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14. ABSTRACT This paper examines the current drive to establish a comprehensive Maritime Domain Awareness (MDA) capability for the United States and the role of the Department of Defense (DoD) in this initiative, with a focus on the specific responsibilities for MDA that should be assigned to DoD. The potential for attack of the United States via the Maritime Domain using a commercial vessel carrying a weapon of mass destruction is very real; when coupled with the current shortfall in U.S. MDA capability, the impetus for improving MDA is made apparent. The MDA capability necessary to provide adequate defense against such threats requires an extensive system of sensors and intelligence collection as well as dedicated fusion and analysis to build a common operational picture with which effective decisions regarding maritime threats can be made. The U.S. Coast Guard has taken the lead in establishing U.S. MDA capability. However, DoD has specific responsibilities for Homeland Security and Homeland Defense that mandate a significant role in establishing MDA for the United States. As a result of its global reach, resources, and specific responsibilities, DoD should be required to provide for information and intelligence collection in the forward regions in support of the MDA process, non-deniable vessel surveillance, detection, and tracking in the maritime approaches to the United States, and dedicated analysis and fusion of data to help build the common operational picture that will be the product of the MDA system.					
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**NAVAL WAR COLLEGE
Newport, R.I.**

**DEPARTMENT OF DEFENSE RESPONSIBILITY FOR
MARITIME DOMAIN AWARENESS**

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

Signature:_____

16 May 2005

ABSTRACT

This paper examines the current drive to establish a comprehensive Maritime Domain Awareness (MDA) capability for the United States and the role of the Department of Defense (DoD) in this initiative, with a focus on the specific responsibilities for MDA that should be assigned to DoD.

The potential for attack of the United States via the Maritime Domain using a commercial vessel carrying a weapon of mass destruction is very real; when coupled with the current shortfall in U.S. MDA capability, the impetus for improving MDA is made apparent. The MDA capability necessary to provide adequate defense against such threats requires an extensive system of sensors and intelligence collection as well as dedicated fusion and analysis to build a common operational picture with which effective decisions regarding maritime threats can be made. The U.S. Coast Guard has taken the lead in establishing U.S. MDA capability. However, DoD has specific responsibilities for Homeland Security and Homeland Defense that mandate a significant role in establishing MDA for the United States. As a result of its global reach, resources, and specific responsibilities, DoD should be required to provide for information and intelligence collection in the forward regions in support of the MDA process, non-deniable vessel surveillance, detection, and tracking in the maritime approaches to the United States, and dedicated analysis and fusion of data to help build the common operational picture that will be the product of the MDA system.

PREFACE

The author would like to acknowledge the assistance of Commander Norman Selley, USCG of U.S. Northern Command, and Commander Jim Robbins, USCG and CAPT Gary Sessel, USNR of the U.S. Coast Guard Maritime Domain Awareness Program Integration Office for providing me with background information necessary to write this paper. These officers are among the many dedicated people working diligently to establish a comprehensive U.S. MDA capability for the benefit of U.S. national security.

Introduction

On December 21, 2004, the President of the United States signed National Security Presidential Directive-41/Homeland Security Presidential Directive-13 (NSPD-41/HSPD-13), which directed the Department of Defense (DoD) and the Department of Homeland Security (DHS) to develop a National Strategy for Maritime Security within 180 days. One of the specific actions to be taken in support of this objective was to develop a plan to improve “Maritime Domain Awareness (MDA).”¹ Regarding improvement of MDA capability, NSPD-41/HSPD-13 stated:

It is critical that the United States develop an enhanced capability to identify threats to the Maritime Domain as early and as distant from our shores as possible by integrating intelligence, surveillance, observation, and navigation systems into a common operating picture accessible throughout the United States Government.²

The challenge of and need for improving the MDA capability of the United States is evident in both the scope of the problem and the potential threat presented. The Maritime Domain is a vital catalyst to U.S. economic prosperity. Over ninety-five percent of overseas trade enters through U.S. ports.³ This level of activity is expected to grow. By the year 2020, global legal maritime trade is expected to be three times that of 1999 with a dramatic rise in the number of container vessels, tankers, cruise ships, and ferries operating in U.S. waters.⁴ Following the attacks of September 11, 2001, it became very apparent that the Maritime Domain, in addition to being a substantial source of power for the U.S. economic engine, was also a critical vulnerability to U.S. security. The situational awareness pertaining to activity within the Maritime Domain on the part of the U.S. was recognized to be poor due to the large number of vessels and breadth of area involved coupled with the lack of an integrated system of sensors, correlation tools, and analytical resources. The United

States has 95,000 miles of shoreline and its Economic Exclusion Zone (EEZ) is comprised of 3.4 million square miles of open ocean area.⁵ It is estimated that 5,000 commercial vessels are within 2,000 nautical miles of the U.S. coast at all times.⁶ Every year, several ocean-going commercial vessels vanish due to sinking, intentional scuttling, or piracy.⁷ It is clearly within an organized terrorist group's capability to acquire an ocean-going vessel and use it to transport, and perhaps deliver, a weapon of mass destruction into one of the 185 deepwater ports in the United States.⁸ The aberrant behavior of such a vessel would probably not be recognized due to a lack of awareness of activity within the Maritime Domain. Fundamentally, there is no North American Aerospace Defense Command (NORAD) equivalent system for the United States in the Maritime Domain.⁹

The recognition of this vulnerability in U.S. security resulted in a drive to improve maritime situational awareness – otherwise known as “Maritime Domain Awareness.” The DHS, particularly the U.S. Coast Guard, has led the initiative to improve U.S. MDA capability.¹⁰ The U.S. Coast Guard has acknowledged that DoD has a significant role regarding MDA capability for the United States.¹¹ However, the specific responsibility of DoD in providing for MDA has not been defined.

