Maritime Security Cutter, Medium (WMSM)

OFFSHORE PATROL CUTTER (OPC)

CONCEPT OF OPERATIONS

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Preface

The Concept of Operations (CONOPS) is a user-oriented document that describes the characteristics for a proposed asset or system from the viewpoint of any individual or organizational entity that will use it in their daily work activities or who will operate or interact directly with it. The CONOPS provides information relating to the needs and expectations of users of the proposed asset or system. It serves as a valuable communications vehicle for informing stakeholders and potential system suppliers of the operational and support context for the asset or system.

The CONOPS is used to communicate overall characteristics to the mission managers, capability managers, project management staff, designers/developers, operational and mission support commanders, tactical users and other organizational elements (e.g., Investment Review Board (IRB), Executive Steering Committee (ESC)) to achieve understanding and buy-in.

The CONOPS provides an analysis that bridges the gap between the users' operational needs and visions and the designer/developer's technical specifications, without becoming bogged down in detailed technical issues that are normally addressed later in the acquisition framework.

The CONOPS also documents a system's characteristics and the users' operational needs in a manner that can be confirmed by the user without requiring any technical knowledge beyond that required to perform normal job functions.

The CONOPS conveys the users' desires, visions, and expectations without requiring the provision of quantified, testable specifications until later in the system life cycle. For example, the users could express in the CONOPS their need for a "highly reliable" system, and their reasons for that need, without having to produce a testable reliability requirement at the same time. In this case, the users' need for "high reliability" might be stated in quantitative terms prior to issuing a Request for Proposal (RFP), or it might be quantified by the System Developer during requirements analysis and documented in the subsequent Requirements Document. The CONOPS also provides a mechanism for users and Business Owner(s)/Partner(s) to express thoughts and concerns on possible solution strategies and to record design constraints, the rationale for those constraints, and to indicate the range of acceptable solution strategies.

NOTE: A CONOPS is neither a specification nor a formal statement of requirements. It is used as a source of information for the development of such documents and for project planning and decision making. The process of developing a CONOPS can enable operational, maintenance, support, acquisition and supply personnel to improve their understanding of the user needs and expectations.

Executive Summary

The Maritime Security Cutter, Medium (WMSM), also known as the Offshore Patrol Cutter (OPC), Mission Need Statement (MNS) documented the need to replace the existing Medium Endurance Cutter (WMEC) fleet because it was no longer cost effective to sustain critical systems and the cutters lack the capability to meet Coast Guard responsibilities as required by the Department of Homeland Security (DHS).

The WMSM Concept of Operations (CONOPS) is a stand alone document that describes at a high level how the WMSM will be employed to meet DHS missions and objectives. It was developed when the Coast Guard assumed the lead role as Deepwater acquisition program systems integrator. It is an asset-level acquisition document intended to establish the operational foundations of the cutter and help codify user terminology for WMSM design decisions.

The WMSM CONOPS builds upon the balanced approach of operations and support that the MNS established. However, it describes in greater detail the required attributes of the WMSM, its core capabilities, and the Coast Guard's envisioned schedule and operational use for the cutter. The WMSM CONOPS will directly assist in the development of the WMSM Operational Requirements Document (ORD), in accordance with the Major Systems Acquisition Manual (MSAM), COMDTINST M5000.10.

The WMSM will primarily operate in the Coast Guard's deep water Area of Responsibility (AOR) in support of the following missions:

- Ports, Waterways, and Coastal Security (PWCS)
- Search and Rescue (SAR)
- Drug Interdiction (DRUG)
- Migrant Interdiction (AMIO)
- Living Marine Resource (LMR)
- Other Law Enforcement (OLE)
- Defense Readiness (DR)

Through its unique set of law enforcement and military capabilities, the WMSM will bridge the gap between the Coast Guard's law enforcement/homeland security mission priorities and the Navy's military defense mission priorities. The WMSM will implement the common vision of the Chief of Naval Operations (CNO) and the Commandant of the Coast Guard (CCG) in the National Fleet Policy. The WMSM will deploy to support Combatant Commanders (COCOM's) around the world in low threat environments but is not envisioned to deploy with a Carrier Strike Group (CSG). The WMSM will have the ability to install additional equipment to augment its capabilities if it is required to conduct operations in higher threat environments in support of national security objectives.

The cutter will be able to conduct assigned missions through a full-spectrum of climate and maritime weather conditions to include tropical, dry, temperate, and Arctic climates. Although the WMSM will not conduct ice breaking as a mission, it will be able to operate in areas of less than 100 percent coverage of broken plate, pancake, and sea ice ranging from 10 to 30 inches thick. A key capability of the WMSM will be improved sea keeping ability over WMECs to

enable greater mission execution through aviation and small boat operations and reduce crew fatigue.

The WMSM will include the latest Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems to improve capability to operate in a highly complex network centric environment. These systems will be capable of interoperability with communications and command and control systems of the Department of Defense (DoD), DHS, NATO allies, and Other Government Agencies (OGA). A Ship's Signals Exploitation Space (SSES) will allow the WMSM to leverage the full capabilities of the US Intelligence Community and serve as a vital forward intelligence collection asset for greater maritime domain awareness (MDA).

The WMSM's aviation capabilities will provide the versatility required to effectively perform in a multi-mission capacity. The cutter will support deployment of Coast Guard HH-60/65's and unmanned aircraft to enhance the cutter's ability to perform the Surveillance, Detection, Classification, Identification, and Prosecution (SDCIP) culling process; provide the cutter with rapid response, medical evacuation, vertical replenishment capabilities; and increase law enforcement compliance through Airborne Use-of-Force (AUF) and Vertical Insertion/Vertical Delivery (VI/VDEL) operations.

The WMSM's small boat capability will support almost every facet of the cutter's operations. Configured to operate with small boats already in the Coast Guard inventory, the WMSM will be able to simultaneously board, inspect, interdict, report, seize, and neutralize – via Use-of-Force (UOF) – surface Targets-of-Interest (TOI).

The cutter will be able to operate at a broad range of speeds providing flexibility for rapid response/interception, fuel efficient patrolling/transiting, and efficient performance of mission defined tasks (e.g. launch recover aircraft/small boats, towing, etc.). The WMSM's top end speed will enable the cutter to effectively escort Military Sealift Command vessels, operate within a naval task force such as an Expeditionary Strike Group (ESG), and intercept/escort commercial shipping traffic, in support of the assigned mission with sufficient reserve speed to react to potential threats directed at the cutter or escorted vessel. The cutter's improved transit and intercept speed will allow for rapid response, reducing transit time and increasing on-scene availability over the current WMEC fleet. The cutter's patrol speed and low transit speed will be designed for efficiency, enabling the WMSM to sustain operational presence within designated Operational Areas (OPAREA).

The WMSM will be capable of normal operations with less than 100 persons. The cutter will be crewed by the minimum number of personnel to optimize mission performance, human performance, affordability, safety, and survivability. The crew will be sized to perform all necessary underway corrective and preventive maintenance and will serve as the initial manpower source for performing operational level maintenance. The WMSM's design will include increased use of automation, remote monitoring systems, and allow for mission-defined detachments to be embarked. The cutter will promote quality of life through crew habitability considerations during design to include: exercise facilities, laundry, entertainment, lounges, training, and specialized gear stowage.

The WMSM will be able to operate for 185 to 230 Days Away from Home Port (DAFHP) each year. Patrols will include sustained operations at sea for a minimum of 14 days between fuel stops and 21 days between food (chill, freeze, and dry) and stores replenishment. WMSM will be able to maintain onstation presence for longer periods with the capability to conduct Fueling at Sea (FAS) and Replenishment at Sea (RAS) operations.

SUMMARY OF CHANGES VERSION 1.1

Executive Summary:

- The discussion of operating environments was expanded to include Arctic climates. An ability to operate in areas of broken plate, pancake, and sea ice ranging from 10 to 30 inches thick was added. However, the summary states that the WMSM will not conduct ice breaking as a mission (page iii).
- The term "Sensitive Compartmented Information Facility (SCIF)" was replaced with "Ship's Signals Exploitation Space (SSES)" to better describe the capability (page iv).
- The speed requirement now includes operations with an Expeditionary Strike Group (page iv).

Section 2

- Paragraph 2.1.1.2: The concept of dedicated logistics facilities to support forward deployed cutters was added.
- Paragraph 2.2.5: Revised at CG-4 request to clarify that fuel will be procured from DoD or commercial sources at all times.
- Paragraph 2.2.6: The concept of dedicated logistics support facilities was added to the discussion on infrastructure requirements.
- Paragraph 2.3.1: Arctic operations was added to the discussion of geographic operating areas.
- Paragraph 2.3.1.4: The Alaska Region was modified to include encountering areas of broken plate, pancake, and sea ice that is 10 to 30 inches thick during summer operations in the Chukcki Sea and Arctic Ocean.
- Paragraph 2.3.1.5: International operations were clarified to include supporting a Navy Expeditionary Strike Group.
- Paragraph 2.3.2: The Threats and Hazards section was expanded to include ice and tropical weather hazards.
- Paragraph 2.6.3 "ELC" changed to "Surface Forces Logistics Center" at CG-4's request.
- Paragraph 2.7.1.4: Crewing and detachments now discusses Signals Intelligence detachments and Direct Support elements.
- Paragraph 2.7.2.3 "Sensitive compartmented information facility" replaced with "Ship's Signal Exploitation Space" and the description of embarked intelligence support was expanded to include a permanently assigned Law Enforcement Intelligence Element and a deployable direct support element.
- Paragraph 2.8.4: New section added describing logistical ports.

Section 3

- Paragraph 3.3.1.2: "SCIF" replaced by "SSES."
- Paragraph 3.3.6.1: Intelligence operations added to the secondary functional capabilities for SAR.
- Paragraph 3.3.6.2: The SAR scenario was revised to focus on a small cruise ship that has been damaged by ice and is in danger of sinking. The scenario now includes employment of an ice capable small boat.

- Paragraph 3.4.2.3: As requested by CG-4, ELC changed to Surface Forces Logistics Center.
- Paragraph 3.4.3.3: The logistics port call scenario was revised to specify that it takes place at a Coast Guard forward logistics facility. Also, data connectivity was added to the list of shore ties.
- Paragraph 3.3.7.2: Per DCO direction, scenario was revised to include more realistic case disposition. Scenario reviewed by CG-531 for accuracy.

Section 4

- Paragraph 4.1 was revised to add intel as a secondary capability supporting the SAR mission.
- Paragraph 4.2.4 was revised to reflect SSES vice SCIF requirements and a description of all source intelligence fusion support capabilities was added.
- Paragraph 4.2.5 was revised to state that the WMSM will launch and recover small boats in weather conditions up to and including sea state five.
- Paragraph 4.2.6 was revised to state that the WMSM will launch and recover aircraft in weather conditions up to and including sea state five.
- Paragraph 4.2.8.3 was revised to state that the WMSM will be able to tow ships up to 10,000 tons (equivalent to a WHEC's capacity).
- Paragraph 4.2.11.3 was revised to clarify that the WMSM will receive underway replenishment of munitions and provisions directly from USN/NATO/Allied Naval vessels or by VERTREP.
- Paragraph 4.3.3 was revised at CG-4's request to remove specific examples of organizations that may provide maintenance support. The CONOPs continues to state that there will be maintenance, weapons, and electronics support teams staffed by Coast Guard personnel.

Typographical errors were also corrected. They are not included in this summary.

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Section 1 - Introduction

The WMSM project is a major acquisition to replace the existing WMEC (all classes) fleet of 31 cutters. The project began under the original "system of systems" Deepwater Project but was later removed as the Coast Guard assumed the integrator role. The project was restarted in summer of 2007 and passed Milestone One in January 2008. The restarted WMSM project will follow the Coast Guard's MSAM process.

The WMSM Mission Needs Statement (MNS) was signed in conjunction with the approval from the Milestone One brief. The MNS detailed the case that the only option to meet 21st century mission requirements is to acquire a new cutter class. The MNS established the existing critical systems in Hull, Machinery, and Electrical (HM&E) and C4ISR system are beyond the ability of cost effective sustainment. More importantly, the MNS outlined how the Coast Guard responsibilities within the post 9/11 Department of Homeland Security (DHS) requires improved or new capabilities that cannot be retro-fitted in the existing hull designs of the WMEC classes of cutters.

This CONOPS is a stand alone document to describe in greater detail the balanced approach of operation and support of the WMSM in the present and future mission environments. The document is approved by a cross directorate partnership including mission managers, asset capability managers, and technical authorities with support responsibilities. It describes at a high-level, for the benefit of the government and industry, how the WMSM will be employed and supported by the Coast Guard to accomplish DHS missions and objectives.

This CONOPS describes the WMSM capabilities required to allow the operator to accomplish each Deepwater Coast Guard mission referenced in the MNS. This effort will link how the asset will be used by the operator to the mission requirements in the MNS. In addition, the CONOPS will explore how the Coast Guard will support the asset from the new Mission Support directorate point of view to provide the best availability of systems for mission execution.

Section 2 - Operating Concept

2.1 Operational Description

The WMSM will operate within a complex net-centric architecture of surface, aviation, and shore assets (*Figure 1*) designed to increase the Coast Guard's MDA. The cutter's interoperability; wide area coverage; multi-asset operational command and control (C2); aviation and small boat resources; and COP capability will enhance overall mission performance. This will enable the cutter to better respond to the post-9/11 maritime threat environment. Because its typical deployment schedule will be based on law enforcement activities, the WMSM will primarily be a law enforcement vessel. However, the WMSM will be expected to perform other federally mandated emergent or non-emergent missions, typically without sufficient time to return to port for additional provisions or reconfiguration. The WMSM will operate with DHS, DoD, OGAs, and local law enforcement assets in the full range of maritime operations to include surveillance, visit, board, search, seize, and unit defense.

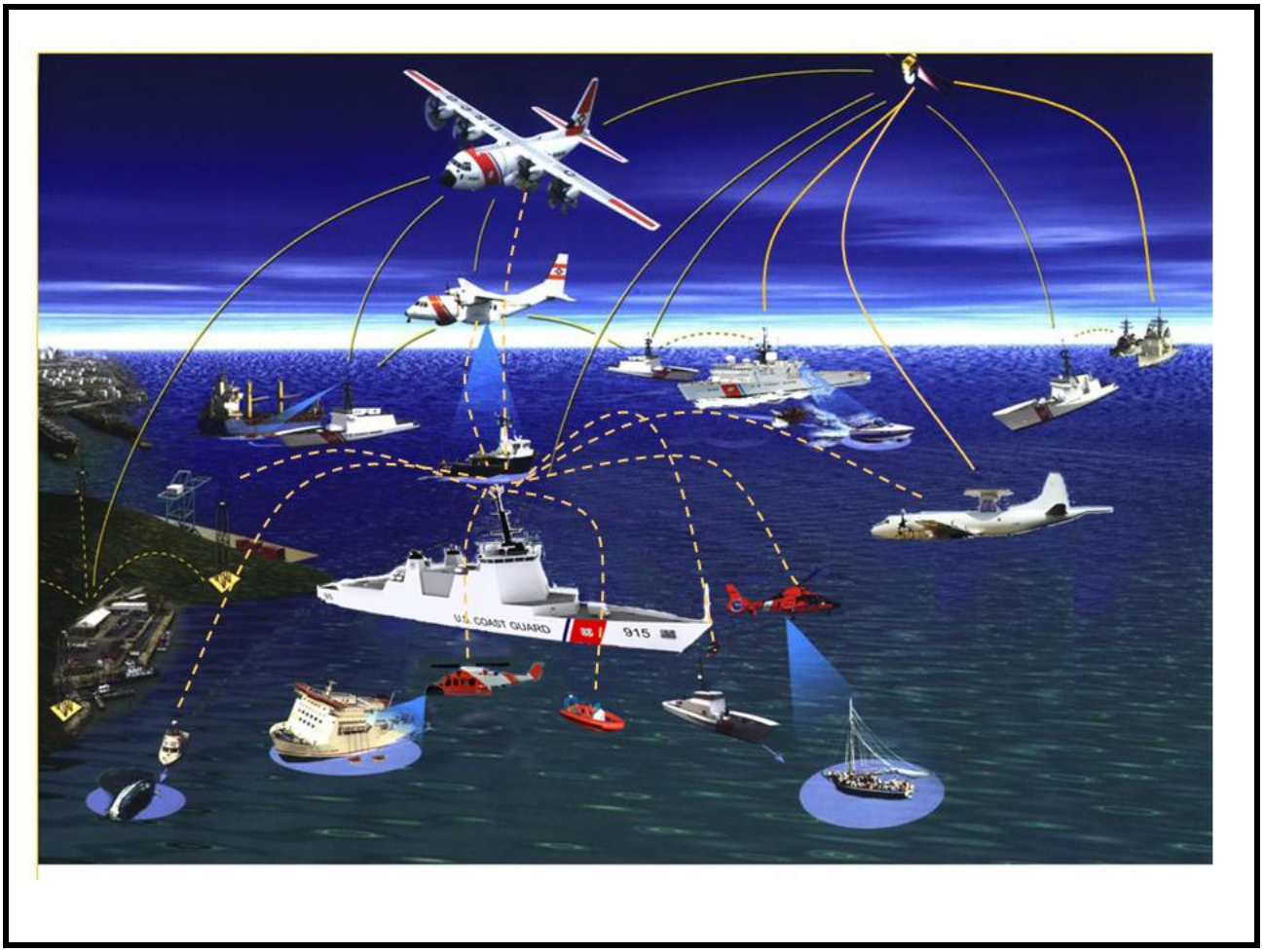

Figure 1 - High Level Operational View (OV-1)

The Coast Guard's ability to carry out its deep water missions is based on a common task sequence: Surveillance, Detection, Classification, Identification, and Prosecution (SDCIP). The WMSM will be able to perform all aspects of the SDCIP culling and sorting process in support of assigned missions and patrols:

- Surveil large areas of ocean and air for targets of interest (TOIs)
- Detect TOIs operating on or over the ocean
- Classify a TOI as being a particular type of vessel or aircraft, engaged in a particular activity
- Identify a TOI for the purpose of prosecution (nationality, name, etc.)
- Prosecute surface TOI to achieve the desired results (board, deter, destroy, rescue, etc.)

The tasks associated with SDCIP are fundamental to all WMSM missions, although the precise nature of each task may differ from mission to mission, especially the prosecution activity. For example, while conducting AMIO, the WMSM will *surveil* the ocean regions between the U.S. and nations from which illegal migrants originate; *detect a maritime target*; then *classify* the target as a vessel (perhaps as a slow moving fishing vessel or a high speed power boat) and *identify* it to ascertain jurisdiction; and then conduct appropriate *prosecution* activities (interdiction and appropriate repatriation actions). Similarly, the search for a missing fishing vessel may require the WMSM to *surveil* the ocean expanse of the vessel's last known position (adjusted for the effects of wind and waves); *detect* targets that may be in the area; *classify* them as not being the TOI (and perhaps engage their assistance); and ultimately, *identify* the distressed vessels in order to *prosecute* an effective rescue.

2.1.1 Employment Modes

2.1.1.1 Operating Schedule

The WMSM will be able to operate for 185 to 230 DAFHP each year. The WMSM will typically operate on 45-60 day patrols with 2-3 day logistic breaks after every 14 days of operation. In addition, the cutter will undergo 3-4 weeks of training and evaluation every 10-24 months The WMSM will assume a Bravo status during mid-patrol breaks as defined by TACON. During maintenance periods, the WMSM will assume Charlie status.

2.1.1.2 Homeporting

The WMSM's homeports will generally be located in the larger United States maritime ports. The location and number of hulls based in a homeport will be a balance of infrastructure availability, efforts to minimize transit time to operational areas, and political considerations. Any WMSM deploying to a geographic region outside the hull's homeport region will be considered forward deployed. Forward deployed cutters will rely on dedicated logistics facilities (where available), OGA assets (e.g., underway replenishment ships) and foreign country port calls for logistics support.

2.1.1.3 Tactical Control Authority

The WMSM will shift Tactical Control authority (TACON) when deployed to the operational commander for that region (e.g., Sector or District Commander), Joint Interagency Task Force

South (JIATF-S), or COCOM's naval component commander when operating with DOD forces. The WMSM's Administrative Control (ADCON) will remain with its force commander cutter force manager.

2.1.1.4 Independent Deployment

The WMSM's endurance, sea-keeping, embarked assets, and command and control systems will provide the capability for self-sufficient independent operations during extended periods of time. Since the cutter will generally operate without a dedicated logistics train of replenishment (fuel, stores, munitions, etc.) and will need to sustain operations throughout the deep water AOR, the ability to be self-sufficient will be especially important. Typically, the cutter will respond to various Coast Guard missions without returning to port for additional personnel or equipment. The cutter's embarked small boats and aircraft will provide flexibility, enabling the cutter to execute numerous missions simultaneously.

2.1.1.5 Commander Task Unit

The WMSM command and control systems will allow the cutter to control and coordinate the activities of multiple surface and air assets as part of a Commander Task Unit (CTU) configuration. A CTU is a functional element that is responsible for operations in a specific OPAREA of a District or International Region AOR. A CTU is a force package that includes multiple assets: cutters (WPC, WMSM, etc.), fixed/rotary wing aircraft (HH60, HH65, HC130, HC144, etc.), boats, and Deployable Operation Group (DOG) elements. A WMSM directed to patrol a specific OPAREA and assigned additional surface and air assets will be designated CTU for the duration of the operation. The WMSM will then be responsible for developing and executing routine operational and crisis action plans. The cutter will have the broad authority to command, direct, coordinate, and monitor the actions of subordinate surface and air assets. The WMSM will also be able to embark additional personnel to either serve as the CTU commander and/or supplemental CTU staff.

2.1.1.6 On-Scene Commander

The WMSM's communications, response speed, endurance, sensors, and command and control system capabilities will enable it to quickly respond to major incidents (e.g., SAR – maritime commercial airliner crash; PWCS – terrorist attack) and assume the responsibilities of On-Scene Commander (OSC). The OSC performs direct management of on-scene assets and crisis action planning, as necessary. Once on scene, the WMSM will utilize its onboard sensors and command and control system capabilities to control and coordinate the activities of multiple surface and air assets responding to an event. As a staging platform, the WMSM will be able to set up vital communications, manage task force resources, and facilitate response agency representatives.

2.2 Mission Support Description

The overall mission support of the WMSM will fall upon the responsibility of the Force Readiness Commander (FORCECOM). The Coast Guard Technical Authorities, under the Deputy Commandant for Mission Support (DCMS), will have the responsibility for supporting

the systems on the WMSM. The WMSM's goal of minimizing permanent crew will require a shift in the support culture of the Coast Guard. The crew will perform all organizational level maintenance while depot level maintenance will be the responsibility of DCMS.

2.2.1 People

All individuals conducting support, both crew and shore side commands, will need extensive knowledge of computer applications for the logistic management application. The WMSM will use enlisted personnel from the current CG rate structure. The cutter's officers will be assigned from the same detailing pool as existing cutters and will require no special prerequisites. All ship's personnel will permanently reside in shore facilities, with only the on-duty crew remaining onboard over night during homeport periods.

2.2.2 Training

The majority of crew training, both maintenance and operational, will be accomplished through individual rating "C" schools and should be done prior to arrival onboard the WMSM. On-the-job training (OJT) time will likely be limited by the optimal crew size and pace of operations required to maintain MDA and prosecution percentages. Deck watch officer and engineer officer training, however, will be conducted on a daily basis, throughout all evolutions in order to facilitate the training of the cutter's officers. Shore support personnel will receive both initial training and sustainment training in order to maintain the high level of expertise required for the complex systems.

2.2.3 Equipment

The WMSM systems and equipment will be designed and built to minimize life-cycle cost and sustained by programs of record with follow-on support funding. The product line manager will control configuration management and systematic upgrades throughout the life-cycle of each system or equipment. An allowance list of equipment will document the "baseline" system and use for entry into the Coast Guard supply/CM application. The equipment will have maintenance cards detailing schedule and procedures for use by personnel.

2.2.4 Support

The WMSM schedule will be developed to support a full year of mission demands. Cutter force managers that control cutter scheduling are responsible for ensuring sufficient maintenance time between deployments. The WMSM patrol schedule will allow a 4-6 week inport maintenance period after each patrol. In addition, the cutter will be afforded a 6-7 week dockside availability period every 2-3 years and a 7-8 week dry-dock availability at an interval of no less than 4-5 years. Preventative maintenance and minor repairs will typically be conducted during the inport maintenance period. Non-critical, major repairs will be scheduled during longer inport periods or during dock-side or dry-dock periods as necessary. Critical, major repairs will be coordinated through the product line manager.

The life-cycle support infrastructure for the WMSM will be defined by the Integrated Logistics Support Management Team (ILSMT) once it is stood up. The ILSMT will be composed of

representatives from sponsor and logistics technical authorities from CG-1, 4, 6, and eventually operator and support personnel. It will be chaired by the acquisition program ILS manager.

2.2.5 Supply

Shipboard and shore-based supply levels will be directly derived from projected corrective and preventative maintenance requirements. Onboard spare and repair parts will be selected based on the level of maintenance to be performed by the cutter personnel as delineated in the maintenance plan. Shipboard supply levels will be monitored and tracked electronically utilizing the current CG supply tracking system. By the Coast Guard Support Date (CGSD), the WMSM will maximize the use of the Federal Supply System (FSS) for WMSM support. The ship's on-board supply manager will be the sole connection to the supply system and will submit supply requests for all equipment as needed. Subsistence stores will be procured by the food services specialists through local suppliers while away from homeport, and by DCMS units while in homeport. Weapons stores will be procured in accordance with appropriate DoD instructions and facilities. Fuel will be procured from DoD or commercial sources.

2.2.6 Infrastructure

Homeporting of the WMSM fleet will be a function of operational and logistical requirements. The main operational consideration is the proximity of the cutter to its primary OPAREA because this reduces transit time and increases on-scene station time. The main logistical considerations are quality of life (e.g., housing, schools, medical services, cost-of-living, environment, etc.) and support (e.g., facilities, storage, maintenance, logistics, training, etc).

To minimize infrastructure costs, existing facilities and infrastructure will be used whenever possible; however, WMSM support facilities must be located to best support the WMSM fleet. These facilities will enable effective operations by providing support to correct casualties; training space and personnel; and food, fuel, and other required supplies that will allow the WMSM to perform missions away from homeport. In addition, dedicated logistic support piers at government facilities or contract support facilities at commercial ports may be established or identified near normal WMSM operating areas.

2.2.7 Information

Support Information Management will be critical to the overall capture and use of corporate knowledge. The primary tool for capturing, scheduling and evaluating the performance of the shipboard equipment will be computer applications and databases link equipment. The WMSM will use, to the greatest extent possible, electronically based documents and manuals. This will reduce storage requirements as well as enable more timely updates to critical information.

2.3 Operating Environment

2.3.1 Geographic Area(s)

The WMSM will operate primarily in the Coast Guard's deep water AOR from Aztec Shore to Arctic Zone to Europe, and Far East or wherever the national interest requires the Coast Guard's humanitarian, law enforcement, or military presence around the globe. The Coast Guard's deep water AOR is loosely defined as that area beyond the normal operating range of single crewed shore-based small boats, where either extended on-scene presence, long transit distances, or forward deployment is required to perform the mission. Primary missions will typically be conducted 12 nautical miles or more beyond U.S. shores. However, the WMSM will transit and operate for limited periods of time throughout inland defined harbors, canals, or waterways navigable by seagoing vessels.

The Coast Guard's deep water AOR is vast, complex, and heterogeneous. Accordingly, operations in those areas are far from identical. Each area has a particular mission emphasis and environmental challenges to overcome in completing the mission. For this reason, the deep water AOR has been subdivided into five regions as shown in *Figure 2*.

The vast operating area of the deep water AOR will subject the WMSM to a full-spectrum of climate and weather conditions to include tropical, dry, temperate, and Arctic climates. The WMSM will operate in all seasons, 24 hours a day, through adverse marine weather conditions (e.g., heavy rain, high seas, fog, snow, sleet, icing, etc.). The WMSM will conduct prolonged operations in areas, such as the Bering Sea, that are prone to harsh sea conditions, i.e., sea state eight. Although, the WMSM will not have an ice breaking mission, it will operate in regions in which ice is frequently encountered.

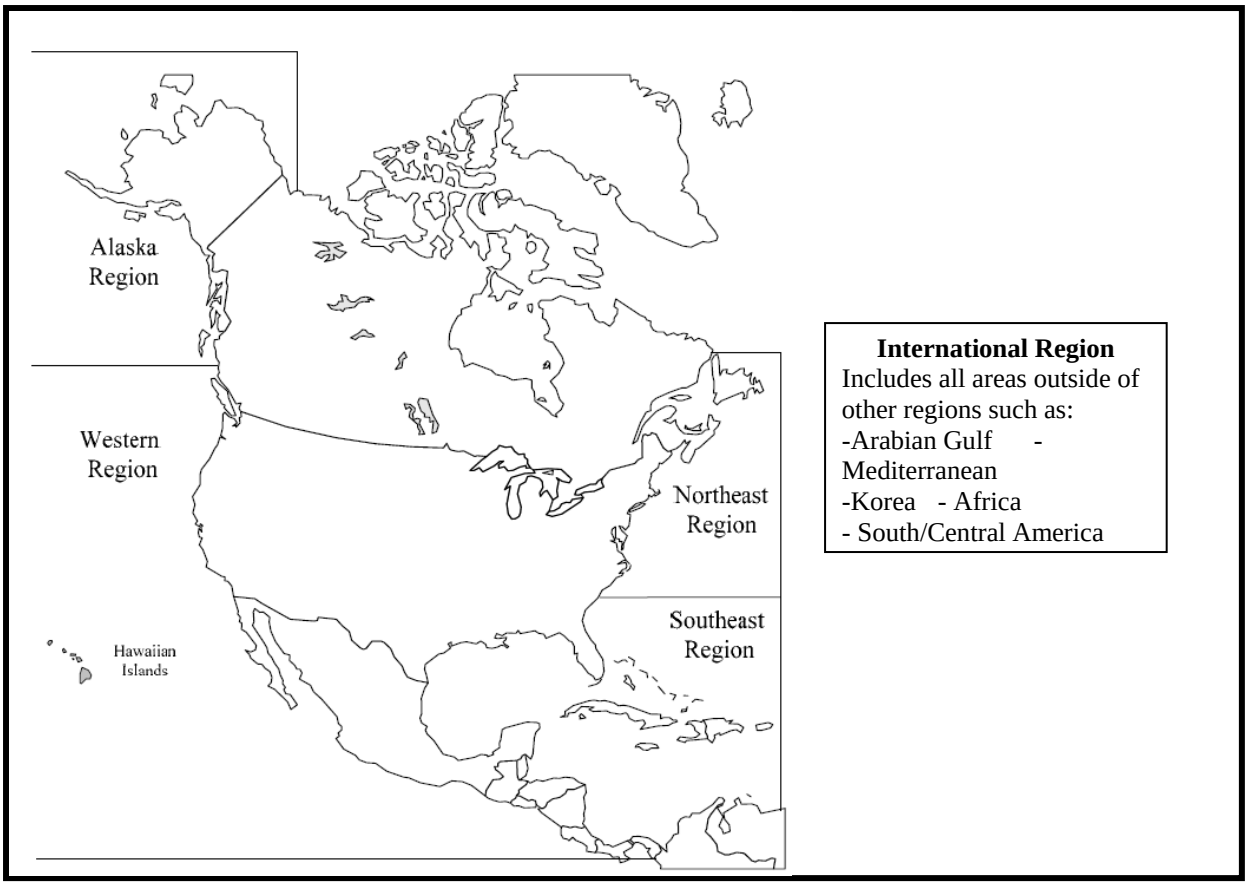

Figure 2 - Deep Water Regions

2.3.1.1 Northeast Region Specifics

The Northeast Region encompasses the First and Fifth Coast Guard Districts. This region includes the U.S. Exclusive Economic Zone (EEZ) from the Canada/Maine border to the North Carolina/South Carolina state line. The region also includes the Western Atlantic Ocean near Canada, but outside Canadian territorial waters.

In the Northeast Region of the deep water AOR, the seasons vary significantly; wind and sea conditions can get very rough, particularly during winter. The winter temperatures range from 0 degrees (Fahrenheit) to 50-degrees (Fahrenheit). During winter, mild hull and structure icing is a constant concern. In summer, temperatures usually range from 60-degrees to 100-degrees (F); the significantly cooler water temperature often causes dense fog.

