



**TESTIMONY OF  
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**ON  
"COAST GUARD COMMON OPERATIONAL PICTURE –  
INTERAGENCY OPERATIONS CENTER & C4ISR"**

**BEFORE THE  
HOUSE SUBCOMMITTEE  
ON COAST GUARD AND MARITIME TRANSPORTATION**

**JULY 31, 2013**

Good morning Chairman Hunter, Ranking Member Garamendi and distinguished Members of the Subcommittee. It is a pleasure to be here today to update you on the Coast Guard's activities to improve our Nation's Command, Control, Computers, Communication, Intelligence, Surveillance and Reconnaissance (C4ISR) capabilities as they specifically relate to Enterprise Architecture, interoperability and data exchange for Coast Guard operations.

The Coast Guard continues to improve its operational effectiveness through modernization and management of its C4ISR systems. The dynamic and demanding operating environment in the maritime domain demands our C4ISR capabilities be interoperable and flexible in order to deliver the right capability, at the right time, to our operational commanders and deployable assets. In addition, these systems must be standardized across our assets to maximize effectiveness and affordability to ensure long-term sustainability.

**C4ISR Enterprise Architecture**

The Coast Guard uses C4ISR systems to produce actionable information, improve situational awareness and enhance collaboration among Coast Guard operators and our partner agencies. At the tactical level, this information helps command staffs effectively allocate resources, prioritize missions, and coordinate operations. At the strategic and national levels, these tools improve maritime domain awareness; a critical component of our maritime safety and security missions.

The Coast Guard's C4ISR management strategy objectives are to address obsolete or redundant technology and bring new capability to the operators at a faster rate. In order to upgrade overall C4ISR capabilities, the Coast Guard is improving its C4ISR requirements management from the early Research, Development, Test & Evaluation (RDT&E) stage, through systems acquisition, and continuing through the sustainment lifecycle. We do this by leveraging existing Department of Defense and other partner technologies, employing best practices throughout the acquisition process and through close consultation with operational commands where we continuously evaluate capability and capacity shortfalls.

This strategy allows the Coast Guard to reduce redundancy and enhance performance to meet the broad demands of both our operational units and command and control entities.

These strategic objectives can be achieved through effective Enterprise Architecture development and management, which will enable the Coast Guard to quickly respond to a variety of changes in the operational environment while reducing support costs through the establishment of a cooperative and streamlined support structure. The end results are standardized systems, enhanced availability, more efficient and effective repairs, and minimized operational risk during maintenance and upgrades.

**Common Operational Picture (COP):** The central component of effective C4ISR is searchable and discoverable data managed, moved and formatted within a Common Operational Picture (COP) that provides operators with the information needed to carry out their missions. Aligned with Chairman, Joint Chief of Staff Instruction Common Operational Picture Reporting Requirements (CJCSI 3151.01), the COP is designed to receive inputs from disparate information sources, process and correlate the data, and distribute it through the enterprise across multiple security domains.

**Primary Data Sources Included in COP:**

**Nationwide Automatic Identification System (NAIS):** NAIS uses a series of shore-based transceivers along the coast of the United States to facilitate vessel tracking. The Coast Guard has deployed interim NAIS receive capability in 58 ports and major coastal areas. This system is currently being recapitalized with a permanent transceiver system to provide both transmit and receive (transceive) capability using Rescue 21 Remote Fixed Facilities (RFFs) to leverage existing antenna and network infrastructure. The permanent transceive system extends receive capability from 24 to at least 50 nautical miles and adds 24 nautical miles of transmit coverage. NAIS is the primary source of vessel tracking data to the Coast Guard COP providing an average of 73,000 vessel position reports daily. The COP is the primary tool for disseminating AIS data throughout the Coast Guard and to the Department of Defense and other domestic and international partners.

**Long Range Identification and Tracking (LRIT):** LRIT is a designated International Maritime Organization (IMO) system designed to collect and disseminate vessel position information received from IMO member state vessels subject to the International Convention for the Safety of Life at Sea (SOLAS). It is a complementary system to NAIS, providing offshore tracking of all U.S. flag vessels throughout the globe, and IMO member state ships 300 gross tons or greater on international voyages that are either bound for a U.S. port or traveling within 1,000 nautical miles of the U.S. coast. The Coast Guard maintains a National Data Center (NDC) that stores the positions of all foreign and domestic LRIT ships. This information is available in near real time, with no more than six hours between reports. LRIT provides an enhanced level of Maritime Domain Awareness.

**Air Marine Operation Center (AMOC):** The Customs and Border Protection's (CBP's) Office of Air and Marine's AMOC, as the national law enforcement interdiction center, collaborates and exchanges data with the Coast Guard COP, providing Coast Guard with a Counter-Narcotics Air and Marine Picture.

