
Appendix B Activity Stressor Matrices

**Environmental Impact Statement/
Overseas Environmental Impact Statement
Hawaii-California Training and Testing**

TABLE OF CONTENTS

APPENDIX B	ACTIVITY STRESSOR MATRICES	B-1
-------------------	---	------------

List of Figures

There are no figures in this appendix.

List of Tables

Table B-1: Stressors by Training Activity	B-2
Table B-2: Stressors by Testing Activity	B-9
Table B-3: Stressors by Modernization and Sustainment of Ranges Action.....	B-14
Table B-4: Stressors by Resource	B-15

APPENDIX B ACTIVITY STRESSOR MATRICES

This appendix contains four matrices. The first two matrices in this appendix list the training and testing activities that occur in the Hawaii-California Training and Testing Study Area and their associated stressors. The third matrix shows the stressors associated with the Modernization and Sustainment of Ranges activities. The fourth matrix lists the resources analyzed in this Environmental Impact Statement/Overseas Environmental Impact Statement and the stressors they are potentially affected by.

Table B-1: Stressors by Training Activity

Hawaii-California Training Activity	Biological Resources																		Physical Resources					Human Resources														
	Acoustic Stressors						Explosive Stressors		Energy Stressors			Physical Disturbance and Strike Stressors				Entanglement Stressors		Ingestion Stressors		Air Quality Stressors	Sediments and Water Quality Stressors			Cultural Resource Stressors		Socioeconomic Resource Stressors		Public Health & Safety Stressors										
	Sonar & Other Transducers	Pile Driving	Vessel Noise	Aircraft Noise	Weapons Noise	Air Guns	Explosions in Water	Explosions in Air	In-Water Electromagnetic Devices	In-Air Electromagnetic Devices	High-Energy Lasers	Vessels & In-water Device Strike	Aircraft & Aerial Target Strike	Military Expended Material	Seafloor Devices	Pile Driving	Wires & Cables	Decelerators/Parachutes	Military Expended Materials – Munitions	Military Expended Materials – Other than Munitions	Air Pollutants	Explosives	Metals	Chemicals (Not Explosives)	Other Materials	Explosives	Physical Disturbance & Strike	Accessibility	Airborne Acoustics	Physical Disturbance & Strike	Underwater Energy	In-Air Energy	Physical Interactions					
U.S. NAVY AND MARINE CORPS																																						
MAJOR TRAINING EXERCISES – LARGE INTEGRATED ANTI-SUBMARINE WARFARE																																						
Composite Training Unit Exercise (Strike Group)	✓		✓	✓					✓		✓	✓	✓			✓	✓		✓	✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓				
Rim of the Pacific Exercise	✓		✓	✓					✓		✓	✓	✓			✓	✓		✓	✓	✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓				
MAJOR TRAINING EXERCISES – MEDIUM INTEGRATED ANTI-SUBMARINE WARFARE																																						
Task Force/Sustainment Exercise	✓		✓	✓					✓		✓	✓	✓			✓	✓		✓	✓			✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓				
INTEGRATED/COORDINATED ANTI-SUBMARINE WARFARE TRAINING																																						
Independent Deployer Certification Exercise/Tailored Surface Warfare Training			✓	✓					✓		✓	✓									✓						✓	✓	✓	✓	✓	✓	✓	✓				
Medium Coordinated Anti-Submarine Warfare	✓		✓	✓					✓		✓	✓	✓			✓	✓		✓	✓	✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓				
Small Coordinated Anti-Submarine Warfare	✓		✓	✓					✓		✓	✓	✓			✓	✓		✓	✓	✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓				
INTEGRATED/COORDINATED TRAINING - OTHER																																						
Composite Training Unit Exercise (ARG/MEU)	✓		✓	✓					✓		✓	✓	✓			✓	✓		✓	✓	✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓				
Innovation and Demonstration Exercise	✓		✓	✓	✓		✓	✓			✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓				
Integrated Air Missile Defense Exercise			✓	✓	✓			✓			✓	✓	✓					✓	✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓				
Large Amphibious Exercise			✓	✓					✓		✓	✓		✓							✓						✓	✓	✓	✓	✓	✓	✓	✓				
Multi-Warfare Exercise	✓		✓	✓	✓				✓		✓	✓	✓			✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓				
AIR WARFARE																																						
Air Combat Maneuvers				✓					✓			✓									✓							✓	✓	✓								
Air Defense Exercise			✓	✓					✓		✓	✓									✓							✓	✓	✓								
Gunnery Exercise Air-to-Air Medium and Small Caliber				✓	✓				✓			✓	✓						✓		✓		✓				✓	✓	✓	✓				✓				
Gunnery Exercise Surface-to-Air Large and Medium Caliber			✓		✓				✓		✓		✓								✓		✓		✓									✓				
High-Energy Laser Exercise (Surface-to-Air)			✓							✓	✓										✓																	
Medium Range Interceptor Capability				✓	✓			✓				✓	✓						✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓				
Missile Exercise (Air-to-Air)				✓	✓			✓				✓	✓					✓	✓	✓	✓		✓	✓	✓	✓												
Missile Exercise – Man-Portable Air Defense System				✓	✓			✓				✓	✓	✓					✓		✓		✓	✓	✓	✓		✓	✓	✓	✓		✓	✓				
Missile Exercise (Surface-to-Air)			✓	✓	✓			✓			✓	✓	✓						✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓				

Table B-1: Stressors by Training Activity (continued)

