✓		✓				✓	✓	✓				✓	✓	✓	✓	✓	✓		✓
NAVAL SPECIAL WARFARE (NSW)																														
Personnel Insertion/Extraction – Submarine											✓																			
Personnel Insertion/Extraction – Non-submarine						✓				✓							✓	✓	✓							✓				
OTHER TRAINING EXERCISES																														
Small Boat Attack					✓		✓									✓	✓	✓		✓										
Intelligence, Surveillance, Reconnaissance						✓				✓							✓	✓								✓				
Search and Rescue						✓				✓							✓	✓								✓				
Surface Ship Sonar Maintenance	✓						✓				✓						✓	✓												
Submarine Sonar Maintenance	✓						✓				✓																			

[1] Cultural resources stressor
[2] Socioeconomics stressor
[3] Public health and safety stressor
Note: A check indicates events that take place for all alternatives.

F.4 STRESSORS BY TESTING ACTIVITY

Table F-4: Stressors by Testing Activity

Northwest Testing Activity	Biological Resources																Physical Resources						Human Resources							
	Acoustic Stressors							Energy Stressors		Physical Stressors				Entanglement Stressors		Ingestion Stressors	Air Quality Stressors		Sediment and Water Quality Stressors											
	Tactical Acoustic Sonar	Other Acoustic Devices	Underwater Explosions	In-air Explosions	Weapons Firing Noise	Aircraft Noise	Vessel and Simulated Vessel Noise	Electromagnetic	Lasers	Aircraft and Aerial Target Strikes	Vessel and In-water Device Strikes	Military Expended Materials	Seafloor Devices	Cables and Wires	Parachutes	Military Expended Materials	Criteria Air Pollutants	Hazardous Air Pollutants	Explosives	Metals	Chemicals	Other Materials	Acoustics[1]	Physical Disturbance[1]	Accessibility[2]	Airborne Acoustics[2]	Physical Disturbance and Strikes[2]	Underwater Energy[3]	In-Air Energy[3]	Physical Interactions[3]
Naval Sea Systems Command																														
TORPEDO TESTING																														
Torpedo Non-Explosive Testing		✓					✓				✓			✓			✓	✓		✓	✓	✓			✓		✓	✓		
AUTONOMOUS AND NON-AUTONOMOUS VEHICLES																														
Unmanned Underwater Vehicle Testing		✓					✓				✓		✓				✓	✓									✓			
Unmanned Aircraft System						✓				✓							✓	✓												
Unmanned Surface Vehicle																														
FLEET TRAINING/SUPPORT																														
Cold Water Training																														
Post-Refit Sea Trial	✓						✓				✓																			
Anti-Submarine Warfare (ASW) Testing	✓						✓				✓				✓		✓	✓												
MAINTENANCE AND MISCELLANEOUS																														
Side Scan/Multibeam Sonar		✓					✓				✓																✓			
Non-Acoustic Tests													✓																	
ACOUSTIC COMPONENT TEST																														
Countermeasures Testing		✓					✓				✓																✓			
Acoustic Test Facility																														
Pierside Integrated Swimmer Defense		✓																												

Table F-4: Stressors by Testing Activity (continued)

Northwest Testing Activity	Biological Resources																Physical Resources						Human Resources							
	Acoustic Stressors							Energy Stressors		Physical Stressors				Entanglement Stressors		Ingestion Stressors	Air Quality Stressors		Sediment and Water Quality Stressors											
	Tactical Acoustic Sonar	Other Acoustic Devices	Underwater Explosions	In-air Explosions	Weapons Firing Noise	Aircraft Noise	Vessel and Simulated Vessel Noise	Electromagnetic	Lasers	Aircraft and Aerial Target Strikes	Vessel and In-water Device Strikes	Military Expended Materials	Seafloor Devices	Cables and Wires,	Parachutes	Military Expended Materials	Criteria Air Pollutants	Hazardous Air Pollutants	Explosives	Metals	Chemicals	Other Materials	Acoustics[1]	Physical Disturbance[1]	Accessibility[2]	Airborne Acoustics[2]	Physical Disturbance and Strikes[2]	Underwater Energy[3]	In-Air Energy[3]	Physical Interactions[3]
SYSTEM, SUBSYSTEM AND COMPONENT TESTING																														
Pierside Acoustic Testing		✓					✓				✓						✓	✓												
Performance Testing At Sea		✓					✓				✓						✓	✓												
Development Training and Testing		✓					✓				✓						✓	✓												
PROOF-OF-CONCEPT TESTING																														
Proof-of-Concept Testing		✓					✓				✓						✓	✓												
ACOUSTIC MEASUREMENT TESTS																														
Surface Vessel Acoustic Measurement		✓					✓				✓																			
Underwater Vessel Acoustic Measurement		✓									✓																			
Underwater Vessel Hydrodynamic Performance Measurement		✓									✓																			
Cold Water Training		✓																												
Component System Testing		✓																												
Countermeasures Testing		✓					✓													✓	✓	✓	✓							
Electromagnetic Measurement		✓					✓				✓																			
Measurement System Repair & Replacement		✓																												
Project Operations (POPS)		✓					✓				✓																			
Target Strength Trial		✓																												
LIFE CYCLE ACTIVITIES																														
Pierside Sonar Testing	✓	✓																												
SHIPBOARD PROTECTION SYSTEMS AND SWIMMER DEFENSE TESTING																														
Pierside Integrated Swimmer Defense		✓																												