Many of the fishery areas in this region are within or adjacent to maritime preserves, which requires special attention to navigation and environmental discharges. Other areas, such as Cape Hatteras and Nantucket Shoals, are well-known for their extreme sea conditions, which often require Coast Guard cutter presence and operations.

2.3.1.2 Southeast Region

The Southeast Region encompasses the Seventh and Eighth Coast Guard Districts. This region includes the U.S. EEZ from the North Carolina/South Carolina state line around the entire coastline of Florida to the Mexico/Texas border. The region includes the Atlantic Ocean areas off South Carolina, Georgia, Florida, the Virgin Islands, the Bahamas, Cuba, and the Commonwealth of Puerto Rico. The region also includes the entire Caribbean Basin and the Gulf of Mexico.

The Southeast Region is comprised of warm-temperate to tropical climates. Summer temperatures can be extreme causing intense sun-warming on a ship operating in the area. Severe thunderstorms and coastal storms are common and often cannot be evaded due to operations or the sudden formation of a storm. Tropical storms and hurricanes occur frequently and require operating near the fringes of these storms for SAR.

2.3.1.3 Western Region

The Western Region encompasses the Eleventh, Thirteenth, and Fourteenth Coast Guard Districts. The Western Region includes the Pacific Coast of the continental United States, Mexico, and Central America and the U.S. EEZ around the Hawaiian Islands, as well as other Pacific U.S. protectorates and territories. Operations in the region may also require Panama Canal transits.

The Western Region encompasses an immensely varied range of climates from tropical to cold. In the northern section, winter conditions are generally described as overcast and wet with mild temperatures; summers are fairly dry and cool. The southern section is characterized by summers of dry heat with generally calm seas and cool, moist winters.

The Western Region includes many areas that are considered environmentally sensitive. States in this region have strict emissions and discharge laws for all vessels.

2.3.1.4 Alaska Region

The Alaska Region encompasses the Seventeenth Coast Guard District and includes all the waters surrounding the state of Alaska. This region covers a vast amount of open-ocean, rivers, bays, and inlets extending from the Canadian border around the Aleutian Chain, above the Arctic Circle, and back to the Canadian border. The size of the Alaska Region makes it necessary to allocate several days transit time for a cutter to reach its assigned patrol area. The Alaska Region has a cold climate and harsh sea and weather conditions. For example, a WMSM operating in the Bering Sea may be exposed to prolonged periods operating in sea state 5 conditions, with temperatures between -20 to 40-degrees (F), winds in excess of 50 kts, and freezing spray. During summer operations in the Chukcki Sea and Arctic Ocean, the WMSM may encounter areas of broken plate, pancake, and sea ice that is 10 to 30 inches thick. These areas of drift ice will have less than 100 percent coverage.

2.3.1.5 International Region

There are no specific geographic boundaries associated with the International Region. It is specifically defined as the area of operations outside normal Coast Guard command and control and logistics support infrastructure. The WMSM will deploy worldwide under the TACON of a DoD COCOM's naval component and with US, NATO, and other foreign navies and coast guards. The WMSM will meet a range of roles from Theater Security Cooperation to deploying with an Expeditionary Strike Group (ESG). The WMSM will not have the capabilities to deploy with a Carrier Strike Group (CSG). WMSMs operating in the International Region will at times integrate into the command and control and logistics environment of the U.S. Navy and Joint Operational Elements. Interoperability with external forces is a critical requirement for these operations and must be supported by regular exercises and training to maintain operational capability and competency.

2.3.2 Threats and Hazards

The WMSM will operate in a low, multi-threat environment as defined below. The cutter shall be designed for, but not delivered with, the equipment and configuration to allow for operations in higher threat environments.

A low-threat environment is defined as being controlled by an interest with the following characteristics:

- Military relatively small, normally ill equipped and with armament capabilities to include crew served weapons and rocket propelled grenades.
- Offensive Chemical and Biological Warfare (CBW) activity not noted.
- Possesses coastal radar line-of-sight surveillance.
- May have some patrol craft and/or Maritime Patrol Aircraft (MPA) for coastal patrol.
- No or minimally capable Electronic Surveillance/Electronic Attack (ES/EA) equipment.
- Very few Anti-Ship Cruise Missiles (ASCM), or none at all.

Beyond the hazards inherent in taking any ship to sea, the WMSM will routinely operate in areas with the following specific hazards:

- In the Alaska region, the WMSM will operate around the edges of the ice pack and in areas of broken plate, pancake and drifting sea ice that is 10 to 30 inches thick. In addition, the WMSM will be able to endure being beset by ice for short periods of time (days not weeks).
- In the southeast region, the WMSM will operate around hurricanes and tropical storms.

2.4 Missions

The Coast Guard is a key element in supporting the National Security Strategy by maintaining the nation's economic, social, environmental, and military security in the maritime environment. The Coast Guard meets this challenge through the employment of its unique multi-mission assets which accomplish a combination of activities far beyond traditional military roles. The WMSM will carry out the following Coast Guard missions mandated by Pubic Law 107-296:

- Ports, Waterways, and Coastal Security (PWCS)
- Search and Rescue (SAR)

- Drug Interdiction (DRUG)
- Migrant Interdiction (AMIO)
- Living Marine Resource (LMR)
- Other Law Enforcement (OLE)
- Defense Readiness (DR)

Figure 3 breaks down the percentage of time that a single WMSM is forecasted to execute each mission in one cutter year. The information of mission breakdown is based on the Modeled Coast Guard Concept of Operations (CG CONOPS). Mission categories not included in the graph (SAR, OLE) are not specifically programmed ahead of time but are conducted on an "as required" basis. Historically, these missions encompass less than .06% of a cutter year. Concurrence

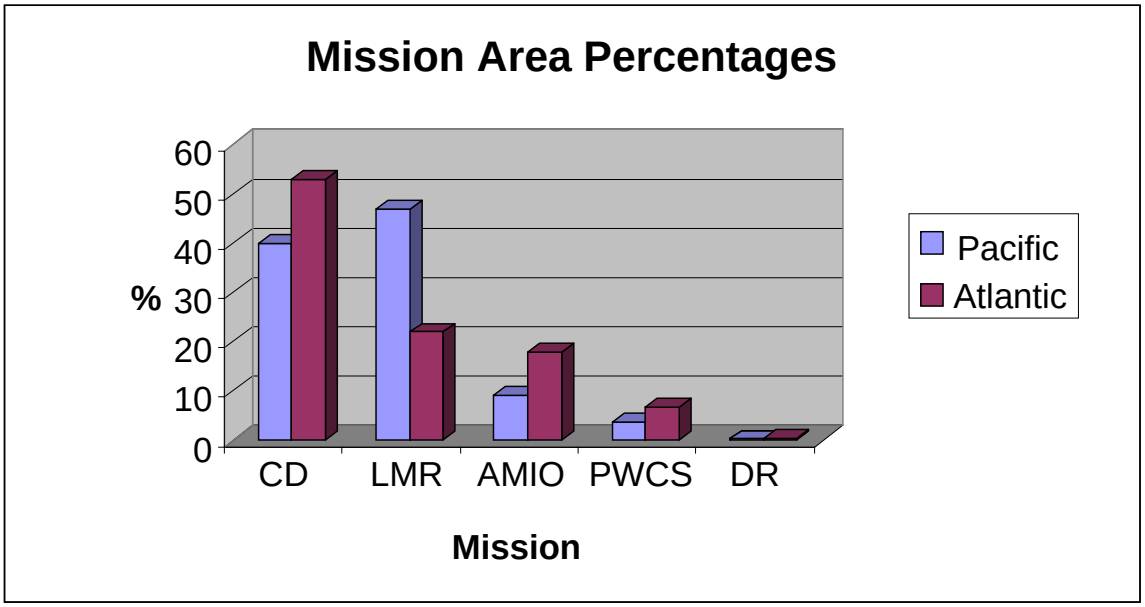

Figure 3: Percentage of Mission by Area

2.5 Interoperability with Other Elements

The WMSM will have the capability to be an integral asset in a command and control (C2) environment where "joint" operations are the norm regardless of the mission or location. The WMSM will be expected to coordinate mission execution with every Coast Guard operational asset from land based operational centers to other vessels (all sizes) and aircraft (all types). The WMSM will be employed as both a task unit and a CTU, controlling multiple surface and air assets. In some cases, the WMSM will relay information between assets.

The WMSM will operationalize the National Fleet Policy between the Coast Guard and Navy. The WMSM will work with/be part of DoD/NATO's network centric command and control systems by working with surface, sub-surface, air and space based DoD/NATO units from single unit to multi-unit task forces. Furthermore, because the Coast Guard is a world wide leader within the maritime law enforcement and rescue realms, many maritime nations request Coast

Guard assistance in training and international partnerships. The WMSM could participate in these international partnering opportunities.

The WMSM will operate with other federal agencies (in and outside of DHS), state, and local agencies for both law enforcement and/or emergency response/management.

2.6 Users and Other Stakeholders

2.6.1 Cuttermen

The core user group of the WMSM will be the men and women who will sail on the WMSM. They will have the responsibility for the daily maintenance, repair, and use of all the WMSM capabilities for mission execution. The sailors will be both users and a capability in itself of the WMSM. They will require training prior to arrival to use the system effectively. The skill level required will be at the detail level of the onboard systems. Cuttermen are divided into two broad categories, officer and enlisted. Enlisted crew members perform most hands-on functions on board ship; possess at least a high-school education, but may have up to advanced college degrees; and conform to the established workforce rate structure. They may be very experienced in CG operations or may have recently entered service. The officer corps performs command and control functions and serves as senior managers of the enlisted workforce. They typically possess various levels of college degrees and, like the enlisted cuttermen, their CG experience will vary significantly between officers.

2.6.2 Operational and Tactical Controllers

The operational and tactical controllers will employ the entire WMSM capability package to meet localized mission goals. This group includes Coast Guard (district and sector level operation centers, and CG task force commanders), DoD (task force commanders and COCOMs), and OGA (federal/state/local law enforcement and emergency response unified commands). Command and control systems of both voice and data will be the primary interface either at regular or near-real time electronic connection.

The WMSM's controllers will have varied experience in dealing with Coast Guard deepwater assets. DoD and OGA controllers may have limited experience dealing with WMSM class vessels and may require a codified description of capabilities. DOD controllers are experienced in commanding naval assets, but may not be familiar with CG policies and procedures. CG controllers are familiar with directing naval assets as well as CG policies and procedures.

2.6.3 Deputy Commandant for Mission Support (DCMS)

DCMS will coordinate all depot level repairs and availability to maintain the functionality of the WMSM and will coordinate with the Force Readiness Commander (FORCECOM) for proper asset deployment. Under the two-level support system, any administrative, maintenance, or repair actions beyond the defined operational maintenance will fall on the depot level. DCMS will include personnel support commands, maintenance command, and engineering centers of excellence (Coast Guard Yard, Surface Forces Logistics Center (SFLC), C2CEN). This group will require extensive training in the functional systems onboard the WMSM both for repair and

upgrades. They will also require computer knowledge in logistics management and electronic record keeping. DCMS will drive the WMSM maintenance schedule during the availability between patrols and will coordinate all dockside and dry-dock periods.

2.6.4 Coast Guard Tactical Units

Coast Guard patrol boats, small boats, fixed and rotary wing aircraft will interact with the WMSM for both mission execution and mission support. These tactical units exchange information with and may receive mission tasking from/via the WMSM. Surface and rotary wing tactical units may require space for maintenance supplies/spare parts, and logistics support from the WMSM (e.g., food, potable water, fuel) in order to extend on-scene presence during operations.

2.6.5 OGA Tactical Units

Tactical units from other government agencies – DHS, DOD, NATO, other allies and coalition partners – may interact with the WMSM for mission execution. These tactical units exchange information with and may receive mission tasking from/via the WMSM. Surface small boats and rotary wing tactical units may require logistics support from the WMSM (e.g., food, potable water, fuel, ammunition) in order to extend on scene presence during operations. The WMSM may require similar logistics support from DOD, NATO, other allies and coalition partners in order to extend on-scene presence during operations.

2.6.6 Organizational Leadership

The USCG, DHS, and DOD leadership employ the WMSM as a national asset to advance international relations, to collect intelligence/information, to protect and defend our Nation from all threats, and to respond to and recover from large maritime disasters.

2.6.7 Public

The American public is the prime customer of the WMSM. The WMSM protects them from maritime threats, rescues them in time of peril, and preserves the environment.

2.7 Policies, Assumptions, and Constraints

2.7.1 Policies

This section lists current self-imposed Coast Guard policies, restraints, or regulations that have a major impact on how the WMSM will be used or basic standards it must meet.

2.7.1.1 Shipbuilding Standards

The WMSM design will comply with the American Bureau of Shipbuilding Naval Vessel Rules (ABS NVR).

2.7.1.2 Environmental Law Compliance

As America's maritime guardians and enforcers of environmental law, the Coast Guard has an obligation to exhibit strong environmental compliance. The WMSM will operate in and around sensitive environmental resources including harbors, navigable inland waterways, and various oceans around the globe. The WMSM will comply with Federal, state, and local environmental laws and regulations, and international treaties. Environmental considerations for the WMSM will include the proper management of bilge water, solid waste and hazardous materials, sewage, ballast water, air and noise emissions, oily discharge, and avoiding harm to aquatic species.

2.7.1.3 Coast Guard Program of Record

The WMSM will use, whenever possible, equipment from the Coast Guard's programs of record. This will include at a minimum the WMSM's computer system components (routers, LAN, terminals, etc.), small boats, and small caliber weapons (e.g., crew served .50 cal machine gun, small arms).

2.7.1.4 Crewing and Detachments

WMSM's permanent crew size will be limited to 100 or fewer members. This limit is to minimize life-cycle costs and ensure the Coast Guard enterprise personnel aspect is maintained at all ranks. The WMSM will be capable of being manned by multiple, rotating crews or a single crew concept. It will also accommodate an Aviation Detachment with up to 5 persons and a Signals Intelligence Direct Support Element with 5-11 persons. Additionally, the WMSM will occasionally accommodate Law Enforcement Detachments (LEDETS), Maritime Safety and Security Teams (MSSTs), C2 elements, and other temporarily deployed personnel.

2.7.2 Assumptions

Assumptions are assertions made about some future characteristic of the WMSM that underlies the current operations or plans of the organization. They provide a foundation from which the operational employment and support of the WMSM can be described. They are based on projected future policies, practices, or technological advances expected to be valid during the operation of the vessel or direction from Coast Guard leadership.

2.7.2.1 Flight Deck

The WMSM will be a Flight Deck Equipped Cutter (FDEC). The flight deck will be capable in size and strength to launch and recover all assigned aircraft including all variants of the H-60 helicopter and up to equivalent weight of a Sikorsky S-92. The hangar will be capable of storing Coast Guard MCH- 65 and HH- 60, as well as USN H-60.

2.7.2.2 Cutter Small Boats

The WMSM will have an organic small boat capability. As stated previously, the small boats will be provided from the Coast Guard's program of record at the time of delivery.

2.7.2.3 Intelligence Operations

The WMSM will support a permanently assigned Law Enforcement Intelligence Element (LEIE) within the Combat Information Center (CIC) and a deployable SIGINT DIRSUP element within the Ship's Signal Exploitation Space (SSES). The two intelligence elements will be capable of providing all-source intelligence fusion support through law enforcement and national intelligence planning and direction, collection, processing and exploitation, analysis and production, dissemination, and evaluation and feedback during mission execution. Through assignment of permanent party LEIE and pooled SIGINT personnel, Coast Guard tactical and operational commanders will receive timely, accurate, and insightful all-source intelligence support. The National Intelligence Element (NIE) DIRSUP will provide an optimally tailored, right-sized SIGINT force package for each deployment and afford significant operational flexibility.

2.7.2.4 Commonality

The WMSM design will minimize overall life-cycle cost by employing common and class standard equipment, such as electronics, engines, weapon systems, and hardware/software. Equipment and system will be common to other DHS and DoD ship acquisitions to the greatest extent possible. The overall objective of commonality is to reduce training costs and time, increase workforce availability and On-The-Job Training (OJT), increase operational readiness/ effectiveness, reduce parts inventories, and promote sharing of expertise among crews and in maintenance support.

2.7.2.5 Design

The WMSM will have a Service Life (SL) of 30 years, and a fatigue life of 40 years. The WMSM will undergo technological upgrades and the addition of new systems over its life cycle as future operations require (e.g., Common Navy Tactical Data Link, Air Search Radar, additional communications circuits). The primary repair facility for the WMSM will be the Coast Guard Yard.

