

Acoustic Rapid COTS Insertion (A-RCI) Sonar System

A-RCI was initiated as Engineering Change 1000 to the AN/BSY-1 Combat System on improved *Los Angeles* class submarines. The program was expanded to provide improvements that could be backfit into all nuclear attack (SSN) and ballistic missile (SSBN) submarines totaling over 60 ship sets.

The motivation for these improvements was to provide expanded capabilities, particularly in littoral waters, for covert intelligence collection and surveillance, covert insertion, and support of Special Forces. Expanded capabilities were also for anti-submarine warfare focused on diesel-electric submarines, covert mining, and covert strike of targets ashore. Specific software improvements include passive ranging, spatial vernier processing, passive broadband improvements, full spectrum processing, dual towed array concurrent processing, low frequency active interference rejection, passive narrowband improvements, passive detection and tracking improvements, track management, on-board training, and port/starboard ambiguity resolution.

The operational test and evaluation plan for A-RCI features testing in four phases, the latter three of which correspond to hardware builds. When the program was placed under DOT&E oversight in 2001, Phase II testing was already underway. Phase II was the first implementation of the towed array improvements. A scarcity of submarine test resources for Phase II resulted in the deployment of Phase II equipped ships without operational test. The importance of the program and the lack of adequate operational testing led to DOT&E putting this Acquisition Category IV program on oversight.

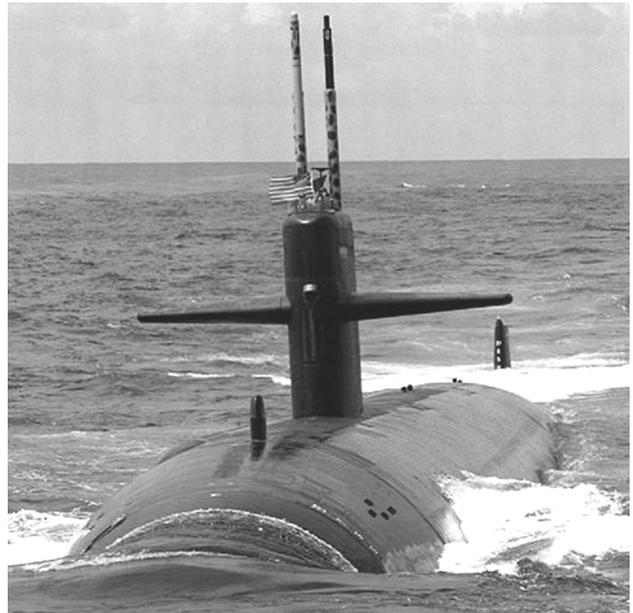
Due to repeated cancelled tests and equipment failures, the Phase II testing was never completed. Software reliability and configuration management problems continued to slow the program. Finally, the Commander, Operational Test and Evaluation Force (COMOPTEVFOR) terminated the testing program until the system could be re-certified for test.

TEST & EVALUATION ACTIVITY

Following re-certification, test and evaluation activity in 2002 centered about the operational evaluation of Phases III and IV, which are covered under separate Test and Evaluation Master Plans (TEMPs). Phase III is a major replacement of the sonar processing hardware and software for the towed arrays, the hull array, and the spherical array. Phase IV is an upgrade to the high frequency array. The Phase IV (minefield portion) test was completed in two days in a test minefield. The Phase III TEMP calls for ten days of open-ocean testing and two days on an acoustic range. All ten were planned for completion in FY02, but only three were accomplished due to cancellations, etc. In a letter to the Navy in April 2001, DOT&E stated:

“...The submarine force has provided insufficient test assets and time to complete planned testing before A-RCI sonar-equipped submarines have been deployed, citing lack of test assets because of higher-priority Navy tasking. Instead, A-RCI installation and deployment decisions appear to be marching independently of any Commander, Operational Test and Evaluation Force input.”

The procurements and deployments of Phase II and III systems continued resulting in the Director citing the A-RCI program in a letter to the Secretary of the Navy in August 2002 stating: *“I strongly recommend that you adopt a policy of deploying new combat systems after they have demonstrated appropriate performance during adequate operational test and evaluation.”*



The AN/BQQ-10 (V) Sonar is a major product improvement that will go on all submarine classes.

NAVY PROGRAMS

TEST & EVALUATION ASSESSMENT

Procurement and deployment of inadequately tested A-RCI systems are not in accordance with “fly before buy.” The A-RCI Program Office must work with the Navy Type Commander and COMOPTEVFOR to ensure that the resources (test submarines and time) are available for the adequate Operational Test and Evaluation of A-RCI before ships are deployed with those systems. As the testing proceeds, DOT&E will review the assessments made by COMOPTEVFOR and will look for assurance that the effectiveness and suitability (primarily reliability) goals are met.