**Department of Defense (DoD):** The Coast Guard is a member of the DoD Global COP Architecture and we are the primary data provider to NORTHCOM's Situational Awareness Geospatial Enterprise (SAGE) system. In common terms, SAGE can be compared to "Google Earth" albeit with much greater capability.

**Contributors to the COP:**

**Shipboard Command and Control (C2) Systems:** Shipboard C2 systems, such as Shipboard Command and Control System (SCCS) on legacy cutters, and Coast Guard Command and Control (CGC2) onboard the National Security Cutter (NSC) provide operators full interaction with the COP, allowing the integration of organic sensor data into the enterprise COP. Seawatch is slated to be the C2 system used for the Offshore Patrol Cutter (OPC) acquisition and is presently in use aboard the Fast Response Cutter (FRC). Additionally, Seawatch has been developed to replace the legacy SCCS on the in-service High and Medium Endurance cutter (HEC/MEC) fleet. This will standardize system architecture across the cutter fleet and provide unprecedented integration of ship and shore data into the COP.

**Shore Command Control System:** The primary C2 system ashore is the Global Command and Control System – Joint (GCCS-J), the DoD system of record for C2. Fielded at Headquarters, Area, and District Command Centers, this system allows personnel full COP interaction and integration of organic sensor data into the COP.

**Airborne Command and Control:** The mission systems currently installed on the HC-144A and HC-130J aircraft are a variant of the CGC2 system installed on the NSC. As such, they provide full interaction with the COP, allowing aircraft to send organic sensor data to the enterprise COP. The systems integrate collection of AIS, RADAR and Electro-Optic/InfraRed (EO/IR) imagery and allow it to be transmitted off the aircraft while in flight, provided adequate connectivity is available.

**Viewers of the COP:**

**Command and Control Personal Computer (C2PC):** C2PC is the most prevalent C2 System in the C4ISR Architecture and allows viewing of COP data on a CG standard workstation.

**WatchKeeper:** WatchKeeper provides access for users from multiple agencies and organizations with a single user interface and connectivity to numerous authoritative data sources while leveraging open system architecture for future improvements. WatchKeeper access has been provided to 26 of 35 locations. WatchKeeper has been proven operationally effective and has benefited from CG and other agency blue force tracking capabilities.

**Enterprise Geospatial Information System (E-GIS):** The Coast Guard E-GIS contains a storehouse of information, including maps and charts, originally developed to support the viewing and exchange of Geospatial data, such as critical infrastructure information. The operational utility of E-GIS and the continuing effort to enhance its service offerings make it the primary viewer of dynamic mission data used by the field.

## Communications

Timely interactions and exchanges between units and operational commanders would not be possible without a comprehensive communications infrastructure. In addition to improved direct unit-to-unit communications capability, the Coast Guard is pursuing Internet Protocol (IP)-based connectivity and increased bandwidth to enable timely exchange of information and C4ISR data across domains. Projects primarily focused on this objective are:

**Rescue 21 (R21):** R21, the Coast Guard's advanced command, control and direction-finding communications system, was created to better locate mariners in distress and save lives and property. R21 deployment will be complete in 2017. R21 is operational along the entire Atlantic, Pacific and Gulf coasts of the continental United States as well as along the shores of the Great Lakes, Hawaii, Puerto Rico, the U.S. Virgin Islands, Guam, and the Northern Marianas Islands, covering approximately 41,871 miles of coastline. The deployment of digital selective calling (DSC) and improved transmit and receive capability to Alaska and the Western Rivers is in progress, with expected completion in the next 4 years. R21 recapitalizes the National Distress and Response System, which has been in use since the 1970s. R21 can more accurately identify the location of callers in distress via towers that generate lines of bearing to the source of VHF radio transmissions, significantly reducing search time. R21 coverage is out to a minimum of 20 nautical miles from the coastline. By harnessing state-of-the-market technology, R21 enables the Coast Guard to execute its search and rescue missions with greater efficiency. It improves information sharing and coordination with the Department of Homeland Security and other federal, state and local first responders, and can also identify suspected hoax calls, conserving valuable response resources.

**Commercial Satellite IP Connectivity (COMMSATCOM):** The Cutter Connectivity project will supply IP-based internet connectivity to all Coast Guard cutters one hundred and ten feet or larger. To improve available bandwidth at a significantly lower cost, the Coast Guard has started to deploy a new Ku band COMMSATCOM system on most cutters. This system triples the available bandwidth, at a fraction of the cost of other systems. Installation on most of the patrol boats is complete and installation is scheduled to start this month on larger cutters. The system provides increased bandwidth to allow underway assets to conduct e-business as well as better access to shore side data sources, such as the COP.

