Surveillance Towed Array Sensor System (SURTASS) and Compact Low Frequency Active (CLFA) System

Executive Summary

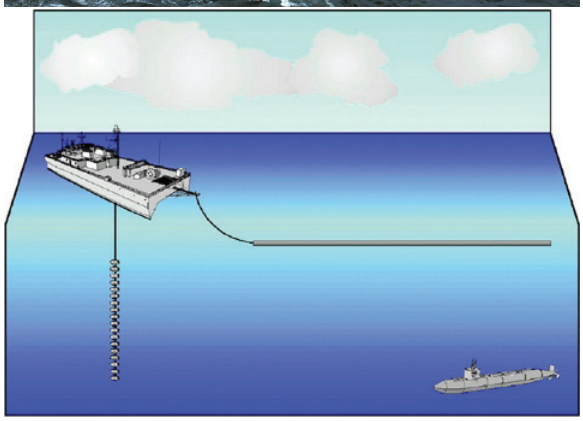
- The Navy has installed one engineering developmental model and two production Compact Low Frequency Active (CLFA) systems on three of the five Western Pacific-based tactical auxiliary general ocean surveillance (T-AGOS) ships. Installation of the CLFA system on remaining T-AGOS ships is not planned.
- The Navy's Commander, Operational Test and Evaluation Force (COTF) commenced IOT&E on the Surveillance Towed Array Sensor System (SURTASS)/CLFA during fleet exercise Valiant Shield 12 in September 2012. IOT&E will complete in FY13. The analysis of test data collected is still in progress. No preliminary evaluation is available.

System

- SURTASS/CLFA is a low frequency, passive and active, acoustic surveillance system installed on T-AGOS ships as a component of the Integrated Undersea Surveillance System (IUSS).
- SURTASS provides passive detection of quiet nuclear and diesel submarines and enables real-time reporting of surveillance information to Anti-Submarine Warfare (ASW) commanders.
- CLFA is a low frequency, active sonar system developed to provide an active detection capability of quiet submarines operating in environments that support active sonar propagation.
- The system consists of:
  - A T-AGOS host ship with array-handling equipment
  - A towed vertical string of active acoustic projectors
  - A towed horizontal twin line (TL-29A) acoustic array
  - An integrated common processor (ICP) for processing active and passive acoustic data
  - A communications segment to provide connectivity to shore-based IUSS processing facilities and to fleet ASW commanders

Mission

- Maritime Component Commanders employ T-AGOS ships equipped with SURTASS/CLFA systems to provide active and passive acoustic sensors for long-range ASW detection, classification, and tracking of submarines in support of theater naval operations.
- Maritime Component Commanders use SURTASS/CLFA to protect naval ships from threat submarines and to provide accurate targeting information to theater ASW forces to prosecute the threat submarines.



Major Contractors

- Overall Integrator: Maritime Surveillance Systems Program Office (PMS 485)
- ICP: Lockheed Martin – Manassas, Virginia
- CLFA Projectors: BAE – Nashua, New Hampshire
- CLFA Handling System: Naval Facilities Engineering Service Center (NAVFAC ESC) (Government Lab) – Port Hueneme, California
- High Frequency Marine Mammal Monitoring Sonar: Scientific Solutions Incorporated (SSI) – Nashua, New Hampshire
- TL-29A Towed Arrays: Lockheed Martin – Syracuse, New York

Activity

- After the August 2010 DOT&E Operational Assessment of SURTASS/CLFA installed on USNS *Able*, the Navy determined that additional system development was required to address system reliability, automated detection, and active tracking concerns before the system could proceed to IOT&E.
  - In January 2011, the Navy conducted at-sea test (AST) 11-2 to assess developmental changes to improve reliability.
  - In October 2011, the Navy conducted AST 11-4 to assess developmental changes to improve automated detection and active tracking performance.
  - In May 2012, the Navy conducted AST 12-1A as an advanced engineering analysis and system validation to inform a system certification decision.
  - On August 29, 2012, the Program Executive Office, Submarines certified the CLFