

## SSGN *Ohio* Class Conversion

### Executive Summary

- The Navy completed full IOT&E of SSGN strike capability and partial IOT&E of SSGN special operations capability. The Navy deferred the remaining SSGN events to Follow-on Operational Test and Evaluation (FOT&E).
- Preliminary analysis indicates that the SSGN is effective and suitable for the land attack strike mission and for special operations missions utilizing a single Drydeck Shelter (DDS). DOT&E expects to publish a Beyond Low-Rate Initial Production Report as required by Title 10 in February 2008.

### System

- The SSGN conversion program involves the conversion of four *Ohio* class ballistic missile submarines into strike and special operations platforms.
- In a full strike configuration, an SSGN is intended to carry up to 154 Tomahawk cruise missiles for land attack strike, with 22 missile tubes carrying seven missiles per tube. In the standard configuration planned for normal operations, an SSGN is intended to carry one DDS or Advanced SEAL Delivery System (ASDS), embarked SEAL teams, and 105 Tomahawk cruise missiles in 15 tubes.
- The SSGN is designed to carry up to two ASDS and/or DDS, allowing submerged lockout and delivery of large numbers of Special Forces personnel. Additionally, the Navy converted two SSGN missile tubes into lockout chambers (LOCs) to allow submerged delivery of smaller numbers of Special Forces without use of ASDS or DDS.
- The conversion includes extensive modernizations to forward electronics, radio, navigation, sonar, and fire control systems.



It also develops an extensive payload capability for 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
- Traditional attack submarine missions

### Activity

- The Navy conducted SSGN IOT&E from February to August 2007 in accordance with the DOT&E-approved Test and Evaluation Master Plan (TEMP) and Test Plan.
- The Navy completed IOT&E of SSGN strike capability from April to May 2007. USS *Florida* conducted strike communications and simulated Tomahawk missile launches in the Atlantic Ocean while avoiding opposition air, surface, and submarine assets. USS *Florida* also conducted four Tomahawk missile test launches on the Eglin Air Force Base Range Facility, Florida; two of the four missiles were launched in rapid succession as a salvo.
- The Navy completed IOT&E of SSGN special operations support using a single DDS in February and August 2007. The Operational Test Agency conducted two scenario-based test events. The first event utilized Combat Rubber Raiding Craft to deliver Special Operations Forces (SOF) personnel to shore; the other utilized a Swimmer Delivery Vehicle.
- The Navy was unable to demonstrate SSGN Dual DDS capability during IOT&E because of wave damage to the available DDS. The Navy deferred dual DDS testing to FOT&E currently scheduled for December 2008.
- During developmental testing in July 2007, the Navy discovered a design problem that affected the safe operation of LOC hatches while submerged. The Navy deferred testing of special operations LOC capability to FOT&E in order to correct this problem.
- As a result of significant reliability and performance problems with the first ASDS, the Navy determined that the ASDS program could not support SSGN IOT&E in FY07. The Navy deferred testing of the SSGN with ASDS to FOT&E, currently scheduled for March 2008.
- The Navy conducted two tests of the Acoustic Rapid Commercial Off-the-Shelf Insertion (A-RCI) sonar system

# NAVY PROGRAMS

installed on an SSGN in April and May 2007. These events tested the ability of the SSGN to search for an enemy submarine and to safely detect and avoid a minefield.

- Concurrent with strike and special operations testing, the Navy completed IOT&E of the SSGN variant of the Common Submarine Radio Room (CSRR).
- DOT&E approved Change 1 to Revision A of the SSGN TEMP in November 2007. This change documents the deferral of LOC, Dual DDS, and ASDS capability to FOT&E.
- The Navy completed SSGN Total Ship Survivability Trials and issued the final installment of the detailed design Vulnerability Assessment Report in support of the SSGN LFT&E program.

## Assessment

- Preliminary analysis indicates that the SSGN is effective and suitable for the land attack strike mission and for special operations missions utilizing a single DDS. DOT&E expects to publish a Beyond Low-Rate Initial Production Report as required by Title 10 in February 2008.
- When configured with a single DDS, the SSGN's capability to deliver SOF personnel to shore is commensurate with the existing capability of DDS-configured SSNs. However, the SSGN provides a significantly improved onboard environment for SOF operations, including better command, control and communications, equipment storage, berthing, and exercise facilities.
- SOF delivery using the SSGN LOCs is limited by the lack of oxygen recompression capability in case of a diver accident. U.S. Special Operations Command (USSOCOM) will not certify the LOCs without this capability. The Navy currently plans to complete the first installation in 2008.
- The existing inventory of six DDS appears to be inadequate to support all four SSGNs and DDS-capable SSNs over the long term.

- The deferral of ASDS and Dual DDS significantly reduces the current SSGN special operations capability. USSOCOM has identified a number of critical potential missions that would require the greater effective range of ASDS and/or the greater capacity of ASDS or Dual DDS.
- The Navy achieved their goal of maintaining the original ballistic missile submarine (SSBN) level of survivability by completing conversion to SSGN without introducing any new survivability deficiencies. However, SSGN missions require the submarine to operate closer to shore and assume a more detectable communications posture. As a result, the SSGN is more susceptible to detection than a typical SSBN.
- SSGN operations would be enhanced by modifying the SSGN High Data Rate (HDR) antenna in order to achieve the same antenna height as the HDR on *Ohio* class SSBNs. The shorter SSGN HDR antenna forces the SSGN to operate at a shallower depth while communicating. This makes control of the SSGN more difficult and results in greater periscope exposure, increasing the submarine's susceptibility to detection.

## Recommendations

- Status of Previous Recommendations. The Navy satisfactorily addressed the FY06 DOT&E recommendation.
- FY07 Recommendations.
  1. The Navy should consider modifying the SSGN HDR antenna in order to achieve the same antenna height as the HDR on *Ohio* class SSBNs.
  2. The Navy and USSOCOM should evaluate and address the apparent shortfall in DDS inventory.
  3. The Navy should add organic oxygen recompression capability for SSGN's to enable SOF delivery without an installed DDS.