
Appendix F: Training and Testing Activities Matrices

TABLE OF CONTENTS

APPENDIX F TRAINING AND TESTING ACTIVITIES MATRICESF-1

F.1 STRESSOR BY TRAINING ACTIVITY.....F-1

F.2 STRESSOR BY TESTING ACTIVITY.....F-7

F.3 STRESSORS BY RESOURCE.....F-8

LIST OF TABLES

TABLE F-1: STRESSORS BY TRAINING ACTIVITY.....F-1

TABLE F-2: STRESSORS BY TESTING ACTIVITYF-7

TABLE F-3: STRESSORS BY RESOURCEF-8

LIST OF FIGURES

There are no figures in this section.

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

Mariana Islands 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				Underwater Acoustics ¹	Physical Disturbance ¹	Accessibility ²	Airborne Acoustics ²	Physical Disturbance and Strike ²	Underwater Energy ³	In-Air Energy ³	Physical Interactions ³			
	Sonar and other active acoustic sources	Explosives	Swimmer Defense airguns	Weapons firing, launch, and impact noise	Aircraft noise	Vessel noise	Electromagnetic Devices	Lasers	Aircraft and Aerial Targets	Vessels and in-water devices	Military Expended Materials	Seafloor Devices	Fiberoptic cables and guidance wires	Parachutes	Military Expended Materials	Criteria Air Pollutants	Hazardous Air Pollutants	Explosives and explosive byproducts	Metals	Chemicals other than explosives									Other Materials		
ANTI-SUBMARINE WARFARE (ASW)																															
Tracking Exercise – Helicopter	✓				✓	✓			✓	✓	✓			✓	✓	✓	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	
Torpedo Exercise – Helicopter	✓				✓	✓			✓	✓	✓			✓	✓	✓	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	
Tracking Exercise – Maritime Patrol Advanced Extended Echo Ranging Sonobuoys	✓				✓	✓			✓	✓	✓			✓	✓	✓	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	
Tracking Exercise – Maritime Patrol Aircraft	✓				✓	✓			✓	✓	✓			✓	✓	✓	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	
Torpedo Exercise – Maritime Patrol Aircraft	✓			✓	✓	✓			✓	✓	✓			✓	✓	✓	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	
Tracking Exercise – Surface	✓					✓				✓	✓				✓	✓								✓	✓		✓	✓	✓	✓	
Torpedo Exercise – Surface	✓					✓				✓	✓				✓	✓								✓	✓		✓	✓	✓	✓	
Tracking Exercise – Submarine	✓					✓			✓	✓	✓		✓											✓			✓	✓		✓	
Torpedo Exercise – Submarine	✓					✓			✓	✓	✓		✓											✓			✓	✓		✓	
MAJOR TRAINING EVENTS																															
Joint Expeditionary Exercise	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
Joint Multi-Strike Group Exercise	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
Fleet Strike Group Exercise*	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
Integrated Anti-Submarine Warfare Exercise*	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
Ship Squadron Anti-Submarine Warfare Exercise*	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
Marine Air Ground Task Force Exercise (Amphibious) – Battalion	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
Special Purpose Marine Air Ground Task Force Exercise	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
Urban Warfare Exercise					✓	✓										✓	✓	✓	✓					✓	✓						