This paper will analyze the current status of the strategy for improving the MDA capability of the United States in support of NSPD-41/HSPD-13, focusing on the role of DoD. Based upon this analysis, recommendations will be made regarding the assignment of specific responsibilities for MDA for the United States to DoD. In particular, this paper will show that there are several tasks with respect to the Maritime Domain that should be assigned to DoD to include responsibilities for surveillance, vessel detection and tracking, intelligence and information collection, and analysis and fusion of collected data.

Evolution of MDA Concepts and Desired MDA Capability End-State

DoD and DHS had been working to develop an improved MDA capability before the issuance of NSPD-41/HSPD-13. Prior to the terrorist attacks of September 11, 2001 various studies, including those done by the Office of Naval Intelligence (ONI) and the Hart-Rudman Commission, identified numerous threats to U.S. via the Maritime Domain, including proliferation of weapons of mass destruction, terrorist attacks against ports and coastal population centers, migrant and drug smuggling, and environmental degradation.¹² The attacks of September 11, 2001 gave great impetus to responding to these threats as evidenced by border and transportation security being a critical mission area within the National Strategy for Homeland Security.¹³ The issuance of this strategy document resulted in various initiatives to improve maritime security that are described in the U.S. Coast Guard's Maritime Strategy for Homeland Security, one being the need for comprehensive MDA.¹⁴ This need was widely recognized, culminating in the formation of several interagency groups to address the requirement. A national MDA summit was held in May of 2004 and defined the concept of MDA to be:

... the effective understanding of anything associated with the global Maritime Domain that could impact the security, safety, economy, or environment of the United States.¹⁵

This definition was subsequently adopted in NSPD-41/HSPD-13, which also includes the following definition for Maritime Domain:

... "Maritime Domain" means all areas and things of, on, under, relating to, adjacent to, or bordering on a sea, ocean, or other navigable waterway, including all maritime-related activities, infrastructure, people, cargo, and vessels and other conveyances.¹⁶

In 2004, the U. S. Coast Guard established the MDA Program Integration Office. A MDA Senior Steering Group (MDASSG) comprised of DoD and DHS representatives was

formed and first met in September 2004.¹⁷ Additionally, in 2004 the U.S. Coast Guard started drafting a Maritime Domain Awareness Concept of Operations.¹⁸

NSPD-41/HSPD-13 formalized the requirement for improved MDA as well as the responsibility of the MDASSG to produce the plan to achieve this goal.¹⁹ This policy directive was issued as a result of U.S. MDA capability being far short of what is required to assure U.S. security. Subsequently, DoD and DHS jointly drafted a National Plan to Improve Maritime Domain Awareness and the U.S. Joint Chiefs of Staff directed the drafting of the joint publication Joint Doctrine for Homeland Security.²⁰

The above MDA-related documents describe a desired end-state for the MDA capability of the United States using several criteria. In summary, the MDA capability should:

- Provide the ability to:
 - Persistently monitor vessels, craft, cargo, organizations, people, and identified areas of interest within the global maritime environment.
 - Access and maintain data on vessels, facilities, and infrastructure as well as MDA-related mission performance within the global maritime environment.
- Permit analysis and dissemination of information on the global maritime environment to decision makers.²¹

Regarding achieving this end-state, the priority is the homeland and approaches of the United States and unique national security requirements in the forward regions.²²

MDA Contribution to Homeland Security and Homeland Defense

The strategic objectives for Homeland Security (HS) for the United States are to prevent terrorist attacks, reduce vulnerability to terrorism, and to minimize damage and

promote recovery from attacks that do occur. DoD contributes to Homeland Security through three mission areas: its military actions overseas, Homeland Defense (HD), and Civil Support (CS).²³ HD is defined as "...the protection of U.S. territory, sovereignty, domestic population, and critical infrastructure against external threats and aggression."²⁴ Simplified, HD is action taken by DoD to defend U.S. territory.

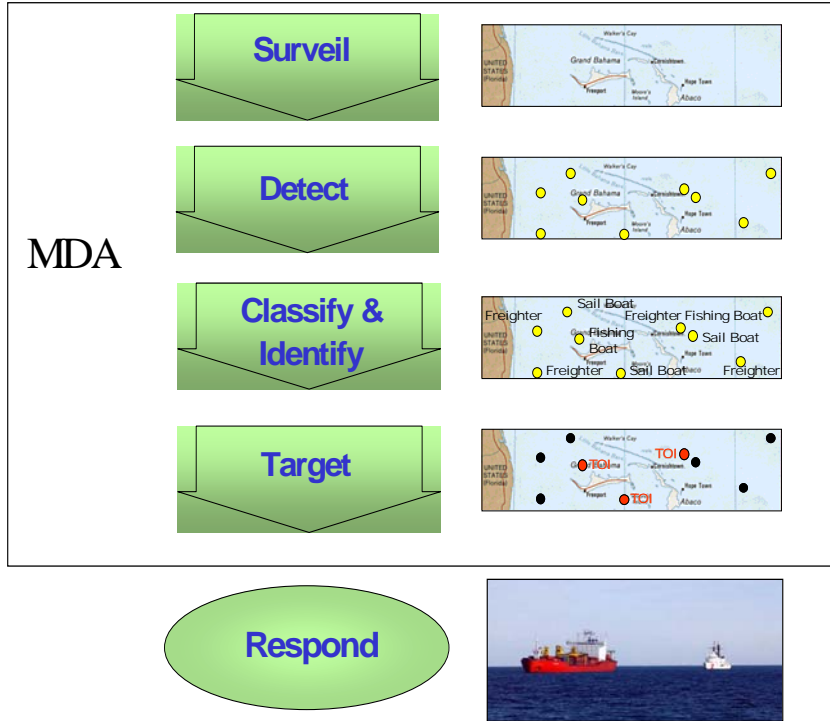
MDA capability would provide warning of a threat, permitting action before the threat reached the territorial waters of the United States. This would be a case of DoD executing its HD mission outside U.S. territory. Furthermore, MDA could also provide warning of a threat that may require DoD to exercise its HD responsibility within the United States.

