Submarine Exterior Communications System (SubECS)

The Submarine Exterior Communications System (SubECS) is an umbrella program, which integrates 15 smaller acquisition programs and commercial off-the-shelf components into a system that supports network centric warfare. The goal of this effort is to provide a communications system that is common across all submarine classes, is interoperable with the planned DoD Command, Control, Communications, Computers and Intelligence (C4I) infrastructure, and will support the Navy's Copernicus Information System Architecture, the Joint Technical Architecture, the Global Command and Control System Maritime, and the Joint Maritime Communications System. SubECS will support the steady infusion of new technology and the modernization and replacement of obsolete equipment to allow prompt, sustained, and synchronized operations with joint U.S. and multinational forces.

SubECS will be fielded as Common Submarine Radio Room (CSRR) variants upgrading the communications systems of all *Los Angeles* class, *Seawolf* class, *Trident* class, SSGNclass, and *Virginia* class submarines. In order to arrive at the goal of a CSRR on all ships, the *Los Angeles* class is being provided with a backfit Submarine Communications Support System (SCSS) that will eliminate many legacy components in favor of CSRR components. The *Virginia* class CSRR is being developed and integrated as part of new construction using the construction shipyard as the integrator. The goal for the out-years is that all in-service submarines will be upgraded to the technology of the *Virginia* CSRR plus any necessary technology insertions, maintaining a common state-of-the-art radio room on all submarine classes.

TEST & EVALUATION ACTIVITY

The test concept for SubECS involves operational testing for each CSRR variant and end-to-end system testing for each major phase. Each CSRR variant undergoes operational testing before it is introduced into the fleet. CSRR class variants may undergo a land-based operational assessment (OA) and land-based technical evaluation (TECHEVAL) to mitigate risk for submarine installation. Subsequent to on-board installation, each CSRR class variant will undergo an at-sea TECHEVAL (for those tests not completed in the land-based radio room) and an OPEVAL. The *Virginia* class land-based testing occurs in the Combat Control System Module Off-hull Assembly and Test site during *Virginia* class submarine construction at the Electric Boat Company in Groton, Connecticut. At-sea operational testing of the *Virginia* CSRR will occur concurrently with the overall OPEVAL of the *USS Virginia*.
Testing activity focused on the SCSS Phase I being prepared for backfit into the *Los Angeles* class. The land-based portion of the TECHEVAL was completed in May 2001. The at-sea TECHEVAL was completed in December 2002. The Operational Test and Evaluation Force (OPTEVFOR) conducted an OA in 2001.

The test plan for the SCSS Phase I OPEVAL has been approved. The SCSS has been installed on a submarine and was ready for testing; however the submarine was deployed to support Operation Iraqi Freedom before the test was completed.

TEST & EVALUATION ASSESSMENT

The results of the early OA and at-sea TECHEVAL were positive, with OPTEVFOR concluding that the system was potentially operationally effective and potentially suitable. Operators from the deployed ship provided positive feedback.

The software for the Digital Modular Radio portion of CSRR is behind schedule and the current configuration supports satellite communications only. As a result, legacy radio room equipment may have to be added to the racks in early ships of the *Virginia* class. This is proving to be a space and operability problem that requires resolution.

The Submarine Exterior Communications System provides a communications system that is common across all submarine classes.