



# ANNEX D

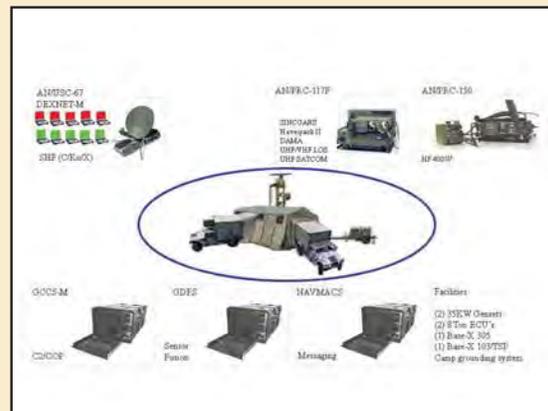
## Navy Expeditionary Combat Platforms, Programs and Systems

### Maritime Expeditionary Security Force

MESF stood up in 2007 and combines legacy Naval Coastal Warfare forces and mobile security forces. It is organized into capability-based divisions and detachments ready to deploy at any time to supply highly trained, scalable, flexible, responsive and sustainable security teams capable of defending mission-critical assets in the near-coast environment. MESF provides worldwide maritime, coastal and inshore surveillance; security and antiterrorism force protection; ground defense; VBSS support; command, control, communications system and intelligence support; and security for aircraft, airfields, campsites, convoys and convoy routes, ports, harbors, anchorages, approaches, roadsteads and other inshore or coastal areas of importance. The force also performs secondary tasks including detention operations, law enforcement, oil platform security, embarking security teams aboard Navy and merchant vessels for in-transit security protection and cross-training with foreign national military and police forces.

### AN/TSQ-108A (V)4 Radar Sonar Surveillance Center (RSSC)

**Description:** MESF forces employ the Radar Sonar Surveillance Center (RSSC) as their primary combat system element in the coastal and littoral areas. The RSSC can be located on land, piers, or aboard ships and supports operations such as force protection, port area security, high value asset escort, and JLOTS in the expeditionary, littoral, and ashore environmental operational areas. The system provides detailed tactical situational awareness and common tactical picture functionality to the tactical area commander. System components provide radar, visual, thermal, electronic, and underwater acoustic sensor information. The RSSC's Graphical Data Fusion System (GDFS) processes the sensor information and provides real-time, multi-sensor correlation and graphical display to the RSSC team. The GDFS displays standard symbology to the operator who can control and calibrate organic RSSC sensor systems and record/replay data with permanent archive capabilities and automatic system recording. The RSSC is the only land-based rapidly deployable mobile Navy system that provides both surface and subsurface surveillance.



*Radar Sonar Surveillance Center Increment II*



**Status:** RSSC upgrades occur when approved based on production Engineering Change Packages (ECP) for the purposes of technology refresh. Typically, the ECPs either mitigate the impact of obsolescent components or ensure the RSSC remains interoperable based on emerging requirements. In FY 2010, the plan provided an internet protocol (IP) connectivity path for the RSSC using very small aperture terminal satellite communications for short duration operations requiring rapid set up and using commercial satellite communications (SATCOM), and USC-67 (triband super high frequency) for longer duration using military SATCOM. The RSSC requires IP capability in order to remain interoperable as Navy legacy circuits transition to IP circuits. The Global Command and Control System - Maritime (GCCS-M) component will be upgraded in order to maintain interoperability in accordance with Navy's C4I Master Plan and Joint requirements.

### Mobile Ashore Support Terminal (MAST)

**Description:** MESF employ the Mobile Ashore Support Terminal (MAST) as their primary combat C4I system in the coastal and littoral areas. The MAST consists of a self-contained, modular-design, transportable C4I system that can be rapidly deployed to theater via C-130 or other transport. A MAST provides an initial C4I capability for a naval task force commander or MESF detachment operating ashore. MAST capabilities include a comprehensive communications suite including ultra /very high frequency, SATCOM and associated crypto gear; a command, control, and intelligence capability; GCCS-M; GPS; and an integrated briefing system.



Mobile Ashore Support Terminal (MAST) III

**Status:** MAST upgrades occur when approved based on production of ECPs for the purposes of technology refresh. Typically the ECPs either mitigate the impact of obsolescent components or ensure the MAST remains interoperable with joint, agency, and coalition partners in accordance with the Navy's C4I master plan. In FY 2010, the plan provided for the development and testing of the ECP kits, initial kits for testing of AN/USC-60 baseband equipment upgrades and GCCS-M upgrades to ensure interoperability. As obsolescence mitigation strategy, timeplex components will be replaced with appropriate multiplexers.