The MDA end-state capability is envisioned to include awareness of many facets of activity in the Maritime Domain, including safety, economic, and environmental concerns.²⁵ The scope of this end-state extends beyond that of the specific requirements of DoD's HS and HD functions, including elements that are within the realm of civil authority and responsibility, particularly that of the U.S. Coast Guard.

For HS and HD functions, the MDA capability should provide the ability to surveil desired ocean areas, detect and track vessels which could potentially be threats to the homeland, and provide a means to classify and identify these vessels, their cargo, and their personnel sufficiently to permit evaluation and targeting of those that warrant further investigation via reconnaissance or interdiction. This "MDA Spectrum" as envisioned in the draft document Maritime Domain Awareness Concept of Operations is provided as Figure 1.²⁶

Figure 1²⁷

MDA Spectrum



The current U.S. MDA capability is well short of this envisioned end-state, making the Maritime Domain a significant vulnerability with respect to HS and HD.

MDA Capability Structure

The contribution of MDA to HS and HD would be to provide a means in which maritime threats would be identified in sufficient time to permit action before the threat reached U.S. territorial waters. Inherent in the HS and HD functions of MDA is a layered defense in depth structure, in which the degree of fidelity of the MDA Spectrum is determined by the type of vessels coupled with their range to the U.S. coast.²⁸

Vessel Regimes

Defining MDA capability with respect to vessel characteristics permits establishing requirements and priorities in providing for a layered defense. There are three basic categories of vessel that are of concern with respect to HS and HD functions: compliant, non-transparent, and non-compliant.

A compliant vessel is one that observes the regulations of the International Maritime Organization (IMO) and U.S. or other governments regarding documentation, inspections, filing of Notice of Arrival (NOA), and etcetera, and carries a device that readily permits tracking of its movements. Non-transparent vessels are those that comply with applicable regulations but due to the regulatory regime in place have unknown cargo or personnel or are not readily tracked. Non-compliant vessels are those that do not comply with regulatory requirements.²⁹

Clearly, a compliant vessel is one that can have the nature of its cargo or personnel evaluated early and its movements will be predictable and verifiable. A non-compliant vessel, on the other hand, comprises a much greater risk to the security of the United States since it is much more difficult to detect, track, classify, and intercept and therefore, is one that must be identified by the MDA capability.³⁰ Non-transparent vessels are of concern due to their being a maritime security vulnerability and consequently must also be identified by the MDA capability.

Geographic Regions

Both draft documents National Plan to Improve Maritime Domain Awareness and Maritime Domain Awareness Concept of Operations divide the Maritime Domain into three regions to facilitate a layered structure:

- The forward areas, which are defined as those greater than 2,000 nautical miles from the U.S. coast or within the jurisdiction of another country.
- The approaches, which are defined as the portion of the Maritime Domain within 2,000 nautical miles of the U.S. coast.
- The homeland, which is the portion of the Maritime Domain comprised of the territorial and internal waters of the United States.³¹

Additionally, both draft documents define terms describing the collective regions of homeland and approaches.³² This paper will use the term “Maritime Detection and Identification Zone (MDIZ)” from the draft document Maritime Domain Awareness Concept of Operations to refer to the combined region of the homeland and approaches.³³

Performance Requirements

Within each geographic region, the requirement for fidelity of the MDA Spectrum is different based upon the relative threat posed. Consequently, as the range to the U.S. coast decreases, the requirements for size and type of vessels to be detected, tracked, classified, and identified become more stringent.³⁴ Outside the MDIZ, information gained from international partners per agreements and IMO regulatory requirements, surveillance and tracking systems, and intelligence collection will be put into the MDA system to provide for detection of threats before they reach the MDIZ as well as to provide warning of security concerns outside the MDIZ.³⁵ Within the MDIZ, a key feature of the MDA capability must be a non-deniable means of detecting, tracking, classifying, and identifying vessels due to the threat posed by non-transparent or non-compliant vessels. Consequently, the Maritime Domain Awareness Concept of Operations specifies the MDIZ as the area within which non-deniable vessel detection, tracking, and classification must occur.³⁶

The merit of the selection of the size of the MDIZ and the MDA capabilities required within each geographic region could be argued, but this paper addresses organizational relationships to achieve unity of effort rather than capabilities. Therefore, this paper is not concerned with the selection of these criteria, nor the means by which the desired MDA capability will be achieved.