2.7.3 Constraints

Constraints are limitations imposed on the WMSM from organizations and laws external to the Coast Guard.

2.7.3.1 Navy Type/Navy Owned (NTNO) Equipment

In order to operate with the Navy Task Force, the WMSM must possess a combat weapons system (CWS) for general defense operations, ship-defense and anti-terrorism/force protection (ATFP). The CWS will include NTNO equipment for medium caliber weapons (e.g., main deck gun, point defense, etc.), sensors, and C4I systems related to the NTNO weapons.

2.7.3.2 International Operations

The WMSM will operate in international waters and within the territorial seas of foreign governments. Therefore, the WMSM must meet international maritime standards, including those for safety, equipment, signaling, and communication.

2.8 Potential Impacts to the Coast Guard

2.8.1 Homeports

The WMSM class is replacing all existing WMEC classes. Length and draft may prevent the WMSM from using the same homeports that 210' and some 270' cutters currently use. Current homeports that can base the WMSM may require pier or facility upgrades. New homeports may be needed to accommodate the increase in WMSM cutter fleet size. Any new homeport identified may have political ramifications that will require early attention.

2.8.2 Training Programs for Entry Level

As noted with the new WMSL class, the effort to minimize the crew size combined with the large technical skill required for every watchstation leaves little room for entry level training (O1's and E2's) billets. The WMSM program may need to designate crew billets as training positions to ensure entry level positions are not completely eliminated and that training is provided to ensure that those individuals can integrate into the crew.

2.8.3 CG Yard Support

The Coast Guard Yard may not be able to lift the WMSM depending on its size and weight. The Yard might require enhancements to lift and service the WMSM fleet.

2.8.4 Logistical Ports

Dedicated logistic support piers at government installations or contract support facilities at commercial ports may be established or identified near normal WMSM operating areas. The WMSM will be able to moor to a pier in these facilities and receive a full range of hotel services (phone, data connectivity, potable water, electricity, and sewage removal). In addition, these port facilities will facilitate fueling, provisioning, receipt of parts and mail, and arrival and departure of ship's crew, detachments, and support personnel.

Section 3 - Scenario(s)

3.1 Mission Prioritization

At times, the capabilities required to complete individual WMSM missions will be in conflict with each other making it difficult to achieve a feasible technical solution. In order to assist decision makers with conducting the necessary trade offs in the design process, the WMSM missions have been prioritized below based on the likelihood of program mission occurrence. Missions such as SAR and OLE are not programmed for and occur when those situations are encountered. When capabilities are in conflict with one another, higher precedence will be given to the capabilities required to achieve the mission that the WMSM is more likely to under take.

1. Drug Interdiction (DRUG)
2. Living Marine Resources (LMR)
3. Alien Migration Interdiction Operations (AMIO)
4. Ports, Waterways, & Coastal Security (PWCS)
5. Defense Readiness (DR)

3.2 Capability Determination

Each mission is illustrated below using a scenario. These scenarios are used to derive functional capabilities required of the WMSM. Of the thirteen possible capabilities (Sensors, Communications, Command and Control (C2), Intel Ops, Small Boat Ops, Aviations Ops, Boarding Ops, Rescue, Maneuverability/Sea Keeping, CWS, Small Arms, Logistics and Human Systems) that may be required for a particular mission, the capabilities are either determined to be Primary (P), Secondary (S) or not required. Primary Functional Capabilities identify capabilities that are required to perform the mission. Secondary Functional Capabilities identify capabilities that are necessary for optimal mission effectiveness, but do not prevent mission completion. In Section 4, these core functionalities can be compared across missions within the Core Functionality Matrix, Table 1.

3.3 Mission Operations Scenario(s)

3.3.1 Drug Interdiction

The Coast Guard is the lead federal agency for maritime drug interdiction, and it shares responsibility for air interdiction with US Customs and Border Protection (CBP). The maritime counter-narcotic mission set includes various activities involving surveillance, detection, and interdiction to prevent the flow of illegal drugs into the U.S. Often times this mission entails patrolling known drug smuggling corridors and working with numerous agencies including federal law enforcement, U.S. military, and LE/military elements of partner nations. On the high seas, the Coast Guard must seek permission from the flag state to take law enforcement action against a foreign flagged vessel that is suspected of transporting drugs in violation of U.S. law or international agreements.

During times of heightened DRUG operations, WMSM activities will not significantly change. However, the risk and level of coordination will increase. Suspect vessels may attempt to

destroy evidence by attempting to jettison the contraband and/or scuttle the vessel. Upon receiving reliable intelligence, the WMSM boarding team (BT) may conduct an Unannounced Nighttime Boarding (UNB). UNBs are boardings of foreign-flagged vessels with flag state consent, conducted without prior notification to the master or crew of the vessel and are used as a tactic to prevent the destruction of evidence by scuttling or fire. Additionally, as Coast Guard's efforts continue to disrupt the flow of illegal drugs, smugglers are likely to employ more aggressive and ingenious tactics which will require bold and innovative measures to counter.

3.3.1.1 Functional Capabilities

The following functional capabilities were determined to be primary or secondary functions for this particular mission:

- Primary: Sensor, Communications, C2, Intelligence Ops, Small Boat Ops, Aviation Ops, Boarding Team, Maneuverability/Sea Keeping, Small Arms, Human Systems

- Secondary: Logistics, CWS

3.3.1.2 Scenario

A WMSM on patrol in the Eastern Pacific under JIATF-S TACON receives Maritime Patrol Aircraft (MPA) support from a CG HC-130J and a CBP P-3. JIATF-S has assigned the WMSM to locate and intercept a go-fast smuggling vessel that had departed South America the day before. The WMSM receives via SIPRNET the mission profile, search areas, Communications Plan (COMMPLAN) and relevant intelligence from JIATF-S. The WMSM employs its communications suite to transmit/receive COP updates, transmit/receive EO/IR data from the MPA, and gain access to the Coast Guard's law enforcement database.

Mid-afternoon, intelligence personnel on watch within the SSES hear radio chatter indicative of smuggling operations and pinpoint the source by combining the cutter's direction finding capability with that of other patrol assets. Later that evening, the MPA detects two TOIs traveling north at a very high speed. The WMSM calculates intercept vectors and launches its small boats and armed helicopter towards one contact, while directing the MPA to track the second. Minutes later, the MPA links a near-real time EO/IR video feed of the GFV to the WMSM's tactical display. The WMSM then relays this information to JIATF-S, and JIATF-S transfers TACON to District 11 (D11).

As the small boat and armed helicopter close-in on TOI-1, the MPA continues to monitor/pursue TOI-2. The helicopter crew confirms that there are no indicia of nationality on TOI-1. TACON assimilates TOI-1 to a stateless vessel status and grants the helicopter and BT permission to initiate non-compliant vessel UOF procedures up to and including warning shots/disabling fire. The helicopter exhausts all other means to compel compliance and fires warning shots, at which time TOI-1 heaves to and allows the small boat BT onboard. The Boarding Officer (BO) confirms the vessel is safe to board and embarks the boarding team. The BO uses a portable "sniffer" device which detects contraband residue on the vessel. The BT then initiates a search and discovers a large quantity of suspected contraband in the forward hold. TOI-1's crew is

detained, checked for weapons, and transferred to the WMSM. Crewmembers aboard the WMSM enter the information into the law enforcement database.

Meanwhile, the MPA reports that TOI-2 is approaching foreign territorial seas. JIATF-S notifies the foreign country, which dispatches a patrol boat to intercept TOI-2. Guided by communications from the WMSM, TOI-2 is intercepted by the foreign Navy's patrol boat, and 2 tons of cocaine is discovered on board.

The WMSM destroys TOI-1 as a hazard to navigation. D11 arranges through an existing International Maritime Interdiction Support (IMIS) agreement to transfer the detained crew and evidence package from TOI-1 to DEA agents in a third country for an immediate flight aboard a US government aircraft to the US for prosecution. The WMSMs TACON returns to JIATF-S, and the WMSM returns to the Operating Area.

3.3.2 Living Marine Resources

This mission set includes a range of activities aimed at enforcing domestic fisheries and marine protected species laws throughout the U.S. EEZ, and international fisheries regulations in international waters. To meet the objectives of this mission, it is necessary for the Coast Guard to project a continuous enforcement presence throughout the U.S. EEZ, operate in international waters when directed, and conduct fishing vessel inspections at sea. The Coast Guard partners with industry, federal, and state agencies to collect and share enforcement information.

Heightened LMR conditions may require more command, control and communication capabilities, but otherwise do not represent a significant departure from normal conditions. The number of assets on a heightened case increases, and the WMSM may assume the responsibility of CTU – coordinating reports and tactical activities of multiple assets. Heightened LMR also includes cases involving adverse weather conditions or numerous TOIs in one area that requires the WMSM to perform simultaneous boardings.

3.3.2.1 Functional Capabilities

The following functional capabilities were determined to be primary or secondary functions for this particular mission:

- Primary: Sensor, Communications, C2, Small Boat Ops, Boarding Ops, Small Arms, Human Systems

- Secondary: Logistics, Intelligence Ops, Maneuverability/Sea Keeping, Aviation Ops

3.3.2.2 Scenario

A WMSM is actively patrolling closed commercial fishing areas within Southeast Alaska's OPAREA, an area that is relatively open and has few natural choke points. The Seventeenth District (D17) Command Center receives an alert based on VMS data correlating with intelligence reports that multiple fishing vessels plan to illegally harvest regulated groundfish

species in this area. The Command Center places this fused information on the Coast Guard COP for assets and supporting shore based air stations to review.

The WMSM receives the alert and launches its UAV and helicopter to classify, locate and document the reported incursions. The UAV locates a potential TOI and transmits data to WMSM that marks the TOI's position in a closed area. The WMSM directs the helicopter to locate the TOI and launches its small boat. The WMSM directs it to take a position such that the TOI is between the small boat and the cutter, thereby creating an artificial choke point for the TOI. The small boat takes position as directed at best available speed. Reasonable Suspicion is established due to the vessel being within a Closed Area and the visual evidence of longlines being deployed via the WMSM's EO/IR video. The WMSM attempts to contact the TOI using International Radio Call Signs from the OPTASK and on-board shipping database (via VHF, Ultra High Frequency (UHF) or SATCOM). Voice Communications are established with the TOI and intent to board is passed to TOI's master. The BT commences the boarding while the WMSM closes on the TOI and takes station off the TOI's quarter. The WMSM maintains voice communications with the master and encrypted communications with the small boat and deployed BT.

Once onboard, the BT conducts an Initial Safety Inspection (ISI) then proceeds with the fisheries boarding. The TOI's master and crew are mustered, questioned, and vessel documents and fisheries license are reviewed. The BT discovers ample evidence to indicate that the vessel had been fishing in the closed area. Additionally, the BT discovers several safety hazards in violation of the Commercial Fishing Industry Vessel Safety Act (CFIVSA) and notes on the Coast Guard 4100F form.

The BT discovers serious violations during onboard inspections and relays the information to the WMSM. The WMSM coordinated with District 17 LMR experts and National Marine Fisheries Service (NMFS), who authorized the seizing of the catch. The WMSM escorts the vessel into the nearest port and is relieved of escort by another government asset as it nears port.

3.3.3 Alien Migrant Interdiction Operations

The Coast Guard is the lead agency for the enforcement of U.S. immigration laws at sea. Migrant interdiction operations are as much humanitarian as they are law enforcement. The majority of cases actually begin as SAR missions based on the fact the vessels are dangerously overloaded, unseaworthy or otherwise unsafe. The Coast Guard conducts patrols and coordinates with a multitude of federal, state and local agencies as well as foreign countries to interdict illegal migrants at sea.

The mission activities at a heightened AMIO include all the normal activities. In addition, heightened levels exist when rescuing large number of PIW in the event of vessel sinking or capsizing and coordinating numerous assets in mass migration surge operation. A heightened condition can exist when a migrant vessel refuses to heave to and law enforcement tactics are required to stop the vessel or control a crowd.

3.3.3.1 Functional Capabilities

The following functional capabilities were determined to be primary or secondary functions for this particular mission:

- Primary: Logistics, Sensor, Communications, C2, Intelligence Ops, Small Boat Ops, Aviation Ops, Boarding Ops, Rescue, Small Arms, Human Systems

- Secondary: Maneuvering/Sea Keeping, CWS

3.3.3.2 Scenario

The WMSM is on patrol under TACON of District 7 (D7) when a small vessel is sighted with numerous people visible on deck. The vessel is proceeding towards U.S. territorial seas but is making very little headway due to the sea conditions (sea state 4). The WMSM sets the AMIO bill and launches both small boats. The WMSM and cutter boats take station on either side of the suspected migrant vessel to avoid the TOI's personnel from overloading one side of the vessel. The WMSM transmits a live video feed to TACON as efforts continue to board the foundering vessel. The heavy seas continue to batter the vessel until finally a large wave breaks over the gunwale and floods out the engine. This causes the vessel to lose propulsion. The WMSM's small boat crew places all of the persons onboard in life jackets, and then begins to transfer them to the WMSM. Having lost propulsion, the vessel goes beam-to the swells and capsizes, spilling approximately 20 people into the water. The WMSM maneuvers to retrieve persons in the water (PIW) directly to the cutter as the small boats continue to retrieve individuals floating away from the group. All the migrants are successfully recovered and treated for injuries. The WMSM musters the migrants on deck, sets a security watch, and provides temporary shelter, food, and water.

A few hours later, a CBP surveillance aircraft reports a high-speed vessel with numerous people visible on deck. The vessel is in international waters and proceeding towards U.S. territorial seas. The WMSM computes an intercept course and makes best speed for intercept. Two 33' SPC-LE boats from the local station are sortied to respond as well. The CBP aircraft reports low fuel state and returns to base. The WMSM launches its helicopter to maintain visual contact with the vessel. The WMSM receives continuous automatic position updates from the helicopter's video data documenting the vessel's conditions. The WMSM sets the AMIO bill and launches both small boats once on-scene. The WMSM directs the interception by vectoring in the cutter boats and those from the station. The WMSM transmits a live video feed to TACON as efforts continue to stop and board the high-speed vessel. Failing to heave to, TACON authorizes the WMSM's small boat crew to utilize non lethal vessel-to-vessel UOF to stop the suspected smuggling craft. The small boat releases an entangling net in front of the vessel, but the net fails to stop the vessel. After this was found to be not effective, TACON authorizes warning shots and disabling fire. When the vessel does not respond to warning shots, the WMSM's small boat crew's disabling fire brings the migrant vessel to a halt.

While the first small boat provides cover, a boarding team (BT) from the second small boat boards the disabled vessel and detains the suspected smugglers. The small boat crew places all of the persons onboard in life jackets and then begins to transfer them to the WMSM. The

WMSM musters the migrants on deck, sets a security watch, and provides temporary shelter, food, and water. The helicopter returns to the cutter for a hot refuel as the station's small boats are vectored by the WMSM to intercept another suspicious target. After the station's small boats intercept the target, the crew determines that it is a smuggling vessel, and they transfer the migrants from the small vessel to their own boat. Later, the migrants are transferred to the WMSM.

While the WMSM is serving as the at-sea holding platform, it receives underway replenishment from another Coast Guard cutter via small boat to replace the stores of blankets and baby food that have been depleted. The WMSM crew collects biometric information from the detained migrants and transmits that information to shore for comparison with LE databases. The WMSM embarks a CIS Protection Screening Officer to interview the migrants; those without protection concerns are then transferred to a WPB for repatriation to their home country. Prior to the migrant transfer, the WMSM conducts astern refueling with the WPB. After the transfer, the suspected smugglers are delivered ashore via one of the SPC-LE boats, and turned over to CBP for investigation.

3.3.4 Ports, Waterways, & Coastal Security

This mission set includes a broad range of activities aimed at preventing catastrophic events to the homeland including: port security patrols, escort and defense of High-Value Units (HVU), interception of High-Interest Vessels (HIV), escort and defense of strategic sealift vessels (MIL), security boardings, and surveillance of port approaches.

The classified operations order for Operation Neptune Shield (ONS) establishes readiness and employment requirements for major cutters performing the PWCS mission for each Maritime Security (MARSEC) level: MARSEC 1 - Baseline security posture for a general, non-specific threat against the U.S. Maritime Domain; MARSEC 2 - Increased security posture set when there is an increased specific (based on intelligence or other warning) or non-specific threat; and MARSEC 3 - Most focused security posture normally set when a terrorist incident is imminent (based on specific intelligence or an abundance of intelligence) or post-incident.