Force Protection - Small Boat

### 25' Force Protection - Small (FP-S) Boat

**Description:** The Force Protection - Small (FP-S) boat is employed by MESF Sailors to maintain security measures to meet force protection requirements. FP-S boats support MESF detecting, identifying, warning, disabling, and defeating potential threats in the vicinity of vulnerable naval assets. Key characteristics of the FP-S are:

- Hull Material Aluminum
- Length 25'
- Beam 8.7'
- Draft 2.4"

- Speed 35+ kts
- Range 150+ nm
- Propulsion Twin Mercury 225 hp Optimax outboards
- Accommodations 10 Personnel (max)
- Weapons Foundations for .50 cal fore and aft; 7.62 mm port and stbd
- Air transportable - C130 with prime mover

**Status:** 43 boats have been delivered to MESF forces.



*Force Protection - Large Boat*

### 34' Force Protection - Large (FP-L) Boat

**Description:** The Force Protection - Large (FP-L) boat is employed by MESF Sailors to provide waterborne security for USN ships and ports to detect, identify, warn, disable or defeat potential threats in vicinity of naval assets. Key characteristics of the FP-L are:

- Hull Material Aluminum with cabin
- Length 34'
- Beam 12'
- Draft 3.2'
- Speed 30+ kts
- Range 100+ nm
- Propulsion Twin Cummins 420 brake horsepower diesel engines with waterjets
- Accommodations 3 crew; 16 personnel
- Air Transportable C5, C17
- Weapons .50 cal weapons (3 aft; 1 gun tub forward)

**Status:** A total inventory of 118 FP-L boats is planned.

### Escalation of Force Mission Module (Navy Variant)

**Description:** The Navy variant of the Escalation of Force-Mission Module (EoF-MM) will provide Sailors with a wide spectrum of non-lethal capabilities for protecting ports; airfields; buildings; and other important maritime infrastructure. The EoF-MM will be comprised of a number of counter-personnel and counter-material tool sets tailored to support the following missions:

- Vehicle Control Point
- Entry Control Point
- Perimeter Security
- Crowd Control
- Personnel Detention
- Non-Lethal Training.



*Sailors Evaluate an Optical Distraction Device, a Non-lethal Weapon in the Navy's Escalation of Force Mission Module*

**Status:** Future test and evaluation is planned to assess the Navy EoF-MM. EoF-MM capability sets may include the following non-lethal tools:

- Shields, batons, other personnel protective gear
- Vehicle arresting devices
- Acoustic hailing devices and voice translators
- Non-lethal munitions (40mm, 12-gauge, and grenades)
- Optical warning and distraction devices

### Integrated Swimmer Defense

**Description:** Integrated Swimmer Defense (ISD) will provide an end-to-end detect-to-engage anti-swimmer capability for the MESF community based on current commercial technology. ISD will be designed to detect, track, classify, warn, deter and neutralize divers and swimmers threats. It will include:



*Integrated Swimmer Defense System Detection Sonar and Configuration*

- Compact underwater surveillance sonar to automatically detect, track, and classify underwater targets including swimmers, divers, and vehicles providing underwater domain awareness, intelligence, and warning to protect vessels, ports and harbors, critical infrastructure, and high value assets
- Subsurface underwater hailer and warning device
- Non lethal air gun.

**Status:** A user operational evaluation system trial was conducted in FY 2010 and IOT&E is planned for FY 2011. ISD Increment 1 IOC is estimated in FY 2012, with FOC in FY 2015.

### Man Transportable Robotic System (MTRS)



*Man Transportable Robotic System at Work*

**Description:** More than 3000 MTRS have been deployed to Iraq and Afghanistan to provide EOD and counter-improvised explosive devices support. The majority of these robots are either the iRobot PackBot EOD Mk 1 or the Foster-Miller Talon Mk 2, both of which have proprietary architecture interfaces, and corresponding maintenance and upgrade challenges.

**Status:** The MTRS system is being upgraded through a Continuous Improvement Program (CIP), but end of service life issues and advances in robotic systems necessitates development of the next generation of EOD ground robots. The Advanced Explosive Ordnance Disposal Robot System (AEODRS) will be a family of systems to address Dismounted, Tactical, and Base/Infrastructure Operations. Notional descriptions of the capabilities required for these operations are provided in the table on the next page:

Dismounted Operations	Tactical Operations	Base/Infrastructure Operations
Back-packable, 35 lbs including backpack <ul style="list-style-type: none"> <li>• 100 meter range</li> <li>• 6 hour endurance</li> <li>• Low-degree of freedom manipulator, 5 lbs lift at full extension</li> <li>• 8 mph vehicle speed</li> <li>• Able to travel through 18 inch culvert</li> <li>• No stair climbing</li> </ul>	Vehicle two-man transportable for short distances - no greater than 164 lbs <ul style="list-style-type: none"> <li>• Vehicle fits within aisle of tactical vehicle</li> <li>• 1000 meter range</li> <li>• 6 hour endurance</li> <li>• Two manipulators, with at least one anthropomorphic</li> <li>• Manipulator lift - TBD</li> <li>• 8 mph vehicle speed</li> <li>• Stair climbing</li> </ul>	<ul style="list-style-type: none"> <li>• Vehicle weight - TBD</li> <li>• Vehicle able to travel through 36" wide doorway</li> <li>• 1200 meter range</li> <li>• 6 hour endurance</li> <li>• Two manipulators, with at least one anthropomorphic</li> <li>• Manipulator lift - 75 lbs at full extension, 300 lbs close-up</li> <li>• 8 mph vehicle speed</li> <li>• Stair climbing</li> </ul>

### Transmitting Set, Countermeasure (TSC) AN/PLT-5

AN/PLT-5 is a man portable TSC system used during travel downrange to and from the threat item and during operations at the incident site. Threats include the entire spectrum of conventional, special and unconventional explosive ordnance using radio controlled fusing or triggering methods.

### Radiac Set AN/PDX-2

The Navy's responsibility to develop equipment for high-fidelity investigation of WMD for use in threat determination and initial forensic analysis by Joint EOD response forces was identified in QDR. The AN/PDX-2 is a lightweight kit comprised of radiation monitors and handheld electronic explosive detection equipment to provide the warfighter the ability to rapidly assess threat level and appropriate response to WMD.

### EOD 7-Meter Rigid Inflatable Boat

**Description:** The Explosive Ordnance Disposal 7-Meter Rigid Inflatable Boat (EOD 7M RIB) is employed in Mobile Diving and Salvage and EOD applications. Key characteristics of the EOD 7M RIB are:

- Hull Material Fiberglass hull with center console
- Length 24'
- Beam 9'
- Draft 2'
- Speed 25+ kts
- Range 100+ nm
- Propulsion Twin Honda 130 hp diesel engine
- Accommodations 3 crew; 18 personnel max
- Weapons .50 cal capable weapons foundation
- Twin fuel tanks/185 gallon capacity

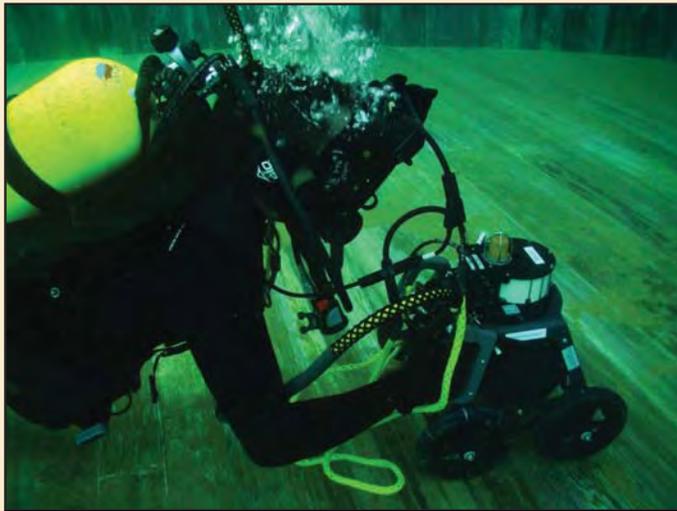


*Explosive Ordnance Disposal 7-Meter Rigid Inflatable Boat*

**Status:** 72 7-meter RIBs have been delivered to MDSU, UCT, and EOD forces.

## Diver Hull Imaging and Navigation System

**Description:** The Diver Hull Imaging and Navigation System (DHINS) improves the capabilities of multiple EOD divers to rapidly reconnoiter ship hull and berthing areas, and to investigate and localize unexploded ordnance objects. The system allows a Navy dive team to inspect a ship hull simultaneously to enable the accurate detection and mapping of targets that present a potential threat to high value assets, while sharing voice communication, visual positional data and sonar imagery, with each other as well as top-side operators. All sensor data including imagery and sonar is recorded and synchronized with diver track information supporting expeditious data retrieval and viewing. Major system components include:



*Diver Hull Imaging and Navigation System (DHINS)*

- Target detection and imaging sensor(s)
- Precise navigation sub-system
- Voice communication sub-system to enable the accurate detection and mapping of targets
- Top-side display and command and control equipment.

**Status:** System integration and testing of the DHINS final production configuration is expected to be completed in FY 2010. In FY 2011 and beyond, development and insertion of mature technologies as part of a CIP to enhance performance in harsh environments is planned. DHINS will be interoperable with the Hull Unmanned Undersea Vehicle (UUV) Localization System (HULS), a low cost two person portable UUV. HULS is designed to decrease the operational timeline and reduce personnel hazards associated with searching ship hulls, piers, pilings, and other underwater structures (IOC anticipated in FY 2012).