MDA Common Operational Picture

The output of the MDA capability in its end-state will be a Common Operational Picture (COP).³⁷ The COP will not be a single picture; rather, it will be an information grid which will provide tailored information to appropriate agencies.³⁸

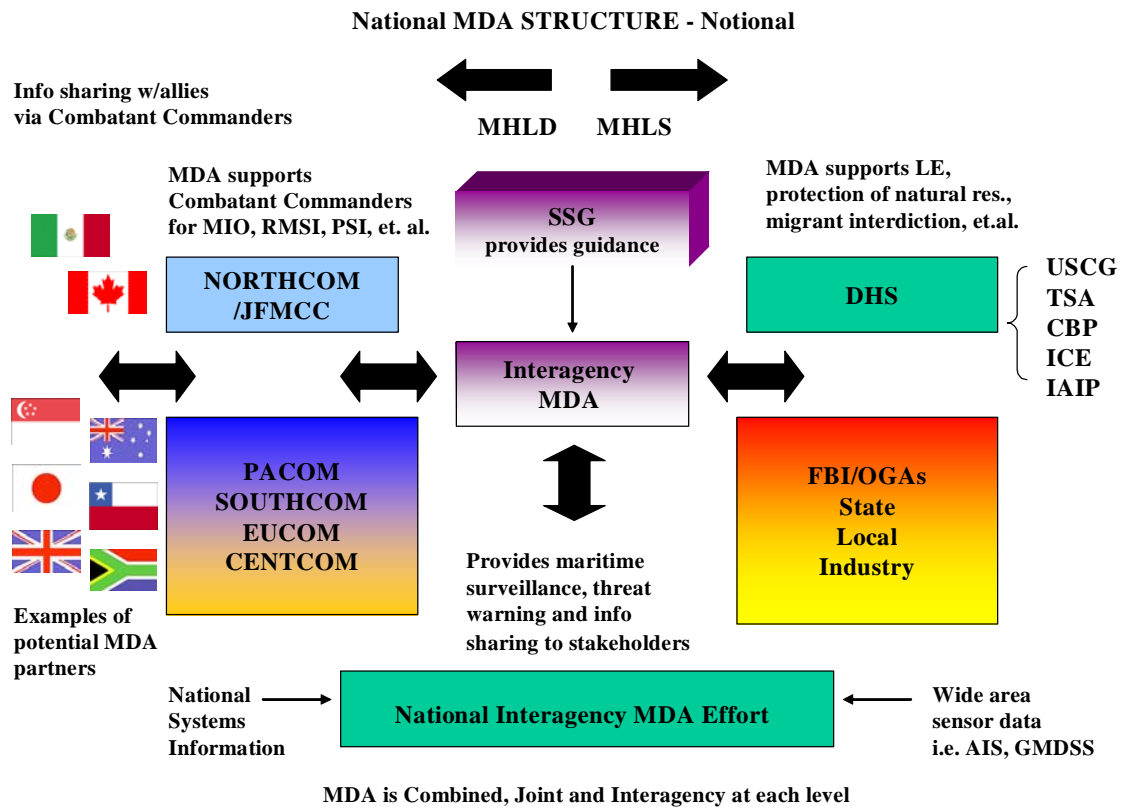
This envisioned MDA capability will require establishment of an architecture of interoperable systems amongst U.S. government agencies and international partners. Currently, within the U.S. government several agencies, including DoD, have their own COP system architectures which are not compatible with others, precluding the development of one COP. Presently, the intention is to adopt the DoD architecture within the U.S. government as the common standard for the MDA system. Information sharing between the U.S. government and parties in the international government and private sector must also be improved.³⁹

In addition to a common architecture, an effective MDA COP will require a clearly defined process to collect, analyze, correlate, fuse, interpret, and disseminate data, intelligence, and information in a manner that permits identification of threats as early as possible to allow for adequate decision making and response to mitigate risk.⁴⁰ Currently, this process is envisioned to occur at the National Maritime Intelligence Center (NMIC) as well as the U.S. Coast Guard's Maritime Intelligence Fusion Centers (MIFC) on each coast.⁴¹

NMIC includes ONI and the Intelligence Coordination Center (ICC), which are U.S. Navy and U.S. Coast Guard organizations, respectively, that are collocated in Suitland, Maryland.⁴²

The fused COP will be analyzed to identify vessels that are of concern due to their non-compliant or non-transparent nature, the risk presented by their cargo or personnel, or their anomalous behavior. The output of this analysis will be used to make decisions regarding action to be taken.⁴³ A notional structure for the MDA process as envisioned in the draft document Maritime Domain Awareness Concept of Operations is provided as Figure 2.

Figure 2⁴⁴



DoD Role in Providing MDA

As discussed above, U.S. MDA capability is expected to provide for both HS and HD. In addition, an improved MDA capability would facilitate better response to a large number of threats that are outside the realm of direct aggression, including drug smuggling, illegal immigration, organized crime, and environmental degradation. These security issues are U.S. Coast Guard responsibilities.⁴⁵ As a result of its being incorporated into DHS as well as its responsibility for addressing a multitude of maritime issues, the U.S. Coast Guard has been designated the Lead Federal Agency (LFA) for Maritime Homeland Security, and as such, has been given the lead in establishing MDA capability for the United States.⁴⁶

Within the umbrella of protection MDA capability will facilitate, HS and HD are priority missions, requiring full awareness of the Maritime Domain in the approaches and homeland.⁴⁷ This MDA requirement extends well beyond the traditional responsibility of the U.S. Coast Guard. This view is reflected in the U.S. Coast Guard's Maritime Strategy for Homeland Security which states their responsibility as LFA for Maritime Homeland Security applies only when responses require involvement of civil authorities.⁴⁸ This implies that the task of detecting and responding to threats of direct aggression within the large area encompassed by the MDIZ and beyond cannot be considered to be the sole responsibility of the U.S. Coast Guard. DoD would therefore be expected to assume a large portion of this responsibility.

