

SSGN *Ohio* Class Conversion

Executive Summary

- The first cruise missile and special operations submarines (SSGN) conversion commenced sea trials in November 2005.
- The Navy needs to improve test schedule coordination between the SSGN conversion program and supporting modernization systems programs.
- SSGN mission performance during operational testing is dependent upon the performance of submarine modernization systems programs. Testing of modernization system program requires improvement.

System

Four *Ohio* class ballistic missile submarines are refueled and reconfigured as cruise missile and SSGN.

- The Strike configuration carries up to 154 Tomahawk cruise missiles for land attack strike.
- The Special Operations Forces (SOF) configuration can carry two mated SEAL delivery vehicles, embarked SEAL teams, and Tomahawk cruise missiles.
- The conversion includes extensive modernizations to forward electronics, radio, navigation, sonar, and fire control systems.
- It develops an extensive payload capability for supporting future off-board systems and weapons.

Mission

The Maritime Force Commander can employ the *Ohio* class SSGN for:



- Land attack strike mission, capable of launching Tomahawk cruise missiles
- Special operations missions including all support and planning for two SEAL submersible vehicles
- All traditional attack submarine missions

Activity

- USS *Ohio*, the first SSGN conversion, commenced sea trials in November 2005.
- The SSGN Test and Evaluation Master Plan (TEMP) Revision A is in final approval signature routing. The SSGN program is executing per the TEMP and on track for operational testing in FY07.
- The Navy's Operational Test Command completed an operational assessment of SSGN in April 2005. The assessment identified minor deficiencies in both the Strike Mission and the supporting system areas. As a result of the significant numbers of deficiencies, the Navy's testers evaluate the risk for a successful operational test as high.
- The Navy completed land-based testing of the Multiple All-up Round Canister (MAC) system.
- The Navy is redesigning the Tomahawk missile Capsule Closure Assembly (CCA) after a series of failed contractor acceptance tests.
- The Navy hosted several Total Ship Survivability Trials (TSST) meetings in support of the LFT&E program.

- The detailed design Vulnerability Assessment Report is nearly complete.

Assessment

- DOT&E agrees with the assessment of Navy testers. While there is not a major deficiency, the program has numerous minor issues that contribute to an overall high-risk evaluation. Most deficiencies relate to the Strike Mission and to submarine support systems. Many of the support system deficiencies are related to modernization programs associated with the submarine's electronics systems. These programs generally are minor programs (Acquisition Category II, III, or IV) and have a poor history of adequate operational test. For example, see the assessment of the Acoustic Rapid Commercial Off-the-Shelf Insertion (A-RCI) Sonar in this annual report.
- Land-based testing indicates that the MACs should support the loading and launch of Tomahawk missiles from an SSGN.
- Capsule and CCA redesign poses a moderate technical risk and could impact schedule. The initial newly designed CCA

failed contractor tests. The redesigned CCA has started contractor testing but is behind schedule. The Navy plans to operationally test the new CCA design from an attack submarine in 2006.

- The integration of the SSGN conversion test plans and the test schedule for modernization systems, such as the sonar, combat systems, and radio room is a concern. The performance of the modernization system can significantly affect the ability of the SSGN to demonstrate satisfactory performance in the new SSGN mission areas. Deficiencies in modernization program performance risk delaying the SSGN operational test or degrading SSGN mission performance.
- The Navy's goal is to maintain the level of survivability in the converted SSGN without introducing any survivability deficiencies into the platform. DOT&E is concerned about the new threats to the SSGN as a result of changes in the submarine's operational profile from an open ocean strategic mission to a littoral mission.
- The Navy's SSGN Program Office has started to coordinate the schedules of the conversion and modernization programs; however, the time allocated for testing, repairing, and retesting of some modernization system programs is often shorter than previously demonstrated.

Recommendations

1. The Navy must improve coordination between the SSGN conversion program and submarine modernization programs. Also, the Navy's operational testing of submarine modernization programs (Acquisition Category II, III, and IV) requires improvement. Navy operational testing of submarine modernization programs is often inadequate, behind schedule, or not accomplished. The operational test of the SSGN, in each mission area, is designed to be an end-to-end test. SSGN mission area performance is dependent upon the performance of submarine modernization systems contributing to the mission area.
2. The Navy's SSGN Test and Evaluation Integrated Process Team should meet on a regular basis to complete planning for operational evaluation. These meetings are important for discussing completed test results and for adjusting future test plans and schedules.
3. The Navy should complete development of the SSGN Concept of Operations.