Hawaii California Training Activity	Biological Resources																		Physical Resources					Human Resources													
	Acoustic Stressors					Explosive Stressors		Energy Stressors			Physical Disturbance and Strike Stressors				Entanglement Stressors		Ingestion Stressors		Air Quality Stressors	Sediments and Water Quality Stressors			Cultural Resource Stressors		Socioeconomic Resource Stressors			Public Health & Safety Stressors									
	Sonar & Other Transducers	Pile Driving	Vessel Noise	Aircraft Noise	Weapons Noise	Air Guns	Explosions in Water	Explosions in Air	In-Water Electromagnetic Devices	In-Air Electromagnetic Devices	High-Energy Lasers	Vessels & In-water Device Strike	Aircraft & Aerial Target Strike	Military Expended Material	Seafloor Devices	Pile Driving	Wires & Cables	Decelerators/Parachutes	Military Expended Materials – Munitions	Military Expended Materials – Other than Munitions	Criteria Air Pollutants	Explosives	Metals	Chemicals (Not Explosives)	Other Materials	Explosives	Physical Disturbance & Strike	Accessibility	Airborne Acoustics	Physical Disturbance & Strike	Underwater Energy	In-Air Energy	Physical Interactions				
AMPHIBIOUS WARFARE																																					
Amphibious Assault			✓	✓					✓		✓	✓									✓						✓	✓	✓	✓	✓	✓	✓	✓			
Amphibious Operations in a Contested Environment			✓	✓	✓			✓	✓		✓	✓	✓	✓					✓		✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓			
Amphibious Raid			✓	✓					✓		✓	✓									✓						✓	✓	✓	✓	✓	✓	✓	✓			
Amphibious Vehicle Maneuvers			✓								✓			✓							✓						✓	✓	✓	✓	✓	✓	✓	✓			
Expeditionary Fires Exercise/Supporting Arms Coordination Exercise			✓	✓					✓		✓	✓									✓						✓	✓	✓	✓	✓	✓	✓	✓			
Naval Surface Fire Support Exercise – At Sea			✓		✓		✓		✓		✓		✓						✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓			
Naval Surface Fire Support Exercise – Land-Based Target			✓		✓				✓		✓		✓						✓		✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓			
Non-Combat Amphibious Operation			✓	✓					✓		✓	✓									✓						✓	✓	✓	✓	✓	✓	✓	✓			
Shore-to-Surface Artillery Exercise			✓		✓		✓	✓			✓		✓						✓	✓	✓	✓	✓			✓		✓	✓	✓				✓			
Shore-to-Surface Missile Exercise			✓		✓		✓	✓			✓		✓						✓	✓	✓	✓	✓			✓		✓	✓	✓				✓			
ANTI-SUBMARINE WARFARE																																					
Anti-Submarine Warfare Torpedo Exercise – Helicopter	✓		✓	✓					✓		✓	✓	✓				✓	✓		✓	✓		✓	✓	✓												
Anti-Submarine Warfare Torpedo Exercise – Maritime Patrol Aircraft	✓		✓	✓					✓		✓	✓	✓				✓	✓		✓	✓		✓	✓	✓												
Anti-Submarine Warfare Torpedo Exercise – Ship	✓		✓						✓		✓		✓				✓			✓	✓		✓	✓	✓												
Anti-Submarine Warfare Torpedo Exercise – Submarine	✓		✓						✓		✓		✓				✓			✓	✓		✓	✓	✓												
Anti-Submarine Warfare Tracking Exercise – Helicopter	✓		✓	✓					✓		✓	✓	✓				✓	✓		✓	✓		✓	✓	✓												
Anti-Submarine Warfare Tracking Exercise –Unmanned Surface Vessel	✓		✓		✓				✓		✓		✓				✓	✓	✓	✓	✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			
Anti-Submarine Warfare Tracking Exercise – Maritime Patrol Aircraft	✓		✓	✓					✓		✓	✓	✓				✓	✓		✓	✓			✓	✓	✓											
Anti-Submarine Warfare Tracking Exercise – Ship	✓		✓						✓		✓		✓				✓			✓	✓			✓	✓	✓											
Anti-Submarine Warfare Tracking Exercise – Submarine	✓		✓						✓		✓		✓				✓			✓	✓			✓	✓	✓											
Training and End-to-End Mission Capability Verification - Torpedo	✓		✓				✓		✓		✓		✓	✓			✓		✓		✓	✓	✓	✓	✓												

Table B-1: Stressors by Training Activity (continued)

Hawaii California Training Activity	Biological Resources																		Physical Resources					Human Resources									
	Acoustic Stressors						Explosive Stressors		Energy Stressors			Physical Disturbance and Strike Stressors				Entanglement Stressors		Ingestion Stressors		Air Quality Stressors	Sediments and Water Quality Stressors			Cultural Resource Stressors		Socioeconomic Resource Stressors		Public Health & Safety Stressors					
	Sonar & Other Transducers	Pile Driving	Vessel Noise	Aircraft Noise	Weapons Noise	Air Guns	Explosions in Water	Explosions in Air	In-Water Electromagnetic Devices	In-Air Electromagnetic	High-Energy Lasers	Vessels & In-water Device Strike	Aircraft & Aerial Target Strike	Military Expended Material	Seafloor Devices	Pile Driving	Wires & Cables	Decelerators/Parachutes	Military Expended Materials – Munitions	Military Expended Materials – Other than Munitions	Criteria Air Pollutants	Explosives	Metals	Chemicals (Not Explosives)	Other Materials	Explosives	Physical Disturbance & Strike	Accessibility	Airborne Acoustics	Physical Disturbance & Strike	Underwater Energy	In-Air Energy	Physical Interactions
ELECTRONIC WARFARE																																	
Counter Targeting Chaff Exercise – Aircraft				✓						✓			✓	✓						✓	✓		✓	✓	✓								
Counter Targeting Chaff Exercise – Ship			✓						✓			✓		✓						✓	✓		✓	✓	✓								
Counter Targeting Flare Exercise				✓					✓				✓	✓						✓	✓		✓	✓	✓								
Electronic Warfare Operations			✓	✓					✓			✓	✓							✓													
EXPEDITIONARY WARFARE																																	
Dive and Salvage Operations			✓							✓		✓								✓							✓	✓	✓	✓	✓	✓	✓
Gunnery Exercise Ship-to-Shore			✓		✓							✓		✓					✓		✓		✓				✓	✓	✓	✓	✓	✓	✓
Obstacle Loading			✓				✓					✓		✓	✓					✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Personnel Insertion/Extraction – Air			✓	✓	✓		✓			✓		✓	✓	✓					✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
Personnel Insertion/Extraction – Surface and Subsurface			✓	✓	✓		✓					✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Personnel Insertion/Extraction – Swimmer/Diver			✓		✓		✓					✓		✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Port Damage Repair		✓	✓									✓			✓	✓				✓							✓	✓	✓	✓	✓	✓	✓
Small Boat Attack			✓		✓					✓		✓		✓					✓		✓		✓				✓	✓	✓	✓	✓	✓	✓
MINE WARFARE																																	
Airborne Mine Countermeasure – Mine Detection			✓	✓						✓		✓	✓	✓	✓		✓				✓		✓		✓		✓	✓	✓	✓	✓	✓	✓
Airborne Mine Laying			✓	✓						✓		✓	✓	✓			✓				✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Amphibious Breaching Operations			✓				✓			✓		✓		✓						✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Civilian Port Defense – Homeland Security Anti-Terrorism/Force Protection Exercise	✓		✓	✓			✓			✓		✓	✓	✓	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mine Countermeasure Exercise – Ship Sonar	✓		✓							✓		✓									✓						✓	✓	✓	✓	✓	✓	✓
Mine Countermeasures Mine Neutralization Remotely Operated Vehicle Operations	✓		✓	✓			✓			✓		✓	✓	✓	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mine Countermeasures – Towed Mine Neutralization			✓	✓					✓	✓		✓	✓								✓						✓	✓	✓	✓	✓	✓	✓
Mine Neutralization Explosive Ordnance Disposal			✓				✓			✓		✓		✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Submarine Mine Avoidance Exercise	✓		✓							✓		✓		✓			✓		✓	✓	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓
Submarine Mobile Mine and Mine Laying Exercise	✓		✓							✓		✓		✓							✓		✓		✓		✓	✓	✓	✓	✓	✓	✓
Surface Ship Object Detection	✓		✓							✓		✓		✓	✓		✓				✓		✓		✓		✓	✓	✓	✓	✓	✓	✓

Table B-1: Stressors by Training Activity (continued)

Hawaii California Training Activity	Biological Resources																		Physical Resources					Human Resources														
	Acoustic Stressors						Explosive Stressors		Energy Stressors			Physical Disturbance and Strike Stressors				Entanglement Stressors		Ingestion Stressors		Air Quality Stressors	Sediments and Water Quality Stressors			Cultural Resource Stressors		Socioeconomic Resource Stressors		Public Health & Safety Stressors										
	Sonar & Other Transducers	Pile Driving	Vessel Noise	Aircraft Noise	Weapons Noise	Air Guns	Explosions in Water	Explosions in Air	In-Water Electromagnetic Devices	In-Air Electromagnetic Devices	High-Energy Lasers	Vessels & In-water Device Strike	Aircraft & Aerial Target Strike	Military Expended Material	Seafloor Devices	Pile Driving	Wires & Cables	Decelerators/Parachutes	Military Expended Materials – Munitions	Military Expended Materials – Other than Munitions	Criteria Air Pollutants	Explosives	Metals	Chemicals (Not Explosives)	Other Materials	Explosives	Physical Disturbance & Strike	Accessibility	Airborne Acoustics	Physical Disturbance & Strike	Underwater Energy	In-Air Energy	Physical Interactions					
MINE WARFARE (cont.)																																						
Training and End-to-End Mission Capability Verification – Mobile Mine and Mine Laying Exercise			✓						✓		✓		✓			✓					✓		✓	✓	✓													
Underwater Demolition Qualification and Certification			✓				✓		✓		✓			✓							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Underwater Demolition Multiple Charge – Large Area Clearance			✓				✓				✓		✓	✓							✓	✓				✓	✓	✓	✓	✓	✓			✓				
Underwater Mine Countermeasure Raise, Tow, Beach, and Exploitation			✓	✓					✓		✓	✓	✓	✓		✓					✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓				
SURFACE WARFARE																																						
Bombing Exercise Air-to-Surface			✓	✓			✓			✓		✓	✓	✓					✓	✓	✓	✓	✓	✓	✓													
Gunnery Exercise Air-to-Surface – Medium-Caliber			✓	✓	✓		✓			✓		✓	✓	✓					✓	✓	✓	✓	✓	✓	✓													
Gunnery Exercise Air-to-Surface – Small-Caliber			✓	✓	✓					✓		✓	✓	✓					✓	✓	✓		✓	✓	✓													
Gunnery Exercise Surface-to-Surface Boat – Medium-Caliber			✓		✓		✓				✓		✓						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Gunnery Exercise Surface-to-Surface Boat – Small-Caliber			✓		✓						✓		✓						✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓				
Gunnery Exercise Surface-to-Surface Ship – Large Caliber			✓		✓		✓			✓		✓		✓					✓		✓	✓	✓		✓													
Gunnery Exercise Surface-to-Surface Ship – Medium Caliber			✓		✓		✓			✓		✓		✓					✓		✓	✓	✓	✓	✓													
Gunnery Exercise Surface-to-Surface Ship – Small-Caliber			✓		✓					✓		✓		✓					✓		✓		✓		✓													
Laser Targeting – Aircraft			✓	✓						✓	✓	✓	✓	✓							✓		✓	✓	✓													
Laser Targeting – Ship			✓	✓	✓					✓	✓	✓	✓	✓							✓																	
Maritime Security Operations			✓	✓	✓					✓		✓	✓	✓					✓		✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓				
Missile Exercise Air-to-Surface			✓	✓	✓		✓			✓		✓	✓	✓					✓	✓	✓	✓	✓	✓														
Missile Exercise Air-to-Surface Rocket				✓			✓			✓			✓	✓					✓	✓	✓	✓	✓	✓														
Missile Exercise Surface-to-Surface			✓		✓		✓			✓		✓		✓					✓	✓	✓	✓	✓	✓														
Sinking Exercise	✓		✓	✓	✓		✓			✓		✓	✓	✓			✓		✓		✓	✓	✓	✓	✓													
Surface Warfare Torpedo Exercise – Submarine	✓		✓								✓		✓				✓				✓		✓	✓	✓													
Training and End-to-End Mission Capability Verification – Submarine Missile Maritime					✓		✓				✓		✓						✓	✓	✓	✓	✓	✓														

Table B-1: Stressors by Training Activity (continued)