Within DoD, U.S. Northern Command (NORTHCOM) was created with HD as a specific focus, and was further charged with defense of the sea approaches to the United States.⁴⁹ However, it is not clear that this translates to direct responsibility for providing for MDA. General Timothy Keating, the current NORTHCOM commander, stated in March

2005 that “We [NORTHCOM] support the U.S. Coast Guard in tracking maritime traffic into the United States...”⁵⁰ Mr. Jeffrey High, the U.S. Coast Guard’s Director of MDA, stated in October 2004 that the U.S. Coast Guard’s vision of MDA does not include a requirement for their control of other agencies’ sensor, surveillance, or intelligence assets.⁵¹ If DoD’s role is to support the U.S. Coast Guard, yet the U.S. Coast Guard cannot task DoD, then the support can be expected to be given only as it is available, which will not be sufficient - especially considering the performance requirements specified within the MDIZ.

The U.S. Coast Guard’s Maritime Strategy for Homeland Security assumes a shared responsibility for Maritime Homeland Security; this assumption extends to MDA capability.⁵² However, shared responsibility should not equate to unassigned or undefined responsibility. MDA is a capability essential to defending against a significant threat, and therefore it is crucial the specific responsibility of each agency be defined to ensure unity of effort. The ambiguity in responsibility pertaining to providing for MDA reflected in the draft documents as well as in the statements of key leaders involved in its development leads to a risk that there will be significant seams in MDA capability. Currently, the specification of DoD responsibility for MDA suffers as a result of this uncertainty. In fact, the only detailed agreement between DoD and DHS regarding specific responsibilities for Maritime Homeland Security pertains to the transfer of U.S. Coast Guard assets to NORTHCOM in the event of a need for a HD response to an identified maritime threat.⁵³ The possibility of a reciprocal arrangement for DoD support to the U.S. Coast Guard is being discussed, but the fact that there is no clear evidence of a firm plan to formally commit DoD resources in support of U.S. Coast Guard missions reflects the ambiguous nature of future arrangements.⁵⁴

Due to DoD's significant role in HS and HD and its extensive capabilities and resources, it is necessary that it be assigned specific responsibilities for establishing MDA for the United States. These responsibilities can be best identified through analysis of three different areas: outside the MDIZ, inside the MDIZ, and development of the COP.

Outside the MDIZ

As discussed above, the MDA system in its end-state is intended to provide a global awareness of the Maritime Domain. To do so, information, intelligence, and data gathered in the forward regions regarding the Maritime Domain must be put into the MDA system. As a consequence of its national security responsibility, the National Intelligence Element of the U.S. Coast Guard's intelligence program is part of the U.S. Intelligence Community (IC).⁵⁵ Therefore, the U.S. Coast Guard is fully able to access and request intelligence from the IC in support of MDA.

However, DoD commands substantial resources in the forward areas that should be used to contribute to MDA COP. In particular, these resources include surveillance and intelligence capabilities of the combatant commanders that are resident in their respective Joint Intelligence Centers and theaters.

The intent for these resources to provide for MDA is consistent with the view of senior DoD officials as well as the responsibilities discussed in draft documents related to MDA. Mr. Paul McHale, Assistant Secretary of Defense (Homeland Defense) has written that operations in support of Maritime Security on the high seas and forward regions would be expected to be a DoD responsibility.⁵⁶ In the draft document Joint Doctrine for Homeland Security, U.S. Strategic Command, which is responsible for global intelligence, surveillance, and reconnaissance, is designated as a supporting commander to NORTHCOM and U.S.

Pacific Command (PACOM) for their HD responsibilities.⁵⁷ Similarly, this draft document states that all of the forward geographic combatant commanders are charged with obtaining information regarding potential adversaries that may be planning attacks on the U.S. homeland.⁵⁸ These broad responsibilities should be interpreted to include contribution of intelligence and information to the MDA COP.

Another resource is the information gathering that is done as part of the geographic combatant commanders' Theater Security Cooperation Plans (TSCPs) with other countries.⁵⁹ The draft document Joint Doctrine for Homeland Security states NORTHCOM "... supports security cooperation initiatives in order to secure the homeland and enhance regional security."⁶⁰ Consequently, NORTHCOM has initiated negotiations with Canada to improve maritime information sharing.⁶¹ However, this draft document is not clear as to responsibilities for geographic combatant commanders besides NORTHCOM regarding factoring MDA or other HS and HD functions into TSCPs.

Within the MDIZ

As discussed above, a specific requirement to ensure the MDA capability provides for effective HS and HD would be a means to conduct non-deniable surveillance, tracking, classification, and identification of vessels within the MDIZ. The MDIZ extends well into the area of responsibility (AOR) of all geographic combatant commanders except U.S. Central Command. Considering that DoD carries a substantial responsibility for HS and HD in the forward areas and approaches, and that the combatant commanders can access DoD resources, and that they would already be expected to contribute to the MDA COP outside the MDIZ, assignment of the specific responsibility for surveillance, detection, and tracking of non-compliant and non-transparent vessels to the combatant commanders would ensure a

seamless unity of effort and provide for the layered and integrated defense envisioned. The additional functions within the MDA Spectrum of classifying and identifying non-compliant and non-transparent vessels would be part of the analysis portion of the MDA process.