There are no specific WMSM activities associated with MARSEC 1. By their presence, WMSMs conducting non-PWCS offshore missions (e.g., DRUG, AMIO, LMR) can provide an outer layer of security and a threat response capability for intercepting specific threats identified through intelligence or other means. At MARSEC 1, FORCECOM may include WMSMs in the force mix supporting a National Security Special Event (NSSE) (e.g., G-8 Summit). During MARSEC 2 and 3, WMSMs play a significantly greater role in PWCS.

During times of heightened operations (MARSEC Levels 2 and 3) WMSM activities do not significantly change. However, the demand and level of readiness increases. The WMSM may be required to work in concert with multiple land, surface, and air assets, requiring close coordination and simultaneous communication with both federal and state law enforcement and regulatory agencies.

3.3.4.1 Functional Capabilities

The following functional capabilities were determined to be primary or secondary functions for this particular mission:

- Primary: Sensor, Communications, C2, Intelligence Ops, Small Boat Ops, Aviation Ops, Boarding Ops, Maneuverability/Sea Keeping, Human Systems

- Secondary: Rescue, Logistics, CWS, Small Arms

3.3.4.2 Scenario

While at MARSEC 1, a WMSM is diverted from patrol to assist the federal government Unified Command (UC) with providing security for a NSSE occurring in a strategic port. The WMSM arrives off the entrance to the strategic port, meets with a Station small boat and embarks several Marine Safety personnel from the Sector. The WMSM is directed to form a Task Unit (TU) consisting of the WMSM and two 87' Patrol Boats (WPB). The UC coordinates fixed and rotary-wing air support. The TU is tasked to augment local forces in conducting normal MARSEC 1 PWCS operations (e.g., Security Boardings of HIVs); to monitor and enforce an established fixed security zone in the inshore approaches to a scheduled NSSE; serve as a C2 platform; and coordinate and conduct maritime security boardings.

The WMSM establishes and maintains communications with the Sector Command Center (SCC), sharing tactical information. Simultaneously, the WMSM communicates the established patrol areas to the WPBs. The WMSM maintains continuous surveillance over the security zone, augmenting its sensors' data with data from overflights and the WPBs.

Based on intelligence and other data received from the SCC and other sources, the WMSM locates and identifies an inbound HIV using on board sensors and those of other assets in the area. The WMSM directs its organic BT, augmented with Marine Safety experts from the Sector, to intercept and board the HIV. The WMSM launches two small boats with embarked BTs. The WMSM directs one small boat and its BT to intercept and board the HIV. Then, the WMSM directs the first small boat to escort the HIV and directs the other small boat and assigned WPBs to intercept and board other vessels that are approaching or encroaching on the NSSE security zone. The WMSM maintains simultaneous communications with its BTs and small boats while receiving tactical updates from the WPBs. The WMSM relays this information to the SCC.

The WMSM BT reports inconsistencies in the cargo/crew manifest and recommends that a Coast Guard asset escort the vessel into port. The WMSM relays this information to the Sector who dispatches two armed escort vessels. The WMSM small boat establishes and enforces a moving security zone around the HIV and directs traffic to remain clear. The WMSM small boat continues the escort until it is relieved by the Sector dispatched escort vessels. The WMSM small boat recovers the BT and would either return to the WMSM or, upon direction, proceed to intercept, challenge, and/or board other vessels.

Sector receives specific information indicating the strategic port and/or its Maritime Critical Infrastructure/Key Resources (MCI/KR) are at heightened risk of attack. Once MARSEC 2 is set, the Sector relays information on the threat via secure means to the WMSM and directs it to proceed to protect offshore MCI/KR and provide response presence in the offshore area of the Sector's AOR.

The WMSM embarks elements of a Maritime Security Response Team (MSRT) and a dedicated rotary wing asset. The WMSM and its embarked aircraft conduct surveillance of the approaches to the MCI/KR. The WMSM increases its readiness posture in preparation for defending the MCI/KR should an attack occur. The WMSM's helicopter detects a suspicious vessel traveling towards the MCI/KR. The suspicious vessel fails to respond to radio hails and repeated orders to stop communicated over the WMSM loudhailer and via flag signal hoist. The WMSM closes on the suspicious vessel and directs it to alter its course using multiple communications methods. The suspect vessel does not comply and the WMSM fires warning shots after ensuring the field of fire is clear of other vessels and infrastructure. The suspect vessel remains undeterred and continues to close the MCI/KR. The WMSM deploys its small boat and helicopter with MSRT teams aboard for an opposed Vertical Insertion (VI) boarding. The suspect vessel refuses to permit the boarding, maneuvers erratically, and attempts to collide with the WMSM. WMSM's EO/IR sensors sight additional personnel gathering on the suspect vessel's deck carrying shoulder-launched weapons aimed towards the MCI/KR in a targeting profile. Boarding is not possible via small boat or Vertical Insertion (VI). As the suspect vessel closes the MCI/KR, the WMSM CO determines hostile intent and, using shipboard and helo-equipped weapons systems, neutralizes the suspect vessel, defending the MCI/KR against attack.

3.3.5 Defense Readiness

The US Coast Guard operates as a branch of the U.S. Navy in times of war or when directed by the President. In peacetime, Coast Guard cutters promote U.S. national initiatives through various humanitarian and maritime security and safety engagement with other nations. Additionally, Coast Guard cutters are made available to DoD in times of hostilities to perform the following essential military tasks: maritime intercept operations, deployed port operations, security and defense, threat engagement, coastal sea control, and environmental defense. The WMSM is typically assigned as a task unit within a surface action group or operates independently under a naval component commander.

Theater Security Cooperation (TSC) activities include performing humanitarian assistance projects (including on-load and offload of donated supplies), conducting professional exchanges, coordinating and participating in military exercises and conducting military exercises with allied and coalition partners.

General Defense mission activities include SDCIP process of air and surface targets; launching, recovering and servicing Coast Guard and DoD aircraft; providing escort protection and defense; and sharing simultaneous secure and clear data, voice, and intelligence information with multiple air and surface entities including DoD, Coast Guard, and allied partners.

The mission activities at a heightened readiness posture do not significantly change. The readiness level and quick prosecution of hostile targets with onboard weapons systems in a

layered defense as well as communications level increases significantly. The probability of damage to cutter's structure and systems also increases.

3.3.5.1 Functional Capabilities

The following functional capabilities were determined to be primary or secondary functions for this particular mission:

- Primary: Sensor, Communications, C2, CWS, Intelligence Ops, Aviation Ops, Small Arms, Maneuvering/Sea Keeping, Rescue, Logistics, Human Systems

- Secondary: Small Boat Ops, Boarding Ops

3.3.5.2 Scenario

Prior to a Theater Security Cooperation (TSC) patrol, the WMSM crew coordinates upcoming foreign port calls to include humanitarian assistance, military training and professional exchange events. The WMSM onloads and stores materials needed to conduct these activities prior to departing on patrol.

During one foreign port call, the crew offloads sports gear and a scoreboard donated by U.S. sources and provides manpower to paint walls and renovate the flooring system at a local school. After getting underway, a U.S. Navy ship transfers humanitarian assistance materials (shoes, clothing, and equipment) to the WMSM via helo prior to their next port call. At this foreign port call, the crew offloads the humanitarian assistance materials in support of Project Handclasp. At a third foreign port call, the crew conducts classroom-based leadership and management training for senior enlisted personnel attending the local maritime academy.

Prior to returning home, the WMSM conducts an at sea refueling from a NATO tanker and then rendezvous with naval ships from three foreign countries to conduct a regional maritime law enforcement training exercise. The WMSM serves as the exercise coordinator, providing at-sea training to the officers and crew of the foreign naval vessels. Training topics include boarding procedures, small boat handling, weapons, and maritime patrol tactics with unmanned aerial vehicles. In addition, the WMSM and participating ships cross-deck personnel to conduct professional exchanges and observe at-sea boarding scenarios from different perspectives.

In response to a national security crisis and the U.S. decision to commence combat operations, a WMSM is tasked to deploy in support of the U.S. Naval component of a Combatant Commander (COCOM). Not outfitted for these operations, the WMSM immediately commences six weeks of pre-deployment work-ups including training and system upgrades required to prepare the cutter to operate in an increased threat environment. The work-ups include point defense combat weapons system, enhanced hard and soft kill ASCM protection, personnel training, and mission specific equipment stores.

At the completion of work-ups the WMSM is assigned as a TU to a Surface Action Group (SAG) composed of a USN DDG, two British type-42 destroyers and a Spanish frigate. The SAG is responsible for maintaining surface, sub-surface and air control over the approaches to a

strategic chokepoint. The WMSM is assigned to an inshore zone and tasked to escort and defend allied shipping through the zone.

The WMSM conducts air and surface surveillance using organic sensors, and receives secure data, voice and intelligence simultaneously from the other SAG TUs over battle networks. The WMSM transmits its own sensor data to the SAG commander (CTU). The WMSM challenges any suspicious air and surface contacts through radio callouts. It then intercepts TOIs with own ship, its embarked helicopter or its small boat. The WMSM dispatches its BT to conduct a search of any vessel suspected of having contraband or poses a threat to the chokepoint or allied shipping in the area.

The SAG CTU directs the WMSM to intercept, escort and defend a HVA through the chokepoint. The WMSM queries the common data picture and computes the intercept. The HVA enters the zone at max speed to minimize time in the choke point. During escort, WMSM's sensors detect several low-profile surface craft near shore that appear to be shadowing the HVA. The WMSM launches its aircraft to investigate. The WMSM suddenly detects and identifies hostile electronic emissions as a surface missile launch. WMSM simultaneously alerts the SAG's warfare commanders, deploys soft kill defensive capabilities and maneuvers for point defense with hard kill capability. SAG assets and the WMSM successfully defend against the attack with minor damage to the WMSM. CTU designates the now high-speed inbound surface contacts as hostile and directs the WMSM to engage them with own long and short range weapon systems, including own ship's main deck gun. The WMSM continues to provide encrypted voice, data, and intelligence to all assets of the SAG and coordinates additional SAG aircraft in the engagement. The WMSM destroys one and disables another hostile surface craft. The WMSM is relieved of escort duties and is directed to conduct rescue and recovery operations. The WMSM deploys its armed small boat and coordinates aircraft to search for survivors. The WMSM recovers enemy combatant personnel from the water while its small boat removes others from the disabled attack boat. Enemy combatants are medically treated, cared for and detained aboard the WMSM. The WMSM dispatches a rescue and assistance team by small boat to salvage the disabled attack boat. The WMSM then takes the attack boat in tow, delivering it and the surviving enemy combatants to a safe haven for intelligence exploitation by coalition forces.

The WMSM is then directed to detach from the SAG and proceed to the seabase for provisioning and repairs. Upon completion of those tasks, the WMSM conducts SDCIP of surface contacts approaching the seabase, including necessary maritime interception operations to prevent hostile and neutral surface contacts from approaching the assets of the seabase.

3.3.6 Search and Rescue

SAR is one of the Coast Guard's oldest primary missions and takes precedence over all other missions except national defense and homeland security operations. The SAR mission set involves numerous means of rendering aid to distressed persons, vessels, and aircraft on and under the high seas and the waters over which the U.S. has jurisdiction. The WMSM will conduct SAR either as an independent asset or as an asset operating in conjunction with other Coast Guard, international, federal, state and local law enforcement assets and Good Samaritan mariners.

The mission activities during heightened SAR do not significantly change except in the command, control and communication. The number of SAR assets on a heightened case increases and the WMSM can assume responsibilities of OSC, coordinating reports and tactical activities of the localized resources. Heightened SAR also includes instances of marine mass casualty such as downed commercial airliners or a cruise ship in distress (generally involving over 100 personnel) and rescue cases in weather anomalies such as hurricanes or gale-force winds.

3.3.6.1 Functional Capabilities

The following functional capabilities were determined to be primary or secondary functions for this particular mission:

- Primary: Sensor, Communications, C2, Small Boat Ops, Rescue, Maneuverability/Sea Keeping, Human Systems

- Secondary: Logistics, Intelligence Ops, Aviation Ops, Intel Ops

3.3.6.2 Scenario

While on a summer D17 patrol, after a brief stop for fuel at a Coast Guard logistics support facility, the WMSM is transiting near the Arctic ice pack at a loitering, or low transit, speed to maximize its endurance and with the automated top-side de-icer on to remove the frozen spray from deck and superstructure. It receives a call on an internationally recognized distress channel from a small cruise ship carrying approximately 150 passengers through the Northwest Passage. The cruise ship is DIW due to ice damage to its propulsion system and is in danger of drifting aground. In addition, the crew reports that their ship suffered hull damage while extracting itself from an ice flow. The WMSM relays the information to TACON and SAR Mission Controller (SMC) while proceeding at best speed for rendezvous with the cruise ship. Because there are large areas of drift ice between the WMSM and the cruise ship, the WMSM launches its helicopter to help identify the fastest route to the cruise ship. Based on the helicopter's report and visual imagery transmitted back to the ship, the WMSM is able to save time by moving through areas of broken pancake ice while avoiding packed ice. The WMSM maintains continuous communication and surveils the horizon with onboard sensors for the cruise ship. Upon arriving on scene, the WMSM learns the cruise ship is able to move at a slow speed but the crew reports they are taking on water from hull damage and requests additional dewatering equipment and escort to the closest port.

The WMSM launches its ice capable small boat and sends a Rescue and Assistance (R&A) team to the cruise ship with dewatering equipment. The WMSM coordinates with the small boat and cruise ship over line of sight radio while updating the SMC. After surveying the damage, the R&A team determines that the flooding is temporarily under control and recommends that the ship continue to the nearest port. The WMSM recovers the small boat and proceeds to escort the cruise ship out of the area of drifting sea ice, keeping in communication with the R&A team, cruise ship, SMC and TACON.

Hours later, the R&A team begins to express concerns about the stability of the vessel given the deteriorating weather conditions and extent of flooding. With flooding progressing in the engine room, the R&A team decides to remove the passengers for added safety. Shortly after, the cruise ship loses all propulsion. The WMSM launches its small boats and proceeds to transfer passengers from the cruise ship to the cutter. The cutter assumes OSC responsibilities and manages nearby Good Samaritan fishing vessels that volunteer assistance. During the evacuation, a passenger falls down a ladder and breaks his leg. The injured passenger is transferred to the cutter and is given initial medical attention. Following the consultation with flight surgeon, the WMSM launches its onboard aircraft for a medical evacuation of the passenger. The cruise ship's passengers and crew are provided with food, water, and basic medical services as needed upon their arrival to the WMSM.

The master of the vessel, R&A team, and a skeleton crew remain onboard the disabled cruise ship. The WMSM takes the cruise ship under tow with the floatable, non-freezing towline and continues transiting to port while closely monitoring the cruise ship's stability. The WMSM safely tows the cruise ship clear of the ice and passes off the tow to commercial tugs. All cruise ship passengers transferred to the WMSM disembark upon mooring.

3.3.7 Other Law Enforcement

This mission set includes a broad range of activities aimed at enforcing U.S. law upon the high seas and waters over which the U.S. has jurisdiction, including enforcement of international laws such as crimes against states, piracy, slavery, and other non-specific crimes. The WMSM must be able to board vessels at sea to ensure compliance with all U.S. and international laws and compel compliance with Coast Guard law enforcement authority.

A subset of this mission is the prevention of illegal incursions of foreign fishing vessels into the U.S. EEZ and enforcing international agreements to suppress damaging high seas Illegal, Unreported, and Unregulated (IUU) fishing activity which can negatively affect maritime security in coastal and regional areas worldwide. To meet the objectives of this mission, it is necessary for the Coast Guard to project a continuous enforcement presence along remote U.S. EEZ boundaries and in international areas of interest to the U.S.

3.3.7.1 Functional Capabilities

The following functional capabilities were determined to be primary or secondary functions for this particular mission:

- Primary: Sensor, Communications, C2, Small Boat Ops, Boarding Ops, Aviation Ops Small Arms, Human Systems

- Secondary: Logistics, Intelligence Ops, Maneuvering/Sea Keeping

3.3.7.2 Scenario

The Seventeenth District Command Center receives intelligence from the Intelligence Coordination Center (ICC) that foreign flagged fishing vessels intend to harvest fish from U.S.

waters inside the EEZ around the Aleutian Islands. The Seventeenth District Commander dispatches a WMSM already on patrol to conduct LMR enforcement.