Hawaii California Training Activity	Biological Resources																		Physical Resources					Human Resources													
	Acoustic Stressors						Explosive Stressors		Energy Stressors			Physical Disturbance and Strike Stressors				Entanglement Stressors		Ingestion Stressors		Air Quality Stressors	Sediments and Water Quality Stressors				Cultural Resource Stressors		Socioeconomic Resource Stressors			Public Health & Safety Stressors							
	Sonar & Other Transducers	Pile Driving	Vessel Noise	Aircraft Noise	Weapons Noise	Air Guns	Explosions in Water	Explosions in Air	In-Water Electromagnetic Devices	In-Air Electromagnetic Devices	High-Energy Lasers	Vessels & In-water Device Strike	Aircraft & Aerial Target Strike	Military Expended Material	Seafloor Devices	Pile Driving	Wires & Cables	Decelerators/Parachutes	Military Expended Materials – Munitions	Military Expended Materials – Other than Munitions	Criteria Air Pollutants	Explosives	Metals	Chemicals (Not Explosives)	Other Materials	Explosives	Physical Disturbance & Strike	Accessibility	Airborne Acoustics	Physical Disturbance & Strike	Underwater Energy	In-Air Energy	Physical Interactions				
OTHER TRAINING EXERCISES																																					
Aerial Firefighting				✓					✓				✓								✓																
At-Sea Vessel Refueling Training			✓								✓										✓																
Combat Swimmer/Diver Training and Certification			✓								✓										✓					✓	✓	✓	✓	✓	✓	✓	✓	✓			
Kilo Dip	✓			✓					✓			✓	✓			✓			✓		✓		✓		✓												
Multi-Domain Unmanned Autonomous Systems	✓		✓	✓			✓		✓		✓	✓	✓							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Precision Anchoring			✓						✓		✓			✓							✓		✓				✓	✓	✓	✓	✓	✓	✓	✓			
Ship-to-Shore Fuel Transfer Training			✓						✓		✓										✓						✓	✓	✓	✓	✓	✓	✓	✓			
Submarine and UUV Subsea and Seabed Warfare Exercise	✓		✓		✓		✓						✓	✓		✓			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓				
Submarine Navigation Exercise	✓										✓										✓						✓	✓	✓	✓	✓	✓	✓	✓			
Submarine Sonar Maintenance and Systems Checks	✓										✓										✓						✓	✓	✓	✓	✓	✓	✓	✓			
Submarine Under Ice Training and Certification	✓										✓		✓			✓					✓		✓	✓	✓												
Surface Ship Sonar Maintenance and Systems Checks	✓		✓						✓		✓										✓						✓	✓	✓	✓	✓	✓	✓	✓			
Training and End-to-End Mission Capability Verification – Subsea and Seabed Warfare Kinetic Effectors			✓		✓		✓						✓				✓		✓		✓	✓	✓	✓	✓												
Training and End-to-End Mission Capability Verification – UAV			✓	✓	✓		✓					✓	✓	✓			✓		✓	✓	✓	✓	✓	✓													
Underwater Survey			✓								✓			✓							✓						✓	✓	✓	✓	✓	✓	✓	✓			
Unmanned Aerial System Training			✓	✓					✓		✓	✓	✓								✓		✓	✓	✓												
Unmanned Underwater Vehicle Training -Certification and Development Exercises	✓		✓	✓					✓		✓	✓	✓	✓			✓				✓																
Waterborne Training			✓								✓										✓						✓	✓	✓	✓	✓	✓	✓	✓			

Table B-1: Stressors by Training Activity (continued)

Hawaii California Training Activity	Biological Resources																	Physical Resources					Human Resources										
	Acoustic Stressors					Explosive Stressors		Energy Stressors			Physical Disturbance and Strike Stressors				Entanglement Stressors		Ingestion Stressors		Air Quality Stressors	Sediments and Water Quality Stressors			Cultural Resource Stressors		Socioeconomic Resource Stressors		Public Health & Safety Stressors						
	Sonar & Other Transducers	Pile Driving	Vessel Noise	Aircraft Noise	Weapons Noise	Air Guns	Explosions in Water	Explosions in Air	In-Water Electromagnetic Devices	In-Air Electromagnetic Devices	High-Energy Lasers	Vessels & In-water Device Strike	Aircraft & Aerial Target Strike	Military Expended Material	Seafloor Devices	Pile Driving	Wires & Cables	Decelerators/Parachutes	Military Expended Materials – Munitions	Military Expended Materials – Other than Munitions	Criteria Air Pollutants	Explosives	Metals	Chemicals (Not Explosives)	Other Materials	Explosives	Physical Disturbance & Strike	Accessibility	Airborne Acoustics	Physical Disturbance & Strike	Underwater Energy	In-Air Energy	Physical Interactions
U.S. COAST GUARD																																	
AIR WARFARE																																	
Gunnery Exercise Surface-to-Air Large Caliber			✓		✓				✓		✓		✓						✓		✓	✓	✓		✓								
Gunnery Exercise Surface-to-Air Medium Caliber			✓		✓				✓		✓		✓						✓		✓		✓		✓								
ELECTRONIC WARFARE																																	
Counter Targeting Chaff Exercise – Ship			✓						✓		✓		✓						✓	✓		✓	✓	✓									
Counter Targeting Flare Exercise			✓	✓					✓		✓	✓	✓						✓	✓	✓	✓	✓	✓									
EXPEDITIONARY WARFARE																																	
Underwater Construction Team Training			✓								✓			✓						✓							✓	✓	✓	✓	✓	✓	✓
SURFACE WARFARE																																	
Gunnery Exercise Air-to-Surface Medium Caliber			✓	✓	✓		✓		✓		✓	✓	✓					✓	✓	✓	✓	✓	✓	✓									
Gunnery Exercise Surface-to-Surface Boat Medium Caliber			✓		✓		✓				✓		✓					✓	✓	✓	✓	✓	✓										
Gunnery Exercise Surface-to-Surface Boat Small Caliber			✓		✓						✓		✓					✓	✓	✓	✓	✓	✓										
Gunnery Exercise Surface-to-Surface Ship Large Caliber			✓		✓		✓		✓		✓		✓					✓		✓	✓	✓	✓										
Gunnery Exercise Surface-to-Surface Ship Medium Caliber			✓		✓		✓		✓		✓		✓					✓		✓	✓	✓	✓	✓									
Gunnery Exercise Surface-to-Surface Ship Small Caliber			✓		✓				✓		✓		✓					✓		✓		✓		✓									
Laser Targeting – Ship			✓						✓	✓	✓									✓													
Maritime Security Operations			✓	✓	✓				✓		✓	✓	✓					✓		✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
OTHER TRAINING ACTIVITIES																																	
Precision Anchoring			✓						✓		✓			✓						✓		✓					✓	✓	✓	✓	✓	✓	✓
Search and Rescue			✓	✓					✓		✓	✓	✓						✓	✓	✓						✓	✓	✓	✓		✓	✓
Unmanned Aerial System Training			✓	✓					✓		✓	✓	✓							✓		✓	✓	✓									
Unmanned Underwater Vehicle Training –Certification and Development Exercises	✓		✓	✓					✓		✓	✓	✓	✓		✓				✓													
Waterborne Training			✓								✓									✓							✓	✓	✓	✓	✓	✓	✓

