

MARITIME DOMAIN AWARENESS

Maritime Domain Awareness, or MDA, is the effective understanding of anything associated with the global maritime domain that could impact the security, safety, economy or the environment. It is the key to policing the world's oceans and ensuring the safety of maritime trade. Admiral Bruce Clingan, recently Commander US Sixth Fleet with Dr Susanne Wirwille, and Edward Lundquist, of Alion Science and Technology, discuss what needs to be done. All agree on the importance of information and intelligence, and that they can only be provided by a worldwide federation of national and regional organisations.

Building Global Maritime Security through Global Cooperation

by Vice Admiral Bruce Clingan and Dr Susanne Wirwille

Bruce Clingan recently completed his tour as Commander, United States SIXTH Fleet and Commander, Strike Force NATO. Susanne Wirwille is Scientific Analyst and Advisor to the US Naval Forces Europe and Africa. In this article they consider the challenges of achieving global maritime security and the importance of a federation of national and regional systems in overcoming them.

During the first week of October 2009, top naval leaders from 101 countries around the world gathered in Newport, Rhode Island at the 19th International Seapower Symposium (ISS) to discuss building partnerships to advance maritime security. The ISS panels highlighted progress in maritime domain awareness, information-sharing and regional partnerships, as well as planned unilateral and multi-lateral initiatives that would build on those achievements in the future. However, the optimism conveyed during the formal events was often tempered in the numerous sidebar discussions that occurred in the margins of the symposium. Such conversations more than once contemplated a formal communiqué to the governments of the countries represented at the symposium, advising that 'sea blindness' in many nations had allowed global naval force structures and operating budgets to decline to the point that reversing the rising tide of maritime threats was unlikely without additional resources.

Their concern over sea blindness is not without merit. Proliferation of military equipment and the creative utilisation of commercial capabilities by ideological extremists, pirates and organised crime have fundamentally altered the maritime challenge. At risk, if such threats are not addressed, are 90% of the world's commodities that move by sea and literally billions of dollars in lost opportunities due to oil theft, illegal fishing, ecological damage and other illicit activities. No wonder, then,

that the world's naval leaders are frustrated by sea blindness and committed at last year's ISS to work together to eliminate it while maximising efficient employment of the resources available today.

Reversing the rising tide of maritime threats was unlikely without additional resources

Collaborative maritime security efforts to date have largely focused on maritime domain awareness (MDA) initiatives. This makes sense in the context of declining force structures and operating budgets. Under such circumstances, available platforms must be accurately cued to successfully intercept bad actors at economical speeds and distances, and to expeditiously reveal illegal activity so they can rapidly transition to follow-on tasks. While much has been accomplished in advancing global MDA, much remains to be accomplished.

The 5Ws + H

Importantly, it must be appreciated that MDA is not the 'end' – it is one of the critical 'means' to maritime security. As new, sophisticated systems and tools are introduced, it should not be forgotten that at its most basic level MDA requires an answer to the "5Ws + H":

- Who exercises decision authority over the vessel?
- What type of vessel is it?
- When is the vessel at sea?
- Where is the vessel?
- Why is the vessel at sea?
- How is illegal activity being obscured?



Leading edge Maritime Domain Awareness initiatives are endeavouring to ascertain “Why” a vessel is at sea and often focus on anomaly detection – noting behaviours inconsistent with stated intentions or activities. [US Navy photo by Mass Communication Specialist 2nd Class Daniel Edgington]

As simple as it is to articulate the core elements of MDA, achieving global MDA is a daunting task, particularly if the objective is a common, standardised system governed by formal agreements. Persuaded that a federation of national and regional systems is the only means to achieve global MDA in the foreseeable future, it is regrettable that information-sharing in some of the 5Ws has actually been regressing over time. For example, as coastal, shipboard, and airborne radars evolve, they frequently become stove-piped within national organisations, and many nations – even those within formal alliances and coalitions – do not share their radar pictures to create a regional picture.

Aggregating national and regional radar information to improve our awareness of ‘Where’ non-military vessels are is but one example of the many opportunities that exist to significantly advance MDA through simple interface and translation units that connect legacy ‘5W’ systems. Once connected, conditions are enhanced to better employ emerging systems such as the Maritime Safety and Security Information System/Automatic Identification System (MSSIS/AIS) and other more complex MDA tools involving new sensors and complex relational processing.

Leading-edge maritime domain awareness initiatives are endeavouring to ascertain ‘Why’ a vessel is at sea and ‘How’ it is concealing illegal activities. The major challenge to answering these questions stems from the fact that both are subject to deception. Work to date in the realm of ‘Why’ a vessel is at sea has focused on anomaly detection – noting behaviours inconsistent with stated intentions or activities. In many cases, discerning such inconsistencies requires close, undetected surveillance of the vessel of interest with staring capability such as full motion video. ‘How’ illicit activities are being concealed requires like capabilities and similarly robust capacity. Burying ballistic missile canisters under

tons of rice and integrating extremist facilitators in fishing boat crews are simple examples that pale in comparison to the sophisticated, costly means commonly employed by organised crime. While non-destructive search and biometric systems are being developed, responsive cueing to prioritise which vessels to board, as well as where and how to search, remains a challenge.