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

Mariana Islands 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				Underwater Acoustics ¹	Physical Disturbance ¹	Accessibility ²	Airborne Acoustics ²	Physical Disturbance and Strike ²	Underwater Energy ³	In-Air Energy ³	Physical Interactions ³					
	Sonar and other active acoustic sources	Explosives	Swimmer Defense airguns	Weapons firing, launch, and impact noise	Aircraft noise	Vessel noise	Electromagnetic Devices	Lasers	Aircraft and Aerial Targets	Vessels and in-water devices	Military Expended Materials	Seafloor Devices	Fiberoptic cables and guidance wires	Parachutes	Military Expended Materials	Criteria Air Pollutants	Hazardous Air Pollutants	Explosives and explosive byproducts	Metals	Chemicals other than explosives	Other Materials													
ELECTRONIC WARFARE (EW)																																		
Electronic Warfare Operations (EW Ops)						✓	✓		✓	✓						✓	✓											✓	✓	✓			✓	
Counter Targeting Flare Exercise – Aircraft					✓				✓						✓	✓		✓		✓								✓	✓	✓			✓	
Counter Targeting Chaff Exercise – Ship						✓				✓					✓	✓	✓				✓								✓			✓		
Counter Targeting Chaff Exercise – Aircraft					✓				✓						✓	✓	✓				✓								✓			✓		
MINE WARFARE (MIW)																																		
Civilian Port Defense**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Mine Laying					✓	✓			✓		✓				✓	✓		✓										✓	✓	✓	✓			✓
Mine Neutralization – Explosive Ordnance Disposal (EOD)		✓				✓			✓	✓	✓	✓			✓	✓	✓							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Limpet Mine Neutralization System/Shock Wave Generator**		✓													✓			✓										✓	✓	✓	✓	✓	✓	
Submarine Mine Exercise**	✓									✓	✓	✓																	✓			✓		
Airborne Mine Countermeasure – Mine Detection**	✓				✓		✓		✓		✓				✓	✓											✓	✓	✓	✓	✓	✓	✓	
Mine Countermeasure Exercise (MCM) – Towed Sonar**	✓					✓		✓		✓		✓			✓	✓											✓			✓		✓		
Mine Countermeasure Exercise – Surface (SMCMEX) Sonar**	✓					✓			✓		✓				✓	✓											✓			✓		✓		
Mine Neutralization – Remotely Operated Vehicle Sonar**	✓	✓				✓			✓	✓	✓	✓	✓		✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Mine Countermeasure (MCM) – Towed Mine Detection**	✓					✓			✓	✓		✓			✓	✓											✓	✓	✓	✓	✓	✓	✓	

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

Mariana Islands 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				Underwater Acoustics ¹	Physical Disturbance ¹	Accessibility ²	Airborne Acoustics ²	Physical Disturbance and Strike ²	Underwater Energy ³	In-Air Energy ³	Physical Interactions ³		
	Sonar and other active acoustic sources	Explosives	Swimmer Defense airguns	Weapons firing, launch, and impact noise	Aircraft noise	Vessel noise	Electromagnetic Devices	Lasers	Aircraft and Aerial Targets	Vessels and in-water devices	Military Expended Materials	Seafloor Devices	Fiberoptic cables and guidance wires	Parachutes	Military Expended Materials	Criteria Air Pollutants	Hazardous Air Pollutants	Explosives and explosive byproducts	Metals									Chemicals other than explosives	Other Materials
NAVAL SPECIAL WARFARE (NSW)																													
Personnel Insertion/Extraction (Non-submarine)									✓																				
Parachute Insertion								✓					✓		✓	✓	✓					✓			✓	✓			
Embassy Reinforcement																✓		✓	✓	✓				✓	✓				
Direct Action (Combat Close Quarters)																✓		✓	✓	✓		✓	✓		✓	✓			
Direct Action (Breaching)																✓		✓	✓	✓		✓	✓		✓	✓			
Direct Action (Tactical Air Control Party)							✓																						
Underwater Demolition Qualification/Certification		✓								✓	✓			✓	✓	✓	✓					✓	✓	✓	✓	✓			✓
Intelligence, Surveillance, Reconnaissance (ISR)																													
Urban Warfare Training					✓											✓		✓	✓	✓				✓	✓				
Underwater Survey						✓																							