Table B-1: Stressors by Training Activity (continued)

Hawaii California Training Activity	Biological Resources																		Physical Resources					Human Resources													
	Acoustic Stressors					Explosive Stressors		Energy Stressors			Physical Disturbance and Strike Stressors				Entanglement Stressors		Ingestion Stressors		Air Quality Stressors	Sediments and Water Quality Stressors			Cultural Resource Stressors		Socioeconomic Resource Stressors		Public Health & Safety Stressors										
	Sonar & Other Transducers	Pile Driving	Vessel Noise	Aircraft Noise	Weapons Noise	Air Guns	Explosions in Water	Explosions in Air	In-Water Electromagnetic Devices	In-Air Electromagnetic Devices	High-Energy Lasers	Vessels & In-water Device Strike	Aircraft & Aerial Target Strike	Military Expended Material	Seafloor Devices	Pile Driving	Wires & Cables	Decelerators/Parachutes	Military Expended Materials – Munitions	Military Expended Materials – Other than Munitions	Criteria Air Pollutants	Explosives	Metals	Chemicals (Not Explosives)	Other Materials	Explosives	Physical Disturbance & Strike	Accessibility	Airborne Acoustics	Physical Disturbance & Strike	Underwater Energy	In-Air Energy	Physical Interactions				
U.S. ARMY																																					
AIR WARFARE																																					
Missile Exercise – Man Portable Air Defense System				✓	✓			✓					✓	✓						✓		✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓			
AMPHIBIOUS WARFARE																																					
Shore-to-Surface Artillery Exercise			✓		✓		✓	✓		✓		✓		✓					✓	✓	✓	✓	✓		✓		✓		✓	✓	✓			✓			
Shore-to-Surface Missile Exercise			✓		✓		✓	✓		✓		✓		✓					✓	✓	✓	✓	✓		✓		✓		✓	✓	✓			✓			
SURFACE WARFARE																																					
Gunnery Exercise Surface-to-Surface Boat Medium Caliber			✓		✓		✓					✓		✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓			
Gunnery Exercise Surface-to-Surface Boat Small Caliber			✓		✓							✓		✓					✓	✓	✓		✓			✓	✓	✓	✓	✓	✓			✓			
U.S. AIR FORCE																																					
AIR WARFARE																																					
Air Combat Maneuvers				✓						✓			✓								✓		✓			✓		✓		✓	✓	✓			✓		
Gunnery Exercise (Air-to-Air) Medium Caliber				✓	✓					✓			✓	✓					✓		✓		✓			✓	✓	✓	✓	✓	✓			✓			

Table B-2: Stressors by Testing Activity

Hawaii California Testing Activity	Biological Resources																		Physical Resources					Human Resources													
	Acoustic Stressors						Explosive Stressors		Energy Stressors			Physical Disturbance and Strike Stressors				Entanglement Stressors		Ingestion Stressors		Air Quality Stressors	Sediments and Water Quality Stressors			Cultural Resource Stressors		Socioeconomic Resource Stressors		Public Health & Safety Stressors									
	Sonar & Other Transducers	Pile Driving	Vessel Noise	Aircraft Noise	Weapons Noise	Air Guns	Explosions in Water	Explosions in Air	In-Water Electromagnetic Devices	In-Air Electromagnetic Devices	High-Energy Lasers	Vessels & In-water Device Strike	Aircraft & Aerial Target Strike	Military Expended Material	Seafloor Devices	Pile Driving	Wires & Cables	Decelerators/Parachutes	Military Expended Materials – Munitions	Military Expended Materials – Other than Munitions	Criteria Air Pollutants	Explosives	Metals	Chemicals (Not Explosives)	Other Materials	Explosives	Physical Disturbance & Strike	Accessibility	Airborne Acoustics	Physical Disturbance & Strike	Underwater Energy	In-Air Energy	Physical Interactions				
NAVAL AIR SYSTEMS COMMAND																																					
AIR WARFARE																																					
Air Combat Maneuver Test				✓	✓			✓		✓			✓	✓				✓	✓	✓	✓	✓	✓	✓	✓												
Air Platform-Vehicle Test				✓					✓				✓								✓																
Air Platform Weapons Integration Test			✓	✓	✓				✓		✓	✓	✓					✓			✓		✓	✓	✓												
Air-to-Air Missile Test			✓	✓	✓		✓	✓		✓		✓	✓	✓				✓	✓	✓	✓	✓	✓	✓													
Intelligence, Surveillance, and Reconnaissance Test				✓					✓				✓								✓						✓	✓	✓	✓		✓	✓				
Large Force Test Event			✓	✓					✓		✓	✓	✓							✓	✓						✓	✓	✓	✓		✓	✓				
Surface-to-Air Gunnery Test – Large Caliber			✓	✓	✓			✓		✓		✓	✓	✓				✓	✓		✓	✓	✓	✓													
Surface-to-Air Gunnery Test – Medium Caliber			✓	✓	✓			✓		✓		✓	✓	✓				✓	✓		✓	✓	✓	✓													
Surface-to-Air High-Energy Laser Test			✓	✓	✓				✓	✓	✓	✓	✓					✓		✓	✓		✓	✓	✓												
Surface-to-Air High-Power Microwave Test			✓	✓					✓	✓		✓	✓								✓																
Surface-to-Air Missile Test			✓	✓	✓		✓	✓		✓		✓	✓	✓				✓	✓	✓	✓	✓	✓	✓													
ANTI-SUBMARINE WARFARE																																					
Anti-Submarine Warfare Torpedo Test (Aircraft)	✓			✓						✓		✓	✓	✓			✓	✓		✓	✓		✓	✓	✓												
Anti-Submarine Warfare Tracking Test (Fixed-Wing)	✓			✓						✓		✓	✓	✓			✓	✓		✓	✓		✓	✓	✓												
Anti-Submarine Warfare Tracking Test (Rotary-Wing)	✓			✓						✓		✓	✓	✓			✓	✓		✓	✓		✓	✓	✓												
Kilo Dip Test	✓			✓						✓			✓								✓																
Sonobuoy Lot Acceptance Test	✓		✓	✓						✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓		✓												
ELECTRONIC WARFARE																																					
Chaff Test				✓						✓			✓	✓						✓	✓		✓	✓	✓												
Electronic Systems Test				✓						✓			✓	✓				✓			✓		✓	✓	✓		✓	✓	✓		✓	✓		✓			
Flare Test				✓						✓			✓	✓						✓	✓		✓	✓	✓												