**Cellular Over the Horizon Enforcement Network (COTHEN):** To improve the reliability of long range communications and leverage existing resources, the Coast Guard has partnered with CBP in transitioning existing High Frequency (HF) radio systems to function with CBP's Cellular Over The Horizon Enforcement Network (COTHEN) Automatic Link Establishment (ALE) System. The Coast Guard has completed the deployment of COTHEN Remote Control Consoles (RCCs) to all Sector, District and Area Command Centers.

The RCCs allow the Command Centers to access the CBP's high frequency automatic link establishment (HF-ALE) network for long range tactical communication with all aircraft.

The Coast Guard and CBP are researching how to increase the COTHEN coverage by merging it with select Coast Guard-owned sites in Alaska, Guam, Boston, Point Reyes CA, and Hawaii to improve coverage system-wide, and specifically in the Arctic.

**Military Satellite Communications (MILSATCOM):** The Coast Guard has begun upgrading MILSATCOM systems throughout the service. This upgrade will replace outdated and non-supportable hardware with Mobile User Objective System (MUOS) and Integrated Waveform (IW) compliant systems to ensure the Coast Guard remains fully interoperable with our DoD counterparts.

### **Intelligence Support to the COP**

The Coast Guard participates in a number of global and regional cooperative vessel tracking and information systems such as Nationwide Automatic Identification System, Vessel Management System, Vessel Traffic Service, Automated Mutual-Assistance Vessel Rescue System, Long Range Identification and Tracking, the Ship Arrival Notification System, and the National Vessel Movement Center, all of which contribute greatly to the nation's maritime domain awareness (MDA). This information is distributed through the classified GCCS, unclassified GCCS and C2PC to ensure the Coast Guard and its maritime partners receive mission-critical information.

The Coast Guard also has afloat systems that provide interoperability with Intelligence Community partners for maritime domain awareness for senior decision-makers and tactical commanders. Specifically, major cutters support classified communications via SIPRNet and the new National Security Cutter (NSC) is outfitted with a Secure Compartmentalized Information Facility (SCIF). In addition, the Maritime Intelligence Fusion Centers fuse information from both classified and unclassified intelligence, law enforcement, and other partners to support tracking of vessels of interest and inform operational planning.

### **Future Plans and Technical Challenges**

Coast Guard efforts to improve information sharing through interoperable, enterprise-wide and net-centric solutions will help improve business processes and mission execution. In order to accomplish this objective, the Service is focusing on system development and data standardization that is compliant with the National Information Exchange Model (NIEM) and facilitates a cloud computing environment. This effort is absolutely essential for system sustainability, adaptability and future mission effectiveness.

Coast Guard One View (CG1V) is a new information technology (IT) development program designed to converge existing Coast Guard mission and mission support IT systems into a common viewer. Through the use of a common application framework, CG1V will provide operators a single user interface that is agile and can adapt to changing technology and user needs. WatchKeeper will capitalize on CG1V capabilities to develop system enhancements based on planned migration to an open architecture and process improvements.

Accurate and timely Blue Force Tracking (BFT) remains a key objective in our system development efforts. Large cutters such as the National Security Cutter and Medium Endurance Cutters equipped with Shipboard Command and Control System (SCCS), Coast Guard Command and Control (CGC2) or Seawatch, along with missionized HC-144 and HC-130J aircraft are capable of transmitting their position using Global Command and Control System (Joint) (GCCS-J). Some response boats are not equipped to provide asset tracking beyond voice-transmitted position reports and cannot automatically or manually feed information into a COP.

The Coast Guard is investigating the feasibility of deploying a hand-held Distributed Tactical Communications System (DTCS), which may provide a satellite-based solution, capable of transmitting BFT information.

### **Conclusion**

While developing, maintaining and modernizing a comprehensive suite of interoperable C4ISR systems remains a challenge, the Coast Guard's past and ongoing efforts have yielded significant results. Shore, surface and aviation assets now employ state-of-the-market C4ISR systems that support the exchange of Common Operational Picture (COP) information, extend the range and reliability of voice communications and data transmission, and provide operational commanders and senior decision-makers with the mission-critical information necessary to identify threats and coordinate operations. New information gathering, display and dissemination efforts, such as development of Coast Guard One View (CG1V) and deployment of Seawatch on our cutters, represent the next generation of Coast Guard C4ISR systems and will further increase our operational efficiency and mission effectiveness.

Thank you for the opportunity to testify today, and for your continued support of the U.S. Coast Guard. I look forward to answering any questions you may have.