F.2 STRESSOR BY TESTING ACTIVITY

Table F-2: Stressors by Testing Activity

Mariana Islands 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					Underwater Acoustics ¹	Physical Disturbance ¹	Accessibility ²	Airborne Acoustics ²	Physical Disturbance and Strike ²	Underwater Energy ³	In-Air Energy ³	Physical Interactions ³					
	Sonar and other active acoustic sources	Explosives	Swimmer Defense airguns	Weapons firing, launch, and impact noise	Aircraft noise	Vessel noise	Electromagnetic Devices	Lasers	Aircraft and Aerial Targets	Vessels and in-water devices	Military Expended Materials	Seafloor Devices	Fiberoptic cables and guidance wires	Parachutes	Military Expended Materials	Criteria Air Pollutants	Hazardous Air Pollutants	Explosives and explosive byproducts	Metals	Chemicals other than explosives	Other Materials													
NAVAL AIR SYSTEMS COMMAND																																		
ANTI-SURFACE WARFARE (ASUW)																																		
Air-to-Surface Missile Test**		✓		✓	✓			✓		✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
ANTI-SUBMARINE WARFARE (ASW)																																		
Anti-Submarine Warfare Tracking Test – Maritime Patrol Aircraft (Sonobuoys)**	✓	✓			✓			✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Anti-Submarine Warfare Torpedo Test**	✓			✓	✓			✓	✓	✓			✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Broad Area Maritime Surveillance (BAMS) Testing – MQ-4C Triton**					✓										✓	✓							✓											
ELECTRONIC WARFARE (EW)																																		
Flare Test**					✓					✓					✓	✓	✓				✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
NAVAL SEA SYSTEMS COMMAND																																		
LIFE CYCLE ACTIVITIES																																		
Ship Signature Testing**	✓					✓			✓						✓	✓												✓	✓		✓	✓		
ANTI-SURFACE WARFARE/ANTI-SUBMARINE WARFARE TESTING																																		
Kinetic Energy Weapon Testing**				✓		✓			✓	✓					✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Torpedo Testing**	✓	✓				✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Countermeasure Testing **	✓				✓	✓		✓	✓	✓			✓	✓	✓	✓						✓	✓			✓	✓							
At-sea Sonar Testing**	✓					✓			✓						✓	✓										✓	✓							
SHIPBOARD PROTECTION SYSTEMS AND SWIMMER DEFENSE TESTING																																		
Pierside Integrated Swimmer Defense**	✓		✓						✓		✓											✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	
NEW SHIP CONSTRUCTION																																		
ASW Mission Package Testing**	✓				✓	✓		✓	✓	✓			✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
MCM Mission Package Testing**	✓	✓			✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ASUW Mission Package Testing**		✓		✓	✓	✓		✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
OFFICE OF NAVAL RESEARCH																																		
North Pacific Acoustic Lab Philippine Sea 2018–19 Experiment (Deep Water)		✓							✓		✓																							

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

F.3 STRESSORS BY RESOURCE

Table F-3: Stressors by Resource

Stressors vs. Resources		Biological Resources															Physical Resources					Human Resources													
		Acoustic Stressors						Energy Stressors		Physical Stressors					Entanglement Stressors	Ingestion Stressors	Invasive Species	Air Quality Stressors		Sediment and Water Quality Stressors															
		Sonar and other active acoustic sources	Explosives	Swimmer Defense airguns	Weapons firing, launch, and impact noise	Aircraft noise	Vessel noise	Electromagnetic Devices	Lasers	Aircraft and Aerial Targets	Vessels and in-water devices	Military Expended Materials	Seafloor Devices	Ground Disturbance	Wildfires	Fiberoptic cables and guidance wires	Parachutes	Military Expended Materials	Habitat, Prey availability, Invasive Species Introductions at FDM	Criteria Air Pollutants	Hazardous Air Pollutants						Explosives and explosive byproducts	Metals	Chemicals other than explosives	Other Materials	Underwater Acoustics	Physical Disturbance	Accessibility	Airborne Acoustics	Physical Disturbance and Strike
Physical	Sediments and Water Quality																				✓	✓	✓	✓											
	Air Quality																		✓	✓															
Biological	Marine Habitats		✓							✓	✓	✓																							
	Marine Mammals	✓	✓	✓	✓	✓	✓			✓	✓	✓			✓	✓	✓					✓	✓	✓											
	Sea Turtles	✓	✓	✓	✓	✓	✓			✓	✓	✓			✓	✓	✓					✓	✓	✓											
	Marine Birds	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓			✓																		
	Marine Vegetation		✓								✓	✓	✓										✓	✓	✓	✓									
	Marine Invertebrates	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓			✓	✓	✓					✓	✓	✓	✓									
	Fish	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓			✓	✓	✓					✓	✓	✓	✓									
Terrestrial		✓		✓	✓				✓	✓			✓	✓																					
Human	Cultural Resources		✓							✓	✓	✓	✓													✓	✓								
	Socioeconomic Resources				✓	✓	✓		✓	✓	✓															✓	✓	✓	✓	✓					
	Public Health and Safety	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓											✓	✓	✓	✓						✓	✓		