Table B-2: Stressors by Testing Activity (continued)

Hawaii California Testing Activity	Biological Resources																		Physical Resources					Human Resources									
	Acoustic Stressors						Explosive Stressors		Energy Stressors			Physical Disturbance and Strike Stressors				Entanglement Stressors		Ingestion Stressors		Air Quality Stressors	Sediments and Water Quality Stressors			Cultural Resource Stressors	Socioeconomic Resource Stressors		Public Health & Safety Stressors						
	Sonar & Other Transducers	Pile Driving	Vessel Noise	Aircraft Noise	Weapons Noise	Air Guns	Explosions in Water	Explosions in Air	In-Water Electromagnetic Devices	In-Air Electromagnetic Devices	High-Energy Lasers	Vessels & In-water Device Strike	Aircraft & Aerial Target Strike	Military Expended Material	Seafloor Devices	Pile Driving	Wires & Cables	Decelerators/Parachutes	Military Expended Materials – Munitions	Military Expended Materials – Other than Munitions	Criteria Air Pollutants	Explosives	Metals	Chemicals (Not Explosives)	Other Materials	Explosives	Physical Disturbance & Strike	Accessibility	Airborne Acoustics	Physical Disturbance & Strike	Underwater Energy	In-Air Energy	Physical Interactions
MINE WARFARE																																	
Airborne Dipping Sonar Minehunting Test	✓			✓					✓			✓									✓												
Airborne Laser Mine Detection System Test				✓					✓			✓									✓						✓	✓	✓	✓		✓	✓
Airborne Mine Neutralization System Test			✓	✓			✓		✓		✓	✓	✓	✓		✓			✓		✓	✓	✓	✓	✓								
Airborne Minehunting Test – Sonobuoy	✓			✓					✓			✓	✓	✓		✓	✓			✓	✓		✓		✓								
Mine Laying Test				✓					✓			✓	✓	✓							✓		✓		✓		✓	✓	✓	✓			✓
SURFACE WARFARE																																	
Air-to-Surface Bombing Test			✓	✓			✓			✓		✓	✓	✓						✓	✓	✓	✓	✓	✓								
Air-to-Surface Gunnery Test			✓	✓	✓		✓			✓		✓	✓	✓					✓	✓	✓	✓	✓	✓	✓								
Air-to-Surface High-Energy Laser Test			✓	✓						✓	✓	✓	✓	✓						✓	✓				✓								
Air-to-Surface High-Power Microwave Test			✓	✓						✓	✓	✓	✓	✓						✓	✓				✓								
Air-to-Surface Laser Targeting Test				✓						✓			✓	✓						✓	✓		✓	✓	✓	✓							
Air-to-Surface Missile Test			✓	✓	✓		✓			✓		✓	✓	✓			✓		✓	✓	✓	✓	✓	✓	✓								
Long-Range Weapons Delivery Systems (Over-the-Horizon)/ Hypersonic Vehicle Test				✓	✓		✓			✓			✓	✓					✓		✓	✓	✓	✓	✓								
Rocket Test			✓	✓	✓		✓			✓		✓	✓	✓					✓	✓	✓	✓	✓	✓	✓								
Subsurface-to-Surface Missile Test					✓		✓					✓		✓					✓		✓	✓	✓	✓	✓								
Surface-to-Surface Gunnery Test – Large-Caliber			✓		✓		✓			✓		✓		✓					✓	✓	✓	✓	✓	✓	✓								
Surface-to-Surface Gunnery Test – Medium-Caliber			✓		✓		✓			✓		✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓								
Surface-to-Surface Gunnery Test – Small-Caliber			✓		✓					✓		✓		✓					✓	✓	✓		✓	✓	✓								
Surface-to-Surface High-Energy Laser Test			✓	✓	✓					✓	✓	✓	✓	✓				✓		✓	✓		✓	✓	✓								
Surface-to-Surface High-Power Microwave Test			✓	✓						✓	✓	✓		✓						✓	✓				✓								
Surface-to-Surface Missile Test			✓		✓		✓			✓		✓		✓					✓	✓	✓	✓	✓	✓	✓								
OTHER TESTING ACTIVITIES																																	
Acoustic and Oceanographic Research			✓	✓						✓		✓	✓								✓				✓		✓	✓	✓	✓	✓	✓	✓
Air Platform Shipboard Integration Test			✓	✓						✓		✓	✓								✓					✓	✓	✓	✓			✓	✓
Undersea Range System Test	✓		✓							✓		✓		✓	✓						✓												

Table B-2: Stressors by Testing Activity (continued)