The OPTASK message, COMMPLAN and assigned search areas developed by the District Commander are transferred to the WMSM via the COP and associated Tactical Overlays.

Upon receiving the OPTASK and reviewing all information in the COP, the WMSM commences a barrier search using all onboard sensors at the eastern edge of the OPAREA. The cutter launches its embarked helicopter for wide area search. The WMSM makes all routine updates via SATCOM.

The helicopter detects two contacts, designated TOI-1 and TOI-2, and relays EO/IR information to the ship. The WMSM closes the TOIs and acquires them on its surface search radar. Based on the TOI's profile, intelligence information, and output from the Mission Decision Support Aid function in the C2 system, the WMSM selects a course and best available speed to close TOI-2 and conduct further surveillance. A SITREP is forwarded electronically to OPCON.

Once the WMSM is within visual range of TOI-2, near-real time EO/IR data is received and analyzed. The data, combined with TOI-2 positional data, reveals that TOI-2 is trawling illegally in U.S. waters. An online database search indicates the vessel is registered to an Indonesian company.

The WMSM establishes communications with TOI-2 and communicates its intent to board for a fisheries inspection. The WMSM concludes that reasonable suspicion of illegal fisheries activity exists due to the vessel's location within the U.S. EEZ and the visual evidence gathered by the WMSM EO/IR. The WMSM provides a SITREP to OPCON with a situational assessment and plan of action for boarding and search of TOI-2. The small boat is launched with BT to conduct a boarding of TOI-2.

The cutter maintains encrypted voice communications with the BT and small boat throughout the course of the boarding. The inspection reveals that TOI-2 was engaged in fishing in the U.S. EEZ, a violation of the Magnuson-Stevens Fisheries Conservation and Management Act. The BT works with personnel onboard WMSM to collect and transmit evidence via secure, electronic means to the District, which works with the Regional Concurrence Team to determine the vessel's disposition. WMSM remains on station during the decision making process and, after being granted a Statement of No Objection by the Deputy Commandant for Operations to seize the vessel, escorts it to the nearest US port. The Final SITREP and electronic copy of the case package are forwarded to the Operational Commander.

3.4 Mission Support Scenarios

To meet its maintenance and operational requirements, the WMSM will require support during the following periods:

- Inport
- Underway
- Deployment Port Call

- Drydock/Dockside

Each period is illustrated below using a scenario. These scenarios are used to derive functional support capabilities required by the WMSM. Of the nine possible mission support capabilities (Pier Services, Personnel Support, Equipment Maintenance, Training, Computer Applications/ Terminals, Hotel Services, MWR, Work-life, and Maritime Traditions) that may be required, the capabilities are either determined to be Primary (P), Secondary (S) or not required. Primary Functional Capabilities identify capabilities that are required to perform the mission. Secondary Functional Capabilities identify capabilities that are necessary for optimal mission effectiveness, but do not prevent mission completion.

3.4.1 Inport Period

3.4.1.1 Considerations

The WMSM inport periods are the 6-week timeframe between deployment patrols when the WMSM is back in homeport. These periods are dedicated mission support timeframes when a significant majority of the crew training, equipment repair and maintenance, and personnel support are completed.

The start of the inport process really begins at the end of the previous inport period. An inport period is a well orchestrated schedule of tasks competing for time and workspace onboard the cutter. The support manager will conduct extensive planning to ensure pier space is not exceeded and that long lead time items are ready for the next inport period.

Crew readiness is a critical aspect of inport maintenance period. The crew will complete training, medical check-ups, and other personnel tasks while still receiving enough rest and relaxation (R&R) to ensure they are ready for the next patrol.

3.4.1.2 Functional Capabilities:

The following functional capabilities were determined to be primary or secondary functions for this particular mission:

- Primary: Pier Services, Personnel Support, Equipment Maintenance, Training, Computers

- Secondary: MWR

3.4.1.3 Scenarios:

Two weeks before the return of the WMSM to homeport for an inport maintenance period, the product line manager and cutter level support manager coordinate via emails and collaborative website the planned maintenance and task schedule to ensure all resources are optimally engaged during the period. The depot level and WMSM's supply personnel order needed materials with sufficient time for them to arrive before work is commenced on each respective task. When the

WMSM returns to homeport after a 56-day patrol, shore support greets the cutter upon arrival and assists in establishing pier services. The WMSM inport duty crew assumes the watch, and the off duty crew departs for their stand-down period. As the crew departs, shore support personnel start maintenance work per the schedule. The crew returns and begins their part of the work schedule. The WMSM product line manager and cadre of depot support managers (electronics, HM&E, CWS, etc.) execute the planned maintenance, changing tasks and resources as necessary, to balance all of the topside work, grooms, overhauls, preventative maintenance , and upgrades.

Members of the shore side personnel support give the WMSM crew priority status upon the crew return from stand down period. The medical staff completes initial examinations and begins treatments to ensure ample time for completion before the next patrol. The administrative staff assists crewmembers with completing the extensive paperwork required for pay, dependent care, TAD for training, etc. The WMSM food service personnel continue to provide a variety of hot meals to the permanent crew and on duty watch section.

The WMSM crew undergoes training on multiple levels during the inport period. Some crew members attend training at established civilian, DoD or Coast Guard training facilities as arranged by the ship's Training Officer through the Coast Guard's training infrastructure. The crew begins organizational training from administrative general military training to inport damage control drills.

The inport period closes with a short "prep" week that finalizes all of the readiness support work complete during the inport period. All equipment is placed back in operational status and tested. The crew undergoes a full day of "Fast Cruise" training in which critical patrol evolutions are practiced. The shore support and WMSM support cadre meet to discuss the mission support functions required for the patrol (TAD personnel movements, mail and part forwarding, etc.). The crew begins the pre-deployment stand-down in which crewmembers ensure their personal affairs and families are ready for the approximate two month patrol.

On the day of the deployment, shore support personnel assist the WMSM with "breaking" pier service connections and then regroup to review this inport period and immediately begin planning the next period.

3.4.2 Underway Period

3.4.2.1 Considerations

The underway period is limited in the scope of maintenance activities that can be completed because of operational demands, limited materials, and the lack of specialized tools and skills that are not found onboard the WMSM. Therefore the primary purpose of underway equipment support is to provide limited maintenance to keep systems running and to repair minor casualties on equipment. While underway maintenance is limited, these underway periods offer the greatest challenge to support, especially when casualties occur.

Crew readiness is a critical support aspect when underway. Training on equipment and systems as well as in mission evolutions is emphasized during this period. Physical Fitness activities are

encouraged during off duty hours in order to maintain both physical and mental readiness of the crew.

3.4.2.2 Functional Capabilities:

The following functional capabilities were determined to be primary or secondary functions for this particular mission:

- Primary: Personnel Support, MWR, Training, Computers, Hotel Services
- Secondary: Equipment Maintenance

3.4.2.3 Scenarios:

The WMSM is underway greater than 50 miles from the nearest point of land. Using the centralized web-based maintenance application, the Auxiliary Division Chief reviews the last inport task completion list and the next's week maintenance schedule with the newly reported Division Officer. They focus on the summary remarks entered by the contractor for trends and quality of work of the shop personnel. The senior shop technician enters the room to ask a technical question about one of the current week's tasks. The Chief answers the questions and directs the shop supervisor to ensure that the supplies for the next week's maintenance were received from the centralized supply division as per the schedule and automated request. The shop supervisor departs. Shortly after, he calls to tell the Chief that the electronic supplies have been received.

The Engineer of the Watch (EOW) calls the Chief to report that the electronic sensor on the "break out" cooler is running above the normal range. The Chief notifies her shop supervisor to take an initial look at the cooler before the noon meal. The shop supervisor reports that the compressor appears to be malfunctioning. The Chief directs him to complete the safety tag-out process and informs him that they will fix it following the ship-wide afternoon damage control drill.

Later as the Chiefs eat the noon meal in their Mess, they discuss how the Chief, Master-at-Arms (CMAA) and Chief Cook tasked the "Jack of the Dust" to clean up broken food containers from the break-out room. The Chief Cook and Auxiliary Chief brainstorm if this event is directly linked to the possible compressor issue. Following the afternoon training, the Chief opens an electronic trouble ticket in CM application for the break-out cooler. Within the hour, the division shop supervisor returns to confirm the Chief's theory and reports that liquid from a busted jar tripped an internal breaker for the compressor. The Chief shows the new Division Officer how to close out the trouble ticket by capturing the symptoms, causes, and fix for future use in the application. The Chief and Division Officer then sign-off on the removal of the safety tag for power.

That evening after watching the satellite TV system, the Auxiliary Chief meets up with the division junior E-5 in the training room to review some of his system drawings. The EOW calls to notify her that the automatic start on the NR2 potable water maker is not working. She tells the EOW to contact the shop supervisor for assistance in the lounge where he is watching the

ship-wide movie of the day after his "workout." She also asks the EOW to notify the EO in the fitness room about the problem. After discussing the upcoming operations schedule with OPS, the EO defers work on the automatic start for later in the patrol.
Several hours later, the WMSM receives a report from a nearby MPA that it has located a suspicious vessel. Due to the weather conditions, the MPA cannot identify the vessel or determine if it is carrying bales in its open deck. The MPA passes the TOIs current position, course, and speed to the WMSM. The WMSM determines an intercept vector and navigates darkened ship towards a rendezvous with the vessel. As the ship makes best speed towards the TOI, the flight crew is alerted to report to the hangar, and the ships crew is alerted to prepare the ship for flight quarters.

As the flight crew prepares the aircraft for flight, the ship's crew readies the flight deck and hangar for helicopter rollout. As the hangar door begins to open, it suddenly comes to a stop halfway up. In this position, it will neither go up or nor down. The rollout crew immediately alerts the helicopter control officer (HCO), who notifies the bridge of the malfunction. The EO and the repair team are alerted.

Upon reaching the deck, the repair team inspects the door system, using a laptop containing system diagrams and descriptions for guidance. Within 20 minutes of commencing the troubleshooting, the repair team has located the problem: a faulty door motor. The repair team is able to disconnect the door from the motor. Then, by using a back-up system, they raise the door manually. The helo is rolled out on deck for operations, and the door is closed manually by a member of the deck crew. After the launch, the repair team returns to the engineering spaces to determine how to affect the repair. The EO submits a casualty ticket to the Surface Forces Logistics Center via e-mail.

The next day, a repair representative from the center contacts the EO to advise that the motor is repairable with tools and skill sets that are organic to the ship. He forwards the complete set of instructions for removal of the motor, internal troubleshooting of the motor, and repair directions to the EO. By the end of the day, the motor is repaired, tested, and re-installed in the hangar. The EO sends an electronic after-maintenance-action report to the repair and logistics center, providing feedback on the repair and corrective measures. The casualty and maintenance action is recorded by the center for tracking and future troubleshooting guidance.

3.4.3 Deployment Port Call Maintenance

3.4.3.1 Considerations

Some equipment failures will require additional depot level support. Ashore maintenance support personnel (depot level managers/technicians, manufacturer representatives, etc.) will maximize virtual assistance to the underway WMSM whenever possible. There will be occasions where mission critical repairs must be completed, and maintenance support personnel will travel to meet WMSM in port calls when virtual assistance alone cannot enable the repair. Cutter design will allow for rapid equipment/maintenance access and equipment removal and strike down routes to support a quick maintenance turnaround in a foreign portcall. The geographic region that the WMSM is operating in will greatly affect logistical support and associated costs. It is significantly easier and less expensive to provide support and equipment to

a WMSM that is on a mid patrol break in Key West, FL vice to a WMSM that is operating off the coast of Venezuela when a critical casualty occurs that requires it to make an unscheduled port call.

3.4.3.2 Functional Capabilities:

The following functional capabilities were determined to be primary or secondary functions for this particular mission:

- Primary: Pier Services, Personnel Support, Equipment Maintenance, Computers
- Secondary: MWR

3.4.3.3 Scenarios:

The electronics Division Officer sends out a casualty report on the WMSMs loss of HF radio system and opens a trouble ticket in the CM application. When the WMSM junior enlisted technician followed the online procedural guide for equipment troubleshooting, the report provides an information record. The depot level manager for the HF system sends an email requesting text file output for the equipment's diagnostics program. The Division Officer sends the requested file, and then returns to his administrative duties, entering an Enlisted Evaluation Report (EER) via the CGSWS. A short time later, he receives an email from the depot manager that the manufacturer reviewed the diagnostic file and requires some additional information. The depot level manager also states that her shop had configured the equipment's master baseline and was trying to repeat the problem on shore. They agree upon a "chat session" time later that day.

The Division Officer and shop supervisor technician enters the online chat room with the depot equipment manager and manufacturer representatives. The group completes multiple tests while exploring possible causes. They isolate the problem to a card on the frequency modulator module. The technician pulls the spare module from inventory as another shop technician completes the inventory request through the CM application. They power down the system, slide the "bad" module from the chassis, and slide the new module in place. Upon power up, the HF system immediately faults out. The self diagnostic application highlights a short in the system coupler. The technician opens the coupler box to find blackened connectors. They document the condition found with pictures and update the CM application. The pictures are forwarded to the depot equipment manager and manufacturer. The depot equipment manager arranges for "tech assist" visit at the WMSM next port call in five-days.

The WMSM pulls in to a Coast Guard forward logistics facility for a 3-day port call for replenishment and crew rest. The crew works with the pier facility manager to ensure that the ship is properly connected to shore services. Once water, sewage, phone, data, and electrical shore ties are connected and the ship passes inspection by the XO and Chief Master at Arms (CMAA), liberty is granted to the off duty crew.

A depot level technician and manufacturer representatives meet the WMSM upon arrival and complete the repair with new parts that they brought with them. The depot level technician documents the repair and updates the CM database since it was a depot level repair.

While these repairs are being conducted, other departments take advantage of the port call to procure needed food items and supplies. The Food Services division receives a large order of perishable items including dairy products, fruits and vegetables. Having noticed that the toilet paper and paper towel supplies were being depleted faster than usual, the CMAA asks the Storekeeper to purchase additional paper products during the port call.

After three days of repairs, procuring additional supplies, and enjoying MWR time, the WMSM prepares to get underway. Shore service and husbanding agent fees are reviewed and the proper paperwork is completed; underway preparations are completed; and shore ties are disconnected. The WMSM then gets underway and continues patrolling.

3.4.4 Dry dock/ Dockside Maintenance Period

3.4.4.1 Considerations

Drydock and dockside maintenance periods are planned and executed by the product line manager. These periods are for technical refresh of equipment, extensive overhauls, or specific maintenance required according to long-term preventative maintenance schedules, such as shaft alignments.

3.4.4.2 Functional Capabilities:

The following functional capabilities were determined to be primary or secondary functions for this particular mission:

- Primary: Pier Services, Personnel Support, Equipment Maintenance, Training, Computers
- Secondary: MWR

3.4.4.3 Scenarios:

DCMS coordinates the WMSM upcoming drydock. With FORCECOM's strategic requirements input, DCMS determines which material equipment and systems need to be repaired, replaced, or overhauled based on CM application data (includes any crew concerns), approved engineering change proposals, and life-cycle maintenance cards. The product line manager assigns a project lead who enters all of the work into a schedule, costs out tasks, and ensures Coast Guard Yard resources can complete the desired work.

The WMSM sails into CG Yard for a 2.5 month drydock. The crew spends the first couple of days securing the ship by: moving off to hotel facilities, closing the galley, transporting classified equipment and codes to the Yard's secure storage vaults, and removing items in and around the systems having work done. Following the move off, one-half of the crew is transported back to homeport for training and rest. The remaining crew members assist with the WMSM projects

and complete small, non-interfering projects. A team comprised of WMSM crew from both shifts is established to document and update CM application throughout the period.

After one month, the crew swaps out to ensure rest and training for all members. Upon Yard completion, the crew onloads their equipment and sails back to homeport for a short patrol prep period.

Section 4 - Core Functional Capabilities

4.1 Mission Functionality

The following table is a summary of Primary (P) and Secondary (S) functional capabilities that have been derived from the mission scenarios in Section 3.2. Primary Functional Capabilities identify capabilities that are required to perform the mission. Secondary Functional Capabilities identify capabilities that are necessary for optimal mission effectiveness, but do not prevent mission completion. Capabilities represented with an (X) are either not applicable or do not increase mission effectiveness.