Table F-4: Stressors by Testing Activity (continued)

Northwest Testing Activity	Biological Resources																Physical Resources						Human Resources							
	Acoustic Stressors							Energy Stressors		Physical Stressors				Entanglement Stressors		Ingestion Stressors	Air Quality Stressors		Sediment and Water Quality Stressors											
	Tactical Acoustic Sonar	Other Acoustic Devices	Underwater Explosions	In-air Explosions	Weapons Firing Noise	Aircraft Noise	Vessel and Simulated Vessel Noise	Electromagnetic	Lasers	Aircraft and Aerial Target Strikes	Vessel and In-water Device Strikes	Military Expended Materials	Seafloor Devices	Cables and Wires,	Parachutes	Military Expended Materials	Criteria Air Pollutants	Hazardous Air Pollutants	Explosives	Metals	Chemicals	Other Materials	Acoustics[1]	Physical Disturbance[1]	Accessibility[2]	Airborne Acoustics[2]	Physical Disturbance and Strikes[2]	Underwater Energy[3]	In-Air Energy[3]	Physical Interactions[3]
UNMANNED VEHICLE TESTING																														
Unmanned Vehicle Development and Payload Testing		✓															✓	✓												
ANTI-SURFACE WARFARE (ASUW)/ANTI-SUBMARINE WARFARE (ASW) TESTING																														
Torpedo (Explosive) Testing		✓	✓				✓				✓			✓		✓	✓	✓	✓	✓	✓	✓			✓		✓	✓		
Torpedo (Non-explosive) Testing		✓					✓				✓			✓			✓	✓		✓	✓	✓			✓		✓	✓		
Countermeasure Testing		✓					✓				✓																✓			
NEW SHIP CONSTRUCTION																														
Anti-Submarine Warfare (ASW) Mission Package Testing	✓						✓				✓				✓		✓	✓												
Naval Air Systems Command																														
ANTI-SUBMARINE WARFARE (ASW)																														
Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft (DICASS)	✓					✓	✓			✓		✓			✓	✓	✓	✓		✓	✓	✓								
Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft (MAC)	✓					✓	✓			✓		✓			✓	✓	✓	✓		✓	✓	✓								
Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft (SUS)	✓					✓	✓			✓		✓			✓	✓	✓	✓		✓	✓	✓								
Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft (IEER)	✓		✓			✓	✓			✓		✓			✓	✓	✓	✓	✓	✓	✓	✓								
Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft (HDC)	✓					✓	✓			✓		✓			✓	✓	✓	✓		✓	✓	✓								
ELECTRONIC WARFARE (EW)																														
Flare Test							✓			✓						✓	✓	✓			✓									

[1] Cultural resources stressor
[2] Socioeconomics stressor
[3] Public health and safety stressor
Notes: (1) A check indicates events that take place for all alternatives. (2) ASDS = Advanced Sea, Air, Land (SEAL) Delivery System

F.5 STRESSORS BY RESOURCE

Table F-5: Stressors by Resource

		Biological Resources																Physical Resources						Human Resources							
		Acoustic Stressors							Energy Stressors		Physical Stressors				Entanglement Stressors		Ingestion Stressors	Air Quality Stressors		Sediment and Water Quality Stressors				Cultural Resources Stressor		Socioeconomic Resources Stressor			Public Health and Safety Stressor		
Stressors vs. Resources		Tactical Acoustic Sonar	Other Acoustic Devices	Underwater Explosions	In-air Explosions	Weapons Firing Noise	Aircraft Noise	Vessel and Simulated Vessel Noise	Electromagnetic	Lasers	Aircraft and Aerial Target Strikes	Vessel and In-water Device Strikes	Military Expended Materials	Seafloor Devices	Cables and Wires	Parachutes	Military Expended Materials	Criteria Air Pollutants	Hazardous Air Pollutants	Explosives and Explosive Hyproducts	Metals	Chemicals Other than Explosives	Other Materials	Acoustics	Physical Disturbance	Accessibility	Airborne Acoustics	Physical Disturbance and Strikes	Underwater Energy	In-Air Energy	Physical Interactions
Physical	Sediments and Water Quality																			✓	✓	✓	✓								
	Air Quality																	✓	✓												
Biological	Marine Habitats			✓								✓	✓	✓																	
	Sea Turtles	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓			✓	✓	✓	✓								
	Birds	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓				✓	✓	✓												
	Marine Vegetation			✓								✓	✓	✓						✓	✓	✓	✓								
	Marine Invertebrates	✓	✓	✓					✓	✓		✓	✓	✓	✓	✓	✓			✓	✓	✓	✓								
	Fish	✓	✓	✓		✓		✓	✓	✓		✓	✓	✓	✓	✓	✓			✓	✓	✓	✓								
Human	Cultural Resources			✓			✓						✓	✓										✓	✓						
	Native American and Alaska Native Traditional Resources			✓			✓						✓	✓										✓	✓						
	Socioeconomic Resources		✓	✓	✓	✓	✓	✓				✓	✓		✓	✓				✓	✓	✓	✓			✓	✓	✓			
	Public Health and Safety	✓	✓	✓	✓	✓					✓	✓	✓																✓	✓	✓

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