Hawaii California Testing Activity	Biological Resources																		Physical Resources					Human Resources													
	Acoustic Stressors						Explosive Stressors		Energy Stressors			Physical Disturbance and Strike Stressors				Entanglement Stressors		Ingestion Stressors		Air Quality Stressors	Sediments and Water Quality Stressors			Cultural Resource Stressors		Socioeconomic Resource Stressors		Public Health & Safety Stressors									
	Sonar & Other Transducers	Pile Driving	Vessel Noise	Aircraft Noise	Weapons Noise	Air Guns	Explosions in Water	Explosions in Air	In-Water Electromagnetic Devices	In-Air Electromagnetic Devices	High-Energy Lasers	Vessels & In-water Device Strike	Aircraft & Aerial Target Strike	Military Expended Material	Seafloor Devices	Pile Driving	Wires & Cables	Decelerators/Parachutes/Nets	Military Expended Materials – Munitions	Military Expended Materials – Other than Munitions	Criteria Air Pollutants	Explosives	Metals	Chemicals (Not Explosives)	Other Materials	Explosives	Physical Disturbance & Strike	Accessibility	Airborne Acoustics	Physical Disturbance & Strike	Underwater Energy	In-Air Energy	Physical Interactions				
NAVAL FACILITIES ENGINEERING AND EXPEDITIONARY WARFARE CENTER																																					
UNMANNED SYSTEMS																																					
Ocean Energy and Cable Systems Research			✓						✓			✓			✓		✓											✓				✓					
OTHER TESTING ACTIVITIES																																					
Undersea Range System Testing			✓									✓		✓	✓		✓								✓		✓			✓	✓						
Underwater Search, Deployment, and Recovery			✓						✓			✓		✓	✓		✓							✓		✓				✓	✓		✓				
NAVAL SEA SYSTEMS COMMAND																																					
ANTI-SUBMARINE WARFARE																																					
Anti-Submarine Warfare Mission Package Testing	✓		✓	✓	✓					✓		✓	✓	✓			✓	✓		✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓			
At-Sea Sonar Testing	✓		✓	✓					✓	✓		✓	✓	✓	✓		✓	✓		✓	✓			✓	✓	✓											
Pierside Sonar Testing	✓		✓							✓				✓							✓				✓			✓	✓		✓	✓	✓				
Surface Ship Sonar Testing/Maintenance	✓		✓							✓		✓									✓						✓	✓	✓	✓	✓	✓	✓	✓			
Torpedo (Explosive) Testing	✓		✓	✓			✓			✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓												
Torpedo (Non-Explosive) Testing	✓		✓	✓						✓		✓	✓	✓	✓		✓	✓		✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓			
ELECTRONIC WARFARE																																					
Radar and Other System Testing			✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓			
MINE WARFARE																																					
Mine Countermeasure and Neutralization Testing			✓	✓			✓			✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Mine Countermeasure Mission Package Testing	✓		✓	✓			✓			✓	✓		✓	✓	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Mine Detection and Classification Testing	✓		✓	✓						✓	✓		✓	✓	✓		✓	✓		✓	✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			
SURFACE WARFARE																																					
Gun Testing – Large Caliber	✓		✓	✓	✓		✓			✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓												
Gun Testing – Medium Caliber			✓	✓	✓			✓			✓	✓	✓						✓		✓	✓		✓													
Gun Testing – Small Caliber			✓		✓					✓		✓		✓					✓	✓	✓		✓	✓	✓												
Missile and Rocket Testing			✓		✓		✓	✓		✓		✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓												
UNMANNED SYSTEMS																																					
Underwater Search, Deployment, and Recovery			✓	✓						✓	✓		✓	✓	✓							✓					✓	✓	✓	✓		✓	✓				

Table B-2: Stressors by Testing Activity (continued)

Hawaii California Testing Activity	Biological Resources																		Physical Resources					Human Resources										
	Acoustic Stressors					Explosive Stressors		Energy Stressors			Physical Disturbance and Strike Stressors				Entanglement Stressors		Ingestion Stressors		Air Quality Stressors	Sediments and Water Quality Stressors			Cultural Resource Stressors		Socioeconomic Resource Stressors		Public Health & Safety Stressors							
	Sonar & Other Transducers	Pile Driving	Vessel Noise	Aircraft Noise	Weapons Noise	Air Guns	Explosions in Water	Explosions in Air	In-Water Electromagnetic Devices	In-Air Electromagnetic Devices	High-Energy Lasers	Vessels & In-water Device Strike	Aircraft & Aerial Target Strike	Military Expended Material	Seafloor Devices	Pile Driving	Wires & Cables	Decelerators/Parachutes/Nets	Military Expended Materials – Munitions	Military Expended Materials – Other than Munitions	Criteria Air Pollutants	Explosives	Metals	Chemicals (Not Explosives)	Other Materials	Explosives	Physical Disturbance & Strike	Accessibility	Airborne Acoustics	Physical Disturbance & Strike	Underwater Energy	In-Air Energy	Physical Interactions	
Unmanned Surface Vehicle System Testing			✓						✓		✓		✓								✓				✓		✓	✓	✓	✓	✓	✓	✓	
Unmanned Underwater Vehicle Testing	✓		✓						✓		✓		✓	✓		✓				✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	
VESSEL EVALUATION																																		
Air Defense Testing			✓	✓	✓			✓		✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓									
In-Port Maintenance Testing	✓		✓						✓		✓										✓						✓	✓	✓	✓	✓	✓	✓	
Propulsion Testing			✓		✓				✓		✓			✓							✓						✓	✓	✓	✓		✓	✓	
Signature Analysis Operations	✓		✓						✓	✓		✓		✓	✓		✓				✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Small Ship Shock Trial			✓	✓			✓		✓		✓	✓									✓	✓	✓	✓	✓									
Submarine Sea Trials – Weapons System Testing	✓		✓						✓		✓		✓	✓			✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Surface Warfare Testing	✓		✓	✓	✓		✓	✓	✓		✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓									
Undersea Warfare Testing	✓		✓	✓	✓			✓	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Vessel Signature Evaluation			✓						✓			✓									✓						✓	✓	✓	✓		✓	✓	
OTHER TESTING ACTIVITIES																																		
Acoustic and Oceanographic Research	✓		✓						✓			✓		✓							✓						✓	✓	✓	✓	✓	✓	✓	
Countermeasure Testing	✓		✓	✓					✓	✓		✓	✓	✓			✓	✓		✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	
Insertion/Extraction	✓		✓						✓			✓		✓			✓	✓			✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	
Non-Acoustic Component Testing			✓	✓					✓			✓	✓								✓						✓	✓	✓	✓	✓	✓	✓	
Semi-Stationary Equipment Testing	✓						✓		✓				✓	✓							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Simulant Testing			✓	✓					✓			✓	✓								✓													
NAVAL INFORMATION WARFARE SYSTEMS COMMAND																																		
ACOUSTIC AND OCEANOGRAPHIC SCIENCE AND TECHNOLOGY																																		
Acoustic, Oceanographic, and Energy Research	✓		✓						✓			✓		✓							✓						✓	✓	✓	✓	✓	✓	✓	
OTHER TESTING ACTIVITIES																																		
Communications	✓		✓	✓					✓			✓	✓		✓		✓				✓						✓	✓	✓	✓	✓	✓	✓	
Intelligence, Surveillance, Reconnaissance	✓		✓	✓	✓	✓						✓	✓	✓	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Vehicle Testing	✓		✓						✓			✓	✓	✓	✓						✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	