Heretofore, most MDA initiatives have been platform-centric and have emphasised interdicting the delivery or execution phase of the activity. MDA must begin to sense the planning and staging phases where a broader spectrum of surveillance means are available. Human intelligence, signals intelligence, and a network of maritime community informants focused on highlighting ports, staging areas and vessels involved in illicit activities could reduce naval at-sea capacity requirements. Bottom line: the activities that threaten maritime security to any significant degree are supported by land-based networks, suggesting that MDA requires a comprehensive interagency solution that begins ashore.

A Case Study – MV *Monchegorsk*

These assertions are aptly illustrated in the 2009 interdiction of the motor vessel MV *Monchegorsk*. Under UN Security Council Resolution 1747, Iran is prohibited from exporting arms or related material.¹ In January 2009 the MV *Monchegorsk*, en route from Iran to Syria, was discovered carrying weapons material. Before the MV *Monchegorsk* could reach Syria, Cyprus recalled the vessel and offloaded the cargo, holding it until a decision could be made regarding its final disposition. In the following paragraphs, this case is used to illustrate current capabilities and to highlight additional capabilities that have the potential to improve global MDA and enhance maritime security.

Basic Maritime Domain Awareness – Who

Iran is known to employ maritime means to transport weapons and weapons-related material to Syria. Traditionally, the vessels used are owned and/or operated by the Islamic Republic of Iran Shipping Lines (IRISL), which allows the Iranian government to maintain positive control over the cargo throughout the duration of each voyage. In the case of the MV *Monchegorsk*, which was Cypriot-flagged, Russian-owned and Swiss-operated, IRISL exclusively chartered the vessel to deliver military cargo.² In so doing, the IRISL was attempting to employ Denial and Deception tactics to improve the probability of successful delivery, given the international community's propensity to inspect IRISL owned and operated vessels.

To help discern such deception and identify 'Who', in fact, has decision authority over a vessel and its cargo, data elements from various government and commercial sources can be automatically correlated with computer assistance. While exclusively chartering a vessel is increasingly easy to identify using such means, significant gaps still exist in the breadth and depth of shared information available for correlation. In particular, freight forwarders, shippers, and cargo expeditor companies continue to be exploited by entities such as the IRISL to hide illegal shipments. Evidence of such techniques continues to mount. Following successful interdiction of the MV *Monchegorsk*, Iran employed transshipment methods involving the motor vessels MV *Hansa India* and MV *Francop* to obscure a movement of illicit weapons to Syria in October and November 2009 respectively.^{3, 4}

Closing such information gaps is imperative. To this end, Flag states may need to expand and enforce reporting requirements in order to obtain greater transparency of shipping operations under their flag, and implement higher shipping security and inspection standards to prevent illicit activities involving their flagged vessels.

Basic Maritime Awareness – What, When and Where

In mid-January 2009 a US warship attached to Task Force 151 in the Gulf of Aden encountered the MV *Monchegorsk*, days after it had been spotted leaving an Iranian port headed for the Suez Canal.⁵ Normal vessel operations, such as leaving and entering ports, passing through choke points that employ vessel traffic separation schemes, and transiting high-density shipping lanes, all provide opportunities to answer and update the 'What', 'When' and 'Where' elements of MDA. Such awareness relies on capable partners willing to share such information, which is not the case throughout much of the maritime domain.

The path to enhanced knowledge of these three elements starts with expanding the community of willing partners – port authorities, vessel traffic managers and maritime surveillance organisations from the littoral countries that sit astride major choke points and shipping lanes – and ensuring such partners possess the requisite sensing and reporting means. Automated



US Navy Fire Scout operating aboard USS McInerney. Many opportunities exist to significantly advance MDA through simple interface and translation units that connect existing "5W" systems such as basic radar. Once connected, conditions are enhanced to better employ emerging MDA tools involving new sensors and complex relational processing. [US Navy photo by Mass Communication Specialist 2nd Class Alan Gragg]

processing and correlation of multiple sensors to provide near real-time position reports, classification of vessel types, and ultimately vessel identification throughout the vastness of the maritime domain is ambitious. The key to success is a prioritised, coherent effort by the international community to achieve such a condition in the areas that will generate the highest 'information return on investment' – the shipping lanes assessed most likely to be employed to traffick weapons of mass destruction, arms, humans and drugs.

Sifting Wheat from Chaff – Why and How

While all of the 5W+H questions must be answered to achieve 'actionable MDA', the last two questions – 'Why' and 'How' – must be answered to conduct effective maritime security operations. If it can be discerned that a vessel is at sea to conduct an illicit activity, and the activity can be observed, appropriate actions can be taken to disrupt the activity and to discipline the offending persons, organisation or nation. In the case of MV *Monchegorsk*, US military personnel attached to Task Force 151 boarded⁶ the vessel prior to its first port visit after departing Iran, conducted inspections and discovered artillery shells and other arms among the cargo.⁷ This revelation seems to indicate that the Iranian government was confident that obscuring 'Who' was shipping the cargo would be sufficient to assure delivery.