Core Functionality Matrix							
	LMR	DRUG	AMIO	DR	PWCS	SAR	OLE
Sensors	P	P	P	P	P	P	P
Communications	P	P	P	P	P	P	P
C2	P	P	P	P	P	P	P
Intel Ops	S	P	P	P	P	S	S
Small Boat Ops	P	P	P	S	P	P	P
Aviation Ops	S	P	P	P	P	S	P
Boarding Ops	P	P	P	S	P	X	P
Rescue	X	X	P	P	S	P	X
Maneuverability/ Sea Keeping	S	P	S	P	P	P	S
CWS	X	S	S	P	S	X	X
Small Arms	P	P	P	P	S	X	P
Logistics	S	S	P	P	S	S	S
Human Systems	P	P	P	P	P	P	P

Table 1 – Mission Core Functionality Matrix

4.2 Mission Functionality Descriptions

4.2.1 Sensors

The WMSM will employ a variety of sensors to safely navigate in various maritime environments including open ocean as well as harbors requiring strict electronic navigation methods. WMSM's surface search and navigation radars will provide information for collision avoidance and radar navigation. Electro-Optical Infrared (EO/IR) system will assist in safe navigation by providing lines of bearing and day/night surveillance capability.

The WMSM will also use sensors to surveil, detect, classify, identify and track surface and air targets in all weather conditions. The WMSM will be able to detect, classify, and track targets ranging in size from a makeshift raft to large commercial vessels, and air targets as small as a single engine, two seat aircraft. The WMSM's sensors will be fully integrated with the C2 system allowing the cutter to simultaneously detect, track, classify, and identify multiple TOIs and maintain the COP.

4.2.2 Communications

Communication capabilities include the simultaneous transmission, receipt and management of voice and data messages, as well as communications by audible and visual means. The WMSM is expected to communicate with a wide range of groups from civilian boaters to the network centric DoD. The WMSM's communications suite will be used to exchange mission essential information (voice and data) by maintaining near real-time voice and data communications in the clear, protected, and secure modes of operation. The cutter's radios will provide interoperable communications on all frequency bands in support of short and long range communications, including access to government satellite communication systems. The communications suite will provide sufficient circuits in all frequency bands to enable the cutter to exchange information with all mission essential entities simultaneously.

The WMSM's communications suite will provide world-wide data communications including full-time Internet Protocol-based data connectivity to classified and unclassified data networks and the internet. The bandwidth provided will be adequate for all operational and administrative applications and will always provide connectivity. The WMSM's Very High frequency (VHF) Automatic Identification System (AIS) system will be used to improve situational awareness by automatically exchanging navigational and identification information with other vessels. Multi-band radio direction finding equipment will be employed to assist in locating TOI and prosecution of Emergency Position Indicating Radio Beacons (EPIRB).

4.2.3 Command & Control (C2)

4.2.3.1 Tactical Control and Display

The centralized system will be able to fuse information from all organic sensors and external data systems. The tactical system will be used to manage the mission prosecution by the Combat Center personnel. The system will be the link into the greater Coast Guard Common Operating Picture (COP) both providing and extracting data necessary for the CG and WMSM crew to complete the mission. This system will exchange information with other C4ISR systems, CWS systems and SSES systems.

4.2.3.2 Integrated Bridge Navigation System

An integrated bridge navigation system will be used for safely navigating the cutter. The system will be integrated with the ship’s navigation sensors and will utilize an electronic charting and display system with different overlays. The cutter will make use of all federally approved radio navigation systems, providing accurate position and timing information. Installed depth sounding equipment will provide the cutter with water depth information as well as cutter speed. This system will exchange information with other C4ISR and SSES systems.

4.2.4 Intelligence Operations

All-source intelligence fusion support is critical to the effective prosecution of every major maritime homeland security risk scenario and improves overall performance by allowing employment of a limited number of assets towards the greatest threats. The WMSM will be a

forward deployable unit within both the Law Enforcement Community and National Intelligence Community. A shared Coast Guard/DHS/DoD/OGA COP provides significantly improved situational awareness and employment efficiency.

The WMSM will facilitate intelligence contribution/information sharing through the collection and fusion of law enforcement intelligence, Signals Intelligence (SIGINT), Law Enforcement Technical Collections (LETC), Geospatial Intelligence (GEOINT), and Measurement and Signatures Intelligence (MASINT). Increased data exchange bandwidth will ensure this information can be fully integrated with available Intelligence, Surveillance and Reconnaissance (ISR) data to appreciably improve the overall intelligence picture, providing timely, accurate, and insightful all-source intelligence support for national decision makers and tactical and operational commanders. The WMSM's intelligence collection facilities will incorporate the most current U.S. Navy standard SSES architecture to satisfy current specified operational requirements with the ability to accommodate future upgrades. This embarked capability will increase MDA and provide valuable input to the COP.

4.2.5 Small Boat Operations

Small boat operations support almost every facet of the WMSMs operations. Embarked small boats will allow the WMSM to simultaneously board, inspect, interdict, report, seize, and neutralize (vessel-on-vessel UOF) surface TOIs. Not only will the WMSMs small boats serve as a force multiplier, but the small boats will also perform in situations and areas where it is either physically impossible or dangerous for the WMSM to navigate. The WMSM will deploy with, launch/recover, and support all assigned small boats. During the execution of all missions in any environment, the cutter's C4I, communications security, mission planning architecture and connectivity will enable the cutter to effectively, safely and simultaneously control/direct multiple small boats.

Boat handling areas will have the ability to be fully illuminated and will be compliant with Night Vision Device (NVD) operations to permit effective nighttime operations. Boat handling areas will have the capacity to allow small boat launch, recovery, securing, servicing (fuel, electrical, fresh water, etc.), and organizational-level maintenance while underway.

The WMSM will be able to launch and recover small boats in weather conditions up to and including sea state five in the various geographic areas during normal missions that require small boat operations. The WMSM will be configured to easily embark/disembark passengers to and from the small boats without having to recover the boats onboard the cutter.

4.2.6 Aviation Operations

The WMSM will be a Flight Deck Equipped Cutter (FDEC). The cutter's aviation capabilities will provide the flexibility and mission versatility required to effectively perform in a multi-mission capacity. The use of manned and unmanned aircraft (when the technology becomes available) will enhance the cutter's ability to perform the SDCIP culling process; provide the cutter with rapid response, medical evacuation, and vertical replenishment capabilities; and increase law enforcement compliance through AUF.

The WMSM will be able to conduct aviation operations in day and night conditions (including NVG conditions) up to and including sea state five. The WMSM will be able to deploy, maintain, support, protect, control/direct, launch/recover, and pressure fuel (on-deck or in-flight) all assigned aircraft. The flight deck will be capable in size and strength to launch and recover all assigned aircraft up to all variants of the H-60 helicopter for VI/VDEL operations and UAVs for surveillance. Hangar(s) will have the capacity to allow recovery, securing, traversing, hangaring, servicing (fuel, electrical, fresh water, etc.), and the conduct of organizational-level maintenance.

The WMSM will be interoperable with DHS, DoD and OGA fixed wing aircraft providing the cutter wide area coverage enhancing prosecution of TOI in support of all missions.

4.2.7 Boarding Operations

Boarding operations (or Law Enforcement capabilities) are critical for nearly every mission. This capability provides the final prosecution phase of SDCIP process. Boarding operations require a means by which a properly trained and equipped boarding team can be transported to, and embarked upon, a suspect vessel. The WMSM will typically employ a small boat and specialized boarding team to conduct the boarding; however, in high threat environments, the WMSM will be able to deploy MSRT boarding teams via Vertical Insertion. While away from the WMSM, the boarding teams will maintain constant communication and will operate within the command and control authority of the WMSM.

One major aspect of this capability is in the portable gear required for the boarding team. The portable gear, in the post 9/11 environment, is extensive for safety and detection of potential harmful agents. The BT is required to have bullet proof vests and an array of use of force items from non-lethal (chemical irritant and stunning device) to lethal small arms. The BT carries a variety of sensors, from drug scanners/testers to radioactive measurement devices. Some regulatory compliance missions, like LMR, require “kits” of equipment to complete measurement and species identification.

The WMSM will be outfitted for all the portable boarding operations gear and have a designated “LE Gear” stowage onboard the cutter. The WMSM will facilitate the boarding teams’ preparations with a designated locker room for stowage of personal LE gear and room to dress in required PPE for the environment (i.e., dry suits for cold weather environment).

4.2.8 Rescue

The rescue category includes those capabilities for the WMSM to assist other mariners in distress and to be helped should an emergency occur onboard the WMSM. To accomplish this mission, the WMSM will typically engage in the following activities: search, recover people from vessels or the water, fight fire, control flooding, and perform damage control, salvage, tow, and shelter. The WMSM will plan and conduct search and rescue operations in day and night conditions. The WMSM will typically employ its organic aviation or small boat capability in addition to using its onboard surveillance and rescue capabilities to search for mariners in distress and to prosecute a rescue

4.2.8.1 Medical

The WMSM will have a “sick bay” capable of treating injuries up to field surgical procedures to sustain life until the individual can transported to shore. The WMSM will have a CG rated HS (Health Service) technician of proper skill for independent duties. The HS will be supported by other crew members with a lower medical certification (i.e., EMT). The “sick bay” will have data and voice connectivity to shore side medical personnel for consultation on complex matters. Medical personnel will have portable kits able to respond to injuries throughout the WMSM and on board vessel in distress. Other spaces on board the WMSM will have the equipment to be quickly converted into a mass casualty triage center.

4.2.8.2 Damage Control

The WMSM will have self damage control (DC) capabilities through the use of automatic, installed and portable damage control equipment. The WMSM will employ compartment design to prevent the spread of damage throughout the ship. Installed damage control systems will be the first defense for spaces with higher potential of damage (i.e., machinery, galley). Automation will provide rapid sensing of fire, flooding and status of damage control condition (e.g. watertight integrity, fire pumps) and start installed systems while the crew mobilizes to repair parties. The portable damage control gear will be stowed in a Damage Control Repair Locker (DCRL) and distributed throughout the WMSM to prevent the damage in one area causing a loss of all equipment. The dispersed DC parties will coordinate efforts through communications with centralized DC location.

The WMSM crew-served systems will also be used to provide assistance to other vessels in distress due to fire, flooding or other damage control issues. The equipment will be sized and weighted to be carried by individuals and fit in the WMSM small boats without endangering the boat crew.

4.2.8.3 Towing

The WMSM will be capable of towing vessels from GFV size boats up to a 10,000 ton displacement vessel from its stern. The WMSM will have the capability to be towed from the bow. It will have the ability to launch and recover assigned small boat(s) while engaged in towing operations.

4.2.8.4 Water Recovery

When a small boat or aviation asset is not available or favorable, the WMSM will have the capability to recovery personnel directly from the water. This capability includes individuals physically able to use the recovery system and to recover individuals injured or unable to physically assist themselves to the deck, including those in medical stretchers. The WMSM will have a capability to quickly recover mass numbers of individuals from the water in an extreme situation.

4.2.9 Maneuverability/Sea Keeping

4.2.9.1 Sea Keeping/Survivability

The WMSM will have the ability to perform continuous efficient operations (other than replenishment and strike down) through sea state five, limited operation and capability of continuing mission without returning to port for repairs (after the sea subsides) through sea state seven, and survive without serious damage to mission essential systems through sea state eight.

4.2.9.2 Speed

The WMSM's vast operating area and multi-mission nature will require the cutter to effectively operate at a broad range of speeds, providing flexibility for rapid response/intercept, fuel efficient patrolling/transiting, and efficient performance of mission defined tasks (i.e., launch recover aircraft/small boats, towing, etc.). The WMSM will typically operate at six designed speeds: idle, tow, patrol, low transit, high transit, and intercept. *Figure 3* illustrates the estimated typical time spent by the WMSM at each operational speed.

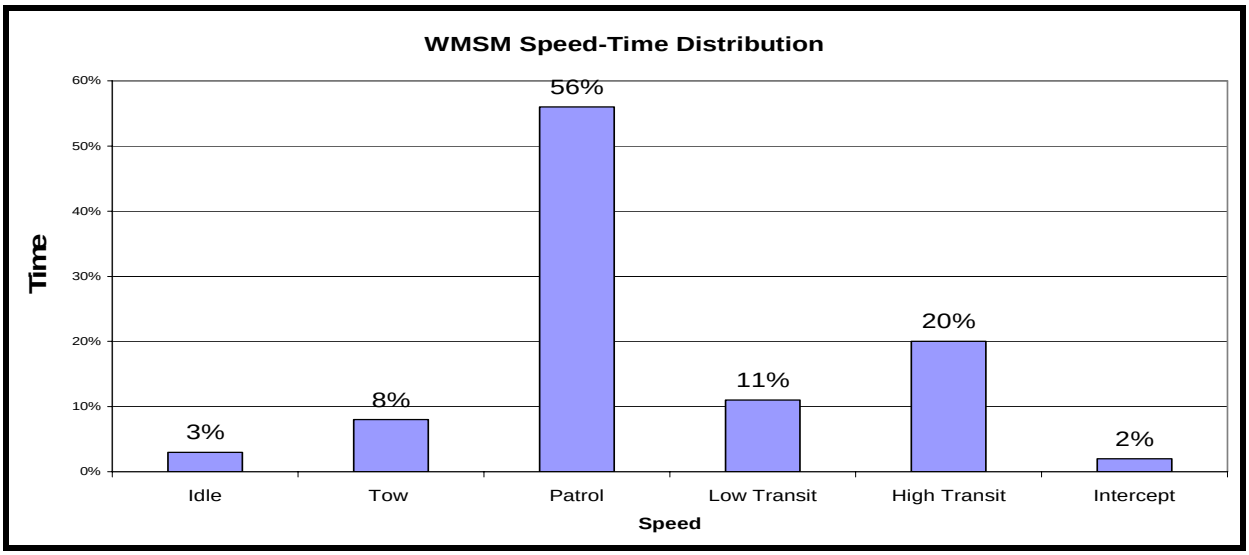

Figure 4 – WMSM Speed – Time Distribution

4.2.9.2.1 Low Transit / High Transit / Intercept

Over the last decade, the Coast Guard has experienced a continuing increase in high speed vessels operating within the Coast Guard's deep water environment. Prior to the use of OTH small boats and AUF, major cutter speed was largely driven by intercepting Go-Fast Vessels (GFV) in support of DRUG and AMIO operations. However, current major cutter speed requirements are driven by the need to escort/intercept military sealift command and commercial shipping traffic in support of PWCS and DR operations. The continually increasing speed of commercial shipping traffic has greatly impacted the effectiveness of major cutter operations. The WMSM's top end speed will enable the cutter to effectively escort/intercept military sealift

command and commercial traffic (at the lower end of their speed capability), in support of assigned missions, with reserve speed to react to potential threats to the cutter or escorted vessel. In addition, the cutter's high transit, low transit and intercept speed will allow for rapid response, reducing transit time and increasing on-scene availability.

4.2.9.2.2 Patrol / Loitering

The majority of the WMSM's time, as illustrated in *Figure 3*, will be spent operating at patrol speed. Patrol, or loitering, speed is designed to optimize fuel efficiency enabling the cutter to extend its active presence within designated patrolling areas. Additionally, the cutter, when not in direct response, will have a low transit speed that will enable it to efficiently transit between operational areas. Both of these speeds are designed to provide the cutter with its far reaching endurance and sustain operational presence.

4.2.9.2.3 Idle / Tow

The WMSM will be able to operate at slow speeds without regularly clutching in/out of the engines and will be designed to effectively and safely perform all associated mission tasks (e.g., launch recover aircraft/small boats, towing, etc.). In addition, the cutter must have the capability to remain at idle for moderate periods of time and maintain station. This will allow the cutter to conduct operations such as unassisted mooring evolutions and Person In Water (PIW) or contraband recovery without concern for engine limitations common with vessels of equivalent size.

4.2.9.3 Range / Endurance

The WMSM's vast AOR and multi-mission responsibilities will require extended transits and sustained on-scene presence. To meet these requirements, the WMSM will have the endurance to meet the project speed profile for the 14 days between refueling with a reserve and a minimum operational range of 7500 NM. In addition, the WMSM will be able to sustain operations at sea for a minimum of 14 days between fuel stops and 21 days between food (chill, freeze, and dry) and stores replenishment.