Table B-2: Stressors by Testing Activity (continued)

Hawaii California Testing Activity	Biological Resources																		Physical Resources					Human Resources									
	Acoustic Stressors						Explosive Stressors		Energy Stressors			Physical Disturbance and Strike Stressors				Entanglement Stressors		Ingestion Stressors		Air Quality Stressors	Sediments and Water Quality Stressors				Cultural Resource Stressors		Socioeconomic Resource Stressors		Public Health & Safety Stressors				
	Sonar & Other Transducers	Pile Driving	Vessel Noise	Aircraft Noise	Weapons Noise	Air Guns	Explosions in Water	Explosions in Air	In-Water Electromagnetic Devices	In-Air Electromagnetic Devices	High-Energy Lasers	Vessels & In-water Device Strike	Aircraft & Aerial Target Strike	Military Expended Material	Seafloor Devices	Pile Driving	Wires & Cables	Decelerators/Parachutes	Military Expended Materials – Munitions	Military Expended Materials – Other than Munitions	Criteria Air Pollutants	Explosives	Metals	Chemicals (Not Explosives)	Other Materials	Explosives	Physical Disturbance & Strike	Accessibility	Airborne Acoustics	Physical Disturbance & Strike	Underwater Energy	In-Air Energy	Physical Interactions
OFFICE OF NAVAL RESEARCH																																	
ACOUSTIC AND OCEANOGRAPHIC SCIENCE AND TECHNOLOGY																																	
Acoustic and Oceanographic Research	✓		✓		✓	✓	✓			✓		✓		✓	✓				✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Large Displacement Unmanned Underwater Vehicle Testing													✓							✓	✓					✓	✓		✓				✓
Long-Range Acoustic Communications	✓		✓									✓		✓						✓	✓												
Mine Countermeasure Technology Research	✓		✓									✓								✓	✓					✓	✓	✓	✓	✓	✓	✓	✓

Table B-3: Stressors by Modernization and Sustainment of Ranges Action

Hawaii California Testing Activity	Biological Resources																		Physical Resources					Human Resources									
	Acoustic Stressors					Explosive Stressors		Energy Stressors			Physical Disturbance and Strike Stressors				Entanglement Stressors		Ingestion Stressors		Air Quality Stressors	Sediments and Water Quality Stressors			Cultural Resource Stressors		Socioeconomic Resource Stressors		Public Health & Safety Stressors						
	Sonar & Other Transducers	Pile Driving	Vessel Noise	Aircraft Noise	Weapons Noise	Air Guns	Explosions in Water	Explosions in Air	In-Water Electromagnetic Devices	In-Air Electromagnetic Devices	High-Energy Lasers	Vessels & In-water Device Strike	Aircraft & Aerial Target Strike	Military Expended Material	Seafloor Devices	Pile Driving	Wires & Cables	Decelerators/Parachutes	Military Expended Materials – Munitions	Military Expended Materials – Other than Munitions	Criteria Air Pollutants	Explosives	Metals	Chemicals (Not Explosives)	Other Materials	Explosives	Physical Disturbance & Strike	Accessibility	Airborne Acoustics	Physical Disturbance & Strike	Underwater Energy	In-Air Energy	Physical Interactions
AIRSPACE																																	
Special Use Airspace Modification				✓									✓																				
SEASPACE																																	
Southern California Offshore Anti-Submarine Warfare Range Modernization			✓						✓			✓			✓		✓				✓			✓			✓	✓		✓	✓		✓
Shallow Water Training Ranges Installation			✓						✓			✓			✓		✓				✓			✓			✓	✓		✓	✓		✓
Sustainment of Undersea Ranges			✓									✓			✓		✓				✓			✓				✓		✓			✓
Deployment of Seafloor Cables and Instrumentation			✓						✓			✓			✓		✓				✓						✓	✓		✓	✓		✓
Installation and Maintenance of Mine Warfare and Other Training Areas			✓									✓			✓		✓				✓						✓	✓		✓	✓		✓
Installation and Maintenance of Underwater Platforms			✓									✓			✓						✓						✓	✓		✓			✓

Table B-4: Stressors by Resource

Stressors vs. Resources		Biological Resources																		Physical Resources						Human Resources									
		Acoustic Stressors						Explosive Stressors		Energy Stressors			Physical Disturbance and Strike Stressors				Entanglement Stressors		Ingestion Stressors		Air Quality Stressors	Habitat and Water Quality Stressors				Cultural Resource Stressors		Socioeconomic Resource Stressors			Public Health & Safety Stressors				
		Sonar & Other Transducers	Pile Driving	Vessel Noise	Aircraft Noise	Weapons Noise	Air Guns	Explosions in Water	Explosions in Air	In-Water Electromagnetic Devices	In-Air Electromagnetic Devices	High-Energy Lasers	Vessels & In-water Device Strike	Aircraft & Aerial Target Strike	Military Expended Material	Seafloor Devices	Pile Driving	Wires, Cables, & Nets	Decelerators/Parachutes	Military Expended Materials – Munitions	Military Expended Materials – Other than Munitions	Criteria Air Pollutants Hazardous Air Pollutants	Explosives	Metals	Chemicals (Not Explosives)	Other Materials	Explosives	Physical Disturbance & Strike	Accessibility	Airborne Acoustics	Physical Disturbance & Strike	Underwater Energy	In-Air Energy	Physical Interactions	
Physical	Air Quality																				↙														
	Sediments and Water Quality																						✓	✓	✓	✓									
Biological	Vegetation							✓				✓		✓	✓	✓																			
	Invertebrates	✓						✓				✓		✓	✓	✓	✓	✓	✓																
	Habitats							✓				✓		✓	✓	✓																			
	Fishes	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓		✓	✓	✓	✓															
	Marine Mammals	✓	✓	✓	✓	✓	✓	✓		✓		✓		✓	✓		✓	✓	✓	✓															
	Reptiles	✓	✓	✓	✓	✓	✓	✓		✓		✓		✓	✓		✓	✓	✓	✓	✓														
	Birds	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓															
Human	Cultural Resources																										✓	✓							
	Socioeconomic Resources																												✓	✓	✓				
	Public Health and Safety																															✓	✓	✓	