Inspections like those conducted by Task Force 151 are not always fruitful. It is unlikely that truthful information will be entered on voyage documents by entities practising Denial and Deception tactics, and contraband can be hidden within containers that are not accessible at sea. Ground truth is most easily reached ashore through a comprehensive 'whole of government' approach that brings to bear the authorities and information available to a nation's intelligence, law enforcement, commerce and judicial departments, among others. In this regard, achieving success will require trust between departments; accountability for attention to detail across a broad spectrum of illicit activity indicators; timely information-

sharing; and responsiveness. When irresponsible nations are complicit in the illegal activities, this trust, accountability and responsiveness must extend to the international community if answers to the 'Why' and 'How' elements of MDA are going to be successfully developed.

Disruption of Illicit Activity

The evidence of illicit activity obtained during the boarding of MV *Monchegorsk* was sufficient to lobby the flag state to recall the vessel under the Proliferation Security Initiative. Since the vessel was Cypriot-flagged, Cyprus had the legal authority to divert, detain and inspect the ship and its cargo. After passing through Suez, the ship was instructed by Cyprus to divert to the port of Limassol on Thursday, 29 January 2009.^{8, 9} Once in Cyprus, a team of experts from the Republic of Cyprus conducted two inspections which confirmed the existence of weapons materials in all 98 containers onboard the vessel.¹⁰ The Cypriot government consulted with the UN and decided that the cargo was in violation of UN sanctions.¹¹ All 98 containers were subsequently offloaded and transported under guard to a secure facility for safekeeping.

In this case, sufficient 'actionable MDA' and international commitment to effective maritime security culminated in the interdiction of the MV *Monchegorsk*. Far more frequently, the shortcomings that remain in our ability to answer the basic '5Ws +H' MDA questions result in missed opportunities.

Conclusion

Faced with declining force structures and operating budgets, naval operations must be cued to successfully establish and sustain maritime security. MDA is the means by which such cueing can occur; it is not an end unto itself. A simple model that captures the key elements of MDA is the '5Ws + H' = 'Who, What, When, Where, Why and How'. We must not overlook the significant advancements that can be made in the elements of 'Who', 'What', 'When' and 'Where'



The 19th International Seapower Symposium held in Newport, Rhode Island was attended by top naval leaders from 101 nations. They expressed concern that global naval forces had declined to the point that reversing the rising tide of maritime threats was unlikely without additional resources [US Navy photo by Mass Communication Specialist 1st Class R. Jason Brunson]

by simply sharing existing information through interface and translation units. While significant work is ongoing to address the 'Why' and 'How' elements of MDA, answering these questions will remain particularly challenging because they are easily obscured by Denial and Deception tactics.

The most significant threats to maritime security stem from diverse networks of individuals, organisations and, in some cases, government entities. With this in mind, we must expand the scope of MDA beyond vessels at sea and embrace the need for a comprehensive 'whole of government' approach that can identify illicit actors and disrupt their activities before they transition to the vast maritime domain. Global MDA will not be achieved by developing a single standardised worldwide system governed by stringent rules, regulations and formal agreements in the near term; it will be achieved by the federation of national and regional systems, facilitated by trust that outpaces the deceptive imagination of people intent on conducting illicit activities. ■

NOTES

- ¹ Under UN resolution 1747 Iran is forbidden from exporting weapons. The resolution states that "Iran shall not supply, sell or transfer directly or indirectly from its territory or by its nationals or using its flag vessels or aircraft any arms or related materiel, and that all States shall prohibit the procurement of such items from Iran by their nationals, or using their flag vessels or aircraft, and whether or not originating in the territory of Iran". www.strategypage.com | online article | dated 8 August 2009
- ² www.washingtoninstitute.org | online article | dated 30 April 2009
- ³ www.independent.com.mt | online article | dated 11 October 2009
- ⁴ <http://hosted2.ap.org> | online article | dated 4 November 2009
- ⁵ www.strategypage.com | online article | dated 8 August 2009
- ⁶ Under international law, a warship may approach any vessel in international waters to verify its nationality. The vessel may be stopped, boarded, and the ship's documents examined provided there is reasonable ground for suspecting that it is engaged in certain illicit activities. Further, a warship may determine the true nature of the vessel's cargo and the manner of the vessel's employment through visit and search means
- ⁷ www.bbc.com | online article | dated 11 February 2009
- ⁸ www.bbc.com | online article | dated 13 February 2009
- ⁹ www.globaljihad.net. | online article | dated 31 January 2009
- ¹⁰ www.financialmirror.com | online article | dated 4 February 2009
- ¹¹ www.globaljihad.net. | online article | dated 31 January 2009