As the recent piracy cases off the coast of Somalia have illustrated, there is a significant need for maritime domain awareness - the ability to detect, classify and identify vessels at sea. We need greater awareness on the high seas as well as along our coastlines for both safety and security purposes. We also need better integration of systems and operations among maritime partners.
U.S. Coast Guard Responsibilities

- Maritime
- Safety
- Security
- Stewardship
Maritime Domain Awareness (MDA)

…the effective understanding of anything associated with the global maritime domain that could impact the security, safety, economy, or environment
The global flow of maritime traffic is illustrated in this graphic by maritime AMVER reports.
# Achieving and Maintaining MDA

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- Anomaly detection
- Pattern recognition & analysis
- Compare w/ rules
- Research tools
- Networks
- Displays (COP/UDOP)
- Command centers
- Strategic
- Operational
- Tactical
Specifically, we need to continue to employ a layered approach to maritime domain awareness, using complementary systems to increase overall capability. We also need to accelerate deployment of a net-centric tactical system that implements Department enterprise standards for the sharing of situation data and services across multiple Department interagency domains and Coast Guard systems.
The Coast Guard currently utilizes robust correlation technology that is continuously evaluating data received from multiple sources including, but certainly not limited to, position reports, radar tracks, AIS and Long Range Identification and Tracking (LRIT) positions, and other external and internally collected data feeds, to correlate and best detect, classify and identify vessels at sea. The correlation capability in the Coast Guard’s Common Operational Picture (COP) provides a comprehensive display of tracks which is a vital piece of the Coast Guard’s maritime domain awareness capability, a capability that is shared with the Navy and other homeland and national security partners.

AIS and LRIT provide vessel positions. AIS provides position updates on the order of seconds or minutes, but is a radio broadcast that was not designed for satellite reception or processing. LRIT provides only four position updates per day under normal reporting, but all reports are received via the near-global coverage of satellite constellations. Vessel tracking actually occurs within the Coast Guard Common Operational Picture (COP), a central system which can aggregate vessel positions from a multiplicity of sources, including LRIT, AIS, NTM and tactical systems aboard cutters or in ports, and provide some basic spoofing (false/incorrect position reporting) detection capability.
The data provided by marine-band radio broadcast AIS is complementary to the data provided by secure transmissions from near-global coverage of satellite-relayed LRIT, such that one can be utilized to verify the other. Such correlation leads to a vessel track with a higher integrity. By having both data sources, the Coast Guard will be better equipped to detect anomalies and improve overall Maritime Domain Awareness.
Commercial AIS - 24 hour period
Combined data of 2 satellites

Time of screen capture: 13:16 UTC
5 November 2008
Vessel count: 11928
The Maritime Transportation and Security Act of 2002 (MTSA) authorizes the Secretary to develop and implement a long-range automated vessel tracking system, so MTSA provides the Coast Guard with authority to implement the IMO’s LRIT system. The United States has successfully completed testing on and is receiving position data from 153 US flag ships with LRIT. Approximately 600 US flag ships fall under the LRIT regulation and will be tracked by the end of CY09. The sooner vessels equip with this secure means of position reporting, the sooner this capability will be available to enhance maritime security in areas like the Gulf of Aden and Horn of Africa.
Cooperative vessel tracking data, such as AIS and LRIT, are of most benefit in detecting and tracking large vessels, while other techniques, such as port-level tactical radar and camera coverage can increase our ability to track small vessels. Tips and other law enforcement information and intelligence gathering can also assist us in detecting and mitigating threats to our maritime homeland security.

Increased maritime awareness and threat mitigation by maritime partners can be achieved through a "SEE, UNDERSTAND, SHARE" model:

- See maritime activities using port and maritime surveillance sensors;
- Understand the scene by automatically bringing tactical and intelligence information together; and
- Share this tactical data among maritime partners.
Neither satellite AIS nor LRIT are specifically intended to increase our ability to detect small vessel threats. Other techniques, such as port-level tactical radar and camera coverage, such as that planned for Interagency Operations Centers in fulfillment of SAFEPort Act requirements, can increase our ability to track small vessels, while tips and other law enforcement information and intelligence gathering can assist us in detecting and mitigating threats to our maritime homeland security.
In Conclusion

- The US Coast Guard is one of many agencies in a layered approach to MDA
- A variety of sensors, analysis tools, technologies, & partnerships combine to guard our waters
- Global implementation & continued international partnerships are essential
- MDA is the key to effectively implementing any maritime security strategy

Maritime threats, including piracy and the potential use of small vessels can be mitigated through greater maritime domain awareness. It is the Coast Guard's responsibility to use all available means of information to achieve that goal and we are doing so at best possible speed.
Thank You

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