4.2.9.4 Alongside Maneuverability

The WMSM's propulsion and maneuvering system will allow for safe and effective operations in and around harbor approaches, within close vicinity to other vessels, and alongside piers and quay walls. The WMSM shall have propulsion system for independent mooring and unmooring operations in close quarter proximity to other vessels and navigation hazards.

4.2.10 Combat Weapon Systems (CWS)

The WMSM will have a range of CWS for surface and air engagements, Anti-Terrorism/Force Protection (ATFP), ship self-defense, and law enforcement operations. The larger ship defense and warfare engagement systems will be Navy-Type/Navy Owned (NTNO). The WMSM will be able to provide a tiered self-defense and employment of AT/FP measures that includes all-weather detection, assessment, and engagement of potential adversaries. The multi-tiered

systems will provide options for combat engagements of surface and air hostile contacts from many miles to close in, point defense weapons.

The WMSM's construction will provide combat survivability against a range of threats. The WMSM will provide increased protection for small caliber weapons and shrapnel fragmentation around the bridge, Combat Center (CC), and magazine spaces. The cutter will not have explosive or underwater shock hardening. In addition, the cutter will have an uninterruptible power supply to allow vital combat, C4ISR, and damage control systems to continue to operate in the event of power loss. It will have combatant type damage control compartment design to increase survivability during combat operations.

The WMSM will have the minimal design feature and portable equipment with stowage to allow it to escape from a Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) or Toxic Industrial Chemical (TIC) contaminated environment. The WMSM will not have the capability to operate for any sustained period of time within a CBRNE or TIC environment.

The WMSM will have the capability to carry small arms and ammunition for all LE missions. The armory will have capability to clean and perform minor repairs for CG issued personal defense side arm up to .50 caliber machine gun/sniper rifle. Dispersed small arms ready service lockers will hold special purpose crew served weapons (e.g., airborne UOF) allowing for quick access during mission execution.

4.2.11 Mission Logistics

Mission logistics is a specialized category for logistics that are an integral part of the operation.

4.2.11.1 Detachment Support

The WMSM will have the capability to support mission teams in addition to the permanent crew. These detachments will include aviation, intelligence or LE detachments that support a mission over some or all the patrol. The detachments will also include special mission teams (e.g., MSRT) that are brought aboard in greater number but for a short period of time for a specific objective.

4.2.11.2 At-Sea Holding Platform

The WMSM will have specific capabilities to facilitate the holding of a large group of migrants or survivors of a SAR case including the ability to supply basic health, shelter, and food requirements. The individuals would not “live” amongst the crew. The WMSM will have the ability to setup a temporary shelter on the weather decks for the group. There will be sanitary facilities within the cutter’s design that will allow for proper facilities for the group without the group proceeding through the interior spaces. The galley will have the ability to store and prepare simple meals to feed the group up to three times a day in addition to crew meals.

4.2.11.3 Underway Refueling & Replenishment

The WMSM will be able to receive underway replenishment of fuel and water from USN/NATO/Allied Navy designated vessels. In addition, the WMSM will receive underway replenishment of munitions and provisions directly from USN/NATO/Allied Naval vessels or by Vertical Replenishment (VERTREP) from embarked or shore based helicopter(s).

The WMSM will be able to fuel at sea Coast Guard/Navy vessel smaller in size (e.g., patrol boat class).

4.2.12 Human Systems

The WMSM's Human systems will enhance the effectiveness of the cutter's ability to complete all missions. The WMSM will incorporate a crew sized and trained for the mission expected to be executed by the cutter. Operational training for individuals and teams will be conducted through a variety of means and measured during regular, evaluated training periods. The WMSM sub-systems will be designed to incorporate Human Factor Engineering principles to ensure items like workload balance and situational awareness. Technology will be leveraged to reduce crew size and workload. Safety standards will be designed throughout the ship to protect the crew in situations ranging from routine equipment usage to mission execution in extreme environmental conditions. The WMSM will promote Quality of Life through habitability concerns in design. Additional crew habitability includes exercise facilities, laundry, entertainment, lounges, training, and specialized gear stowage.

4.3 Mission Support Functional Capability Descriptions

4.3.1 Personnel Support

The WMSM will have basic personnel support capabilities because of the ability to operate miles from shore support for long periods of time. The WMSM will have basic medical services to maintain health. The WMSM will have full food service capabilities to provide the crew a variety of healthy, hot meals. The WMSM will have limited military administrative services. The WMSM's supply procurement capabilities will be limited to organization parts and service procurement.

A shore support command will assume personnel support responsibilities that are beyond the capabilities of WMSM's crew size and equipment. The shore support command will have the role of primary medical provider and ensure crew readiness is a priority during inport periods to minimize the number of crew members unfit to sail for deployments. The shore support command will provide full military administrative services (i.e., pay, vehicle decals, PCS documentation) to allow WMSM's crew members to focus on the mission when deployed and not worry about whether his/her pay checks will arrive. The shore support command will procure the bulk of WMSM's parts and services having full access to the extensive acquisition network and larger contracting warrant.

4.3.2 Training

The WMSM's training and personnel performance will include a comprehensive mix of shore-based, e-learning, and on-the-job learning. The CG training infrastructure and personnel service centers will ensure assigned personnel have or receive the majority of the training before arrival to the cutter.

When in homeport, the crew will receive OJT, shore-based training, CBT, and internet based training to meet their CG and functional training requirements. When underway, the crew will primarily focus on functional training via OJT, but will also use internet based and computer-based training to meet their individual training requirements.

Occasionally, during a port-call, the crew will undergo specific mission oriented training as a whole, such as CG-provided fisheries training prior to conducting an LMR patrol. Otherwise, the crew will typically rely on the same training methods as when underway. For more advanced, specialized, or long-term training, a crewmember will be sent TAD to a shore-based training facility. Cutter-wide training and inspections (e.g., Tailored Annual Cutter Training) shall be carried out in accordance with CG policy, scheduled by OPCOM or FORCECOM.

4.3.3 Equipment Maintenance

Equipment maintenance is essential to maintain the WMSM's material resources for safe, effective mission execution. The crew will conduct basic maintenance while the WMSM is deployed in an operational status. The product line manager will lead a coordinated effort between depot and cutter maintenance tasks while in a normal inport period.

The product line manager will coordinate with equipment managers for upgrades, casualty repairs, and maintenance availability at a drydock/dockside servicing. The depot level managers will support the crew when underway as a link between shoreside technical expertise (CG or contractor) and the crew.

Maintenance, Weapons, and Electronics support teams will be located ashore and will be staffed by Coast Guard personnel. They will be used to assist ship's personnel in completing preventative and organizational level maintenance.

4.3.4 Computer Applications/Terminals

The use of computer applications and/or web base application for mission support is extensive and growing. Every division at every rank level will require exclusive access to computer terminals in each workday for planning, documenting tasks, administrative workload, etc. An administrative computer network is required for large stowage of information and local databases. Due to the criticality of information, an automatic backup system will duplicate, or backup, specified data files at shore command over a connection to the CGDN+.

4.3.5 Pier Services

The WMSM's shore side support will require pier structure and services for adequate maintenance and ability to moor the WMSM. The pier shall be able provide all hotel services for the ship's system to shut down for repair and/or maintenance. The pier shall be able to support large specialized equipment required to work on the WMSM including cranes, fuel/oil sources, and forklifts. The pier will have functions to assist in connecting hotel services and computer/phone connections.

4.3.6 Hotel Services

The WMSM will have basic hotel services to provide a quality of life for the crew members on board. The WMSM will provide sufficient electrical power for HVAC systems for environmental control and personal equipment. The WMSM will have the ability to provide power externally from the cutter for disaster relief bases or local bases (e.g., Sector Key West following a hurricane). The WMSM will "make water" in ample quantity and quality for drinking, bathing, aircraft maintenance, and sanitary cleaning. The WMSM will have sewage system capabilities for the crew and any large group (e.g., migrants). System design and capability should allow for zero discharge during lengthy unsupported harbor operations. The WMSM will have ample storage for consumable items for sanitary reasons (e.g., toilet paper, cleaning supplies) for 30 days and dry storage capacity of at least 45 days.

4.3.7 Work / Life

The WMSM will have dedicated capabilities to maintain a healthy crew throughout their tour onboard. The WMSM will have a fitness center of cardio and strength training for crew use while at sea. The WMSM will maintain morale, welfare, & recreation (MWR) services of equipment and ship-wide entertainment system for the movie account and the satellite television system.

The supporting shore command will provide further MWR services for their area of responsibility for both homeported WMSMs and visiting WMSMs during port calls.

4.3.8 Maritime Traditions

The very nature of the WMSM being a military and sea-going vessel requires in essence certain traditional mission support capabilities. These capabilities support the daily accounting of personnel to ensure no "overboard personnel". The WMSM will have separate berthing and messing accommodations for the rank structure of the personnel onboard. The WMSM will have a ship's bell, a system for public affairs and the ability to host dignitaries in finest of military tradition which includes the ability for a ceremonial "Quarterdeck" at multiple locations.

4.4 Mission Support

4.4.1 Maintenance Cycle Timeline

The WMSM Class service cycle, as scheduled by operational commanders will consist of alternating periods of Operating (ALPHA) Status, and Maintenance (CHARLIE) Status. A single service cycle will extend over two years, due to scheduled drydocking shipyard availabilities planned for alternating years. A training availability or refresher training will be scheduled bi-annually as described in *Section 2.2.2*.

4.4.2 Metrics Tracking

WMSM shall utilize CG metrics systems/procedures for tracking equipment, training, and personnel to keep the command and support structures advised of the cutter's operational readiness. Users shall have the capability to update metrics tracking systems while underway and inport.

Appendix B – Glossary of Terms

Climate - The climates described in the deep water AOR are based on the Koppen climate classification system.

MARSEC Levels - are set to reflect the prevailing threat environment to the marine elements of the national transportation system, including ports, vessels, facilities, and critical assets and infrastructure located on or adjacent to waters subject to the jurisdiction of the U.S.

- **MARSEC Level 1** means the level for which minimum appropriate security measures shall be maintained at all times. MARSEC 1 generally applies when HSAS Threat Condition Green, Blue, or Yellow are set.
- **MARSEC Level 2** means the level for which appropriate additional protective security measures shall be maintained for a period of time as a result of heightened risk of a transportation security incident. MARSEC 2 generally corresponds to HSAS Threat Condition Orange.
- **MARSEC Level 3** means the level for which further specific protective security measures shall be maintained for a limited period of time when a transportation security incident is probable, imminent, or has occurred, although it may not be possible to identify the specific target. MARSEC 3 generally corresponds to HSAS Threat Condition Red.

Go-Fast Vessel - smaller, cigarette-style open boats that can operate in excess of 40 knots and can carry more than two tons of cargo.

Maritime Domain Awareness - a mission-enabling capability that is defined as information and knowledge of maritime elements and activities that affect the safety, security, economy, or environment of America or its citizens, combined with an ability to act.

Appendix C – Acronyms

ADCON	Administrative Control
AIS	Automatic Identification System
AMIO	Alien Migrant Interdiction Operations
A_o	Operational Availability
AOR	Area of Responsibility
ASCM	Anti-Ship Cruise Missile
ASM	Anti-Ship Missile
ASM	Aviation Special Missions
AT/FP	Anti-Terrorism/Force Protection
AUF	Airborne Use-of-Force
BCA	Business Case Analysis
BSF	Brief Stop for Fuel
BT	Boarding Team
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance
CBRNE	Chemical, Biological, Radiological, Nuclear and Explosive
CBW	Chemical and Biological Warfare
CD	Counter Drug
CFIVSA	Commercial Fishing Industry Vessel Safety Act
CGSD	Coast Guard Support Date
CIC	Combat Information Center
CIWS	Close-In Weapon System
CMP	Cutter Maintenance Plan
CMWDS	Counter Measures Wash Down System
CNO	Chief of Naval Operations
COCOM	Combatant Commander
COMMPLAN	Communications Plan
CONOPS	Concept of Operations
COP	Common Operational Picture
CPS	Collective Protection System
CTU	Commander Task Unit
DAFHP	Days Away From Home Port
DC	Damage Control
DCO	Deputy Commandant for Operations
DHS	Department of Homeland Security
DoD	Department of Defense
DOG	Deployable Operations Group
DR	Defense Readiness
DRUG	Drug Interdiction
EA	Electronic Attack
EEZ	Exclusive Economic Zone
EMP	Electromagnetic Pulse
EO/IR	Electro-Optical Infrared
EOSL	End of Service Life

EPIRB	Emergency Position Indicating Radio Beacon
EPSS	Electronic Performance Support Systems
ES	Electronic Surveillance
ESC	Executive Steering Committee
FAS	Fuel at Sea
FDEC	Flight Deck Equipped Cutter
FPCON	Force Protection Condition
GFV	Go-Fast Vessel
GMDSS	Global Maritime Distress & Safety System
HF	High Frequency
HIV	High Interest Vessel
HSI	Human Systems Integration
HSK	Helicopter Support Kit
HVAC	Heating, Ventilation, and Air Conditioning
HVU	High-Value Unit
ICC	Intelligence Coordination Center
ICE	Immigration and Customs Enforcement
ICP	Inventory Control Points
ID	Identification
ILS	Integrated Logistics Support
ILSP	Integrated Logistics Support Plan
IMINT	Imagery Intelligence
IRB	Investment Review Board
ISI	Initial Safety Inspection
IUU	Illegal, Unreported, and Unregulated
KR	Key Resources
LANTAREA	Atlantic Area
LMR	Living Marine Resource
LORA	Level of Repair Analysis
MARSEC	Maritime Security
MASINT	Measurement and Signatures Intelligence
MAT	Maintenance Assessment Team
MCI	Maritime Critical Infrastructure
MDA	Maritime Domain Awareness
MEA	Maintenance Engineering Analysis
MNS	Mission Need Statement
MOA	Memorandum of Agreement
MPA	Maritime Patrol Aircraft
MPB	Mid-Patrol Break
MSAM	Major Systems Acquisition Manual
MSRT	Maritime Security Response Team
NAVAIR	Naval Air Systems Command
NMFS	National Marine Fisheries Service
NSSE	National Security Special Event
NT/NO	Navy-Type/Navy Owned
NVD	Night Vision Device

OBT	Objective Based Training
OGA	Other Government Agency
OJT	On-the-Job Training
OLE	Other Law Enforcement
ONS	Operation Neptune Shield
OP	Operational Picture
OPAREA	Operational Area
OPC	Offshore Patrol Cutter
OPCON	Operational Control
OPTASK	Operational Tasking
ORD	Operational Requirements Document
OSC	On-Scene Commander
OTH	Over-the-Horizon
OV	Operational View
PACAREA	Pacific Area
PBLS	Performance Based Logistics System
PIW	Person(s) In Water
PPE	Personal Protective Equipment
PQS	Personnel Qualification Standards
PWCS	Ports, Waterways, and Coastal Security
R&A	Rescue and Assistance
RAS	Replenishment at Sea
RCM	Reliability-Centered Maintenance
RCS	Radar Cross Section
RFP	Request for Proposal
R_o	Operational Reliability
SAG	Surface Action Group
SAR	Search and Rescue
SATCOM	Satellite Communication
SCC	Sector Command Center
SDCIP	Surveillance, Detection, Classification, Identification, Prosecution
SEI	Specific Emitter Identification
SNO	Statement of No Objection
SRD	Ship Repair Detachment
S/SCIF	Shipboard/Sensitive Compartmented Information Facility
SSES	Ship’s Signals Exploitation Space
SU	Surface Unit
TACON	Tactical Control
THREATCON	Threat Condition
TIC	Toxic Industrial Chemical
TOI	Target(s) of Interest
TSC	Theater Security Cooperation
TU	Task Unit
UHF	Ultra High Frequency
UNB	Unannounced Nighttime Boarding
UOF	Use-of-Force

VDEL	Vertical Delivery
VHF	Very High Frequency
VI	Vertical Insertion
VERTREP	Vertical Replenishment
VUAV	Vertical Take Off and Land Unmanned Aerial Vehicle
WLM	Coastal Buoy Tender
WMEC	Medium Endurance Cutter
WMSL	Maritime Security Cutter, Large
WMSM	Maritime Security Cutter, Medium
WPB	Patrol Boat
WPC	Coastal Patrol Boat
WQS	Watchstation Qualification Standards
WWP	Windward Passage

Appendix D – References

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