

Common Submarine Radio Room (CSRR) (Includes Submarine Exterior Communications System (SubECS))

Executive Summary

- The Navy completed IOT&E of the baseline Common Submarine Radio Room (CSRR) (Increment 1) from September 2006 to April 2007. The baseline CSRR is effective and suitable for current submarine communication requirements.
- The *Virginia* class SSN variant of the CSRR will be tested in 2008 as part of overall *Virginia* class platform IOT&E; this variant is considered an upgraded version of the baseline CSRR.
- The CSRR will achieve full capability in 2012 based on the current plan for incremental development.
- The Navy should re-evaluate the Extremely High Frequency (EHF) communications infrastructure and system architecture in light of the increased importance of EHF communications to submarine operations.

System

CSRR/Submarine Exterior Communications System (SubECS) is an umbrella program that integrates modern antennas, radios, cryptographic equipment, and messaging systems into a submarine communications network.

- It is intended to provide a common communication system across all classes of submarines and is designed to support the steady infusion of new technology with incremental modernization and replacement of obsolete equipment.
- It establishes common hardware and software baselines.
- *Virginia* class CSRR (designated SubECS) is developed and integrated as part of new construction. Other submarine class radio rooms are replaced with CSRR variants to establish a common radio room baseline.
- The CSRR is an incremental acquisition program. Future increments are intended to address obsolescence issues and add new communications capabilities as they mature.



Mission

The Submarine Commanding Officer utilizes the CSRR/SubECS for secure, reliable, and covert communications and information dissemination in order to accomplish assigned missions. The Navy intends to use CSRR capabilities to:

- Manage, control, and disseminate command, control, communications, computers, and intelligence information routed to and from submarines in an open architecture
- Enable Net-Ready communications and operations

Activity

- DOT&E approved Revision 2 to the CSRR Test and Evaluation Master Plan (TEMP), fully incorporating the May 2006 Capability Production Document for CSRR and reflecting other program changes.
- The Navy completed IOT&E of the baseline CSRR (Increment 1) from September 2006 to April 2007. Commander, Operational Test and Evaluation Force (COMOPTEVFOR), the Navy's operational test agency (OTA), conducted separate, scenario-based IOT events on a

Seawolf class SSN, an SSBN, and two SSGNs. All testing was conducted in accordance with the DOT&E-approved TEMP and test plans.

- In separate IOT&E reports for each tested submarine class, the OTA evaluated the CSRR as effective and suitable.
- DOT&E published the CSRR Operational Beyond Low-Rate Initial Production Report required by Title 10 in June 2007. In the report, DOT&E concluded that IOT&E was adequate and that the CSRR baseline increment is effective and suitable.

NAVY PROGRAMS

- The Assistant Secretary of the Navy (Research, Development, and Acquisition) authorized full-rate production of CSRR Increment 1 on August 9, 2007.
- The Navy is updating the CSRR TEMP to address Follow-on Operational Test and Evaluation for planned FY08 and FY09 upgrades to the baseline CSRR.

Assessment

- The baseline CSRR is effective and suitable for current submarine communication requirements. The Navy has planned adequate operational testing for FY08 and FY09 CSRR upgrades.
- The CSRR will achieve full capability in 2012 based on the current plan for incremental development.
- Due to budget constraints, the Navy will not begin fielding the CSRR on older *Los Angeles* class submarines until 2015.
- The CSRR fielding plan is dependent upon successful IOT&E of the Digital Modular Radio (DMR) Version 6.4 by November 2008. This adds risk to the CSRR program schedule. DOT&E placed the DMR program on operational oversight in May 2006.
- The *Virginia* class SSN variant of the CSRR will be tested in 2008 as part of overall *Virginia* class platform IOT&E; this variant is considered an upgraded version of the baseline CSRR. DOT&E is working to ensure that the Navy fully tests the *Virginia* class variant of CSRR within the overall platform

test program. Although the CSRR is intended to be common across all submarine classes, the CSRR program manager is not currently responsible for the *Virginia* class variant (the CSRR program will assume this responsibility for future upgrades).

- EHF connectivity has become increasingly important to submarine operations. The baseline CSRR adequately implements EHF, but successful EHF communications are highly dependent upon satellite availability and adequate shore support. The testers observed, and the crews reported, frequent problems conducting EHF communications. Contributing to these problems, the Navy's EHF architecture does not appear to be optimized to support rapid restoration of communications following an inadvertent interruption.

Recommendations

- Status of Previous Recommendations. The Navy has taken effective action on all previous DOT&E recommendations.
- FY07 Recommendations. The Navy should:
 1. Ensure that the *Virginia* class variant of the CSRR is subject to thorough operational testing.
 2. Re-evaluate the EHF communications infrastructure and system architecture in light of the increased importance of EHF communications to submarine operations.
 3. Complete DMR IOT&E as soon as practicable.