However, the assignment of responsibility to geographic combatant commanders with respect to MDA in the draft document Joint Doctrine for Homeland Security varies significantly in specificity. NORTHCOM's responsibility is most clearly defined:

[NORTHCOM] detects, monitors, and supports interdiction of suspected transnational threats within and along the approaches to CONUS; fuses and disseminates intelligence, contributes to the COP...in order to secure the homeland and enhance regional security.⁶²

In contrast, U.S. Southern Command is charged with surveillance of maritime routes to assist in the detection and monitoring of illicit trafficking. The responsibilities of EUCCOM and PACOM do not include surveillance or detection of threats in the approaches to the United States, even though PACOM has U.S. territory in its AOR. Additionally, only NORTHCOM is charged with contributing to the COP.⁶³

Furthermore, providing for the surveillance, detection, and tracking functions within the MDA Spectrum will require substantial resources and technical capability which only DoD can provide. There is an expectation in some quarters that DoD will provide the "big ticket items" such as re-locatable over the horizon radar and high frequency surface wave radar, and that systems such as the U.S. Navy's ForceNet must be fully exploited to obtain the desired MDA end state.⁶⁴ However, the U.S. Coast Guard's Maritime Domain Awareness Concept of Operations assumes the U.S. Coast Guard will be provided the resources to conduct long-range tracking throughout the MDIZ.⁶⁵ This is an unrealistic expectation, and would likely result in a lack of efficiency. For example, NORTHCOM is working to deploy persistent, full spectrum wide-area surveillance systems targeted against

aircraft (possibly employing high altitude airships).⁶⁶ Efforts such as these should be extended to include the Maritime Domain.

There needs to be a boundary within the MDIZ at which the responsibility for the surveillance, detection, and tracking functions within the MDA Spectrum should shift to the U.S. Coast Guard. Possibilities include the EEZ, contiguous zone, or territorial sea limit.⁶⁷ Inside these regions, issues such as fisheries monitoring, immigration control, and environmental regulation enforcement require the U.S. Coast Guard to have specific additional MDA capability. Furthermore, there are some anticipated U.S. Coast Guard surveillance capabilities that will provide better fidelity for near-shore monitoring.⁶⁸ The myriad responsibilities and anticipated capabilities of the U.S. Coast Guard necessitate defining a boundary within the MDIZ at which the U.S. Coast Guard, rather than DoD, will be responsible for surveillance, detection, and tracking functions pursuant to the MDA capability.

Development of the Common Operational Picture

As discussed above, an effective MDA COP will require a clearly defined process to collect, analyze, correlate, fuse, interpret, and disseminate data, intelligence, and information. The focus of this effort will be NMIC, ICC, and MFICs. It will be essential that DoD ensure adequate analytical resources, architecture interoperability, and command and control capability to support this critical portion of the MDA process.

Recommendations

This paper has analyzed the role of DoD for providing for MDA capability for the United States. As a result of this analysis, several recommendations can be made:

- DoD must ensure all combatant commanders factor MDA requirements into intelligence, surveillance, and reconnaissance priorities as well as cooperative agreements with host nations to build the MDA COP in the forward regions. This will facilitate identification of vessels of concern as early as possible as well as providing for national security requirements in the forward areas.
- Due to the respective responsibilities of DoD and DHS for HS, HD, and civil functions of the U.S. Coast Guard, as well as the resources required to provide sufficient coverage of the large space involved, DoD should be assigned the specific responsibility of providing non-deniable surveillance, detection, and tracking of vessels exceeding the prescribed threshold size in the MDIZ outside a specific boundary such as the EEZ. This responsibility should be assigned to applicable geographic combatant commanders. Within this boundary, the U.S. Coast Guard should be responsible for this function. The boundary selected should be based upon the specific requirements of the U.S. Coast Guard as a result of their civil enforcement responsibilities coupled with their anticipated near-shore surveillance, detection, and tracking capability.
- DoD must ensure sufficient architecture interoperability, command and control capability, and support of intelligence analysis at the NMIC in cooperation with the U.S. Coast Guard to ensure unity of effort in building a COP that will yield effective MDA for the United States.

Conclusion

This paper has provided comment on various draft documents that pertain to MDA. These comments are made not to critique the documents themselves, but rather to highlight that insufficient definition of responsibility for this critical capability risks leading to exploitable seams and a lack of unity of effort in providing for the nation's security. MDA is a complex, challenging issue. Only by thorough assignment and definition of responsibilities for each facet of the process can MDA truly mitigate risk to the United States from the Maritime Domain. Due to its responsibility and resources, it is essential that DoD's role be clearly defined.

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NOTES

¹ U.S. President. Directive. "Maritime Security Policy." National Security Presidential Directive NSPD-41 Homeland Security Presidential Directive HSPD-13 (21 December 2004), 4-5. NSPD-41/HSPD-13 requires the plan to improve MDA to be produced within 180 days of the issuance of the directive as well.

² *Ibid.*, 5.

³ Jeffrey P. High, "Statement," U.S. Congress, House, Committee on Transportation and Infrastructure, Sub-Committee on Coast Guard and Maritime Transportation., Maritime Domain Awareness, Hearing before Sub-Committee on Coast Guard and Maritime Transportation, 108th Cong, 2nd sess., 6 October 2004.

⁴ Office of Naval Intelligence and U.S. Coast Guard Intelligence Coordination Center, Threats and Challenges to Maritime Security 2020 (Washington, D.C.: 1 March 1999), vii-viii.

⁵ "Background," U.S. Congress, House, Committee on Transportation and Infrastructure, Sub-Committee on Coast Guard and Maritime Transportation., Maritime Domain Awareness, Hearing before Sub-Committee on Coast Guard and Maritime Transportation, 108th Cong, 2nd sess., 6 October 2004. The EEZ is a zone for exploration, exploitation, management, and conservation of natural resources extending seaward to 200 nautical miles from the baseline from which territorial waters are measured. U.S. Coast Guard Maritime Domain Awareness Plans, Programs, and Assessments Office, Maritime Domain Awareness Concept of Operations (Draft Version 1.30) (2005), 7.

⁶ High.

⁷ Guy Thomas, "A Maritime Traffic-Tracking System: Cornerstone of Maritime Homeland Defense," Naval War College Review, 56, 4 (Autumn 2003): 139.

⁸ *Ibid.*, 139-140.

⁹ NORAD is a U.S.-Canadian bilateral command that uses space and ground based sensors to monitor, validate, and warn of attack of North America by aircraft, missiles, and space vehicles. Timothy J. Keating, "Statement," U.S. Congress, Senate, Committee on Armed Services, Fiscal 2006 Defense Budget, Hearings before the Committee on Armed Services, 109th Cong, 1st sess., 15 March 2005. General Keating, NORTHCOM commander, stated in March 2005 that a NORAD organizational construct for the maritime domain would be too restrictive, as cooperation with Mexico and other partners - not just Canada - would be required. This author agrees with that assessment. However, the fundamental issue, as pointed out by Chief of Naval Operations Vern Clark and the Defense Science Board, is that the nation does not have an equivalent integrated maritime surveillance system. Timothy J. Keating and John W. Warner, "Hearing," U.S. Congress, Senate, Committee on Armed Services, Fiscal 2006 Defense Budget, Hearings before the Committee on Armed Services, 109th Cong, 1st sess., 15 March 2005.

¹⁰ "Background," U.S. Congress, House, Committee on Transportation and Infrastructure .

¹¹ U.S. Coast Guard, Maritime Strategy for Homeland Security (Washington, D.C.: December 2002), 14.

¹² Thomas H. Collins, "Constancy Amid Great Change," U.S. Naval Institute Proceedings, 128, 8 (August 2002): 32.

¹³ Office of Homeland Security, National Strategy for Homeland Security (Washington, D.C.: July 2002), 21.

¹⁴ Maritime Strategy for Homeland Security, 1-3, 18.

¹⁵ High.

¹⁶ NSPD-41/HSPD-13, 2.

¹⁷ High.

¹⁸ U.S. Coast Guard Maritime Domain Awareness Plans, Programs, and Assessments Office, Maritime Domain Awareness Concept of Operations (MDA CONOPS) (Draft Version 1.25) (June 2004), iii. The most recent version available is numbered 1.30 which was written in 2005.

¹⁹ NSPD-41/HSPD-13, 5.

²⁰ Department of Defense and Department of Homeland Security, National Plan to Improve Maritime Domain Awareness (working draft version 2.0) (Washington, D.C.: 2005), 4; U.S. Joint Chiefs of Staff, Joint Doctrine for Homeland Security (Final Version 3), Joint Pub 3-26 (Draft) (Washington, D.C.: 25 February 2005), i.

²¹ National Plan to Improve Maritime Domain Awareness (working draft version 2.0), 17; Maritime Domain Awareness Concept of Operations (Draft Version 1.30), v.

²² National Plan to Improve Maritime Domain Awareness (working draft version 2.0), 24.

²³ National Strategy for Homeland Security, 3, 13.

²⁴ Joint Doctrine for Homeland Security (Final Version 3), I-4.

²⁵ Maritime Domain Concept of Operations Awareness (Draft Version 1.30), 4.

²⁶ *Ibid.*, 5-6.

²⁷ *Ibid.*, 6.

²⁸ National Plan to Improve Maritime Domain Awareness (working draft version 2.0), 31; Keating, “Statement”; Keating, “Hearing.”

²⁹ National Plan to Improve Maritime Domain Awareness (working draft version 2.0), 30-31. Improvement of vessel documentation and inspections, as well as improving the employment of vessel tracking systems such as the Automatic Identification System (AIS) are elements within the National Plan to Improve Maritime Domain Awareness.

³⁰ High.

³¹ National Plan to Improve Maritime Domain Awareness (working draft version 2.0), 12; Maritime Domain Awareness Concept of Operations (Draft Version 1.30), 7. Internal waters are U.S. waters shoreward of the baseline from which the territorial sea is measured, including all waters on the U.S. side of the international boundary of the Great Lakes as well as lakes, rivers, bays, harbors, and etcetera. Territorial waters are those waters within twelve nautical miles from the baseline and are subject to U.S. sovereignty under international law.

³² Maritime Domain Awareness Concept of Operations (Draft Version 1.30), 7- 8; National Plan to Improve Maritime Domain Awareness (working draft version 2.0), 12-13. The draft document National Plan to Improve Maritime Domain Awareness uses the term “homeland awareness zone” for the region within 2,000 nautical miles of the U.S. coast. The draft document Joint Doctrine for Homeland Security describes regions

similar to the other draft documents without assigning specific distances; this is to be expected, since this document addresses a wider range of concerns than the Maritime Domain. Joint Doctrine for Homeland Security (Final Version 3), I-8-9.

³³ Maritime Domain Awareness Concept of Operations (Draft Version 1.30), 7.

³⁴ National Plan to Improve Maritime Domain Awareness (working draft version 2.0), 13; *Ibid.*, 8. The draft document National Plan to Improve Maritime Domain Awareness states that outside the MDIZ (“homeland awareness zone” in its terminology), MDA will be targeted towards selected critical areas (termed “distributed awareness zones”) in support of national security needs. This document emphasizes that MDA must be “... increasingly comprehensive the closer potential threats are to the U.S. maritime approaches, coasts, ports, and inland waterways.” It goes on to state that within 2,000 nautical miles of the U.S. coast MDA should provide a full understanding of maritime activity, particularly within the EEZ as a result of the need for MDA to address economic and regulatory concerns. The draft document Maritime Domain Awareness Concept of Operations makes specifications regarding the capability to be provided by the MDA process to detect and track vessels based upon assumptions regarding vessel behavior, threat analysis, and future technical capabilities. The MDIZ distance of 2,000 nautical miles from shore roughly corresponds to where a vessel averaging a speed of 20 knots is expected to be located when filing a Notice of Arrival (NOA) 96 hours prior to entering a U.S. port as required by U.S. law. The prescribed threshold size of vessel requiring to be tracked outside the EEZ yet within the MDIZ is 65 feet or greater for the range of 300 NM to 2000 NM and is 25 feet or greater in the range of 200 NM to 300 NM. There are additional specifications in this document as well, with the net result of requiring greater detection and tracking capability the closer a vessel is to the U.S. shore, permitting adequate response time to potential threats.

³⁵ National Plan to Improve Maritime Domain Awareness (working draft version 2.0), 26; Maritime Domain Awareness Concept of Operations (Draft Version 1.30), vi, 5.

³⁶ Maritime Domain Awareness Concept of Operations (Draft Version 1.30), 7-8.

³⁷ High.

³⁸ National Plan to Improve Maritime Domain Awareness (working draft version 2.0), 30.

³⁹ *Ibid.*, 20, 26, 28-29.

⁴⁰ High.

⁴¹ High; Maritime Domain Awareness Concept of Operations (Draft Version 1.30), 11; Maritime Domain Awareness Concept of Operations (MDA CONOPS) (Draft Version 1.25), 29.

⁴² “Background,” U.S. Congress, House, Committee on Transportation and Infrastructure; Brian D. Nicholson, Organizational Change for the Intelligence Community Supporting Maritime Homeland Security and Defense: Developing a Maritime Intelligence Network (Monterey CA: Naval Postgraduate School September 2003), 10; U.S. Joint Chiefs of Staff, Joint and National Intelligence Support to Military Operations, Joint Pub 2-01 (Washington, D.C.: 7 October 2004), II-9-10.

⁴³ Maritime Domain Awareness Concept of Operations (Draft Version 1.30), 2-3.

⁴⁴ *Ibid.*, vi.

⁴⁵ High.

⁴⁶ High; Maritime Strategy for Homeland Security, 8-9.

⁴⁷ National Plan to Improve Maritime Domain Awareness (working draft version 2.0), 13.

⁴⁸ Maritime Strategy for Homeland Security, 9.

⁴⁹ “Who We Are – Mission,” U.S. Northern Command Homepage, n.d., <<http://www.northcom.mil>> [25 April 2005]; “Who We Are – Homefront,” U.S. Northern Command Homepage, n.d., <<http://www.northcom.mil>> [25 April 2005]

⁵⁰ Keating, “Statement.”

⁵¹ High.

⁵² Maritime Strategy for Homeland Security, 13.

⁵³ Memorandum of Agreement Between the Department of Defense and the Department of Homeland Security for the Inclusion of the U.S. Coast Guard in Support of Maritime Homeland Defense (Undated), 2-3.

⁵⁴ Paul McHale to Donald Rumsfeld, 8 December 2004, “Navy-Coast Guard Authorities and Relationship,” Pentagon, Washington, D.C.

⁵⁵ Joint and National Intelligence Support to Military Operations, B-8-9.

⁵⁶ Paul McHale.

⁵⁷ Joint Doctrine for Homeland Security (Final Version 3), II-10.

⁵⁸ *Ibid.*, II-12.

⁵⁹ National Plan to Improve Maritime Domain Awareness (working draft version 2.0), 26.

⁶⁰ Joint Doctrine for Homeland Security (Final Version 3), II-9.

⁶¹ Keating, “Statement.”

⁶² Joint Doctrine for Homeland Security (Final Version 3), II-9-10. This assignment is explicitly given to Joint Task Force-North, which is a subordinate joint task force command under NORTHCOM.

⁶³ *Ibid.*, II-9, 12.

⁶⁴ Maryann Lawlor, “The Coast Guard Seeks Maritime Omniscience,” Signal, 59, 6 (February 2005), 31; National Plan to Improve Maritime Domain Awareness (working draft version 2.0), 27. The CNO’s Strategic Studies Group has defined ForceNet as “the operational construct and architectural framework for naval warfare in the information age that integrates warriors, sensors, networks, command and control, platforms, and weapons into a networked, distributed combat force that is scalable across all levels of conflict from seabed to space and sea to land.” Richard W. Mayo and John Nathman, “ForceNet: Turning Information into Power,” U.S. Naval Institute Proceedings, 129, 2 (February 2003), 42.

⁶⁵ National Plan to Improve Maritime Domain Awareness (working draft version 2.0), 8.

⁶⁶ Keating, “Statement.”

⁶⁷ The contiguous zone is the area contiguous to the territorial sea extending seaward to 24 nautical miles from which the territorial sea is measured in which control is exercised to prevent or punish infringement of U.S. customs, fiscal, immigration, sanitary laws and other regulations. Maritime Domain Awareness Concept of Operations (Draft Version 1.30), 7.

⁶⁸ One anticipated future U.S. Coast Guard capability is the ability to receive AIS signals via National Oceanic and Atmospheric Administration (NOAA) buoys. Another potential capability is obtaining fishing vessel positions from NOAA's Vessel Monitoring System. Additionally, fishing vessel captains could be requested to report suspicious activity. Samuel P. DeBow, "Hearing," U.S. Congress, House, Committee on Transportation and Infrastructure, Sub-Committee on Coast Guard and Maritime Transportation., Maritime Domain Awareness, Hearing before Sub-Committee on Coast Guard and Maritime Transportation, 108th Cong, 2nd sess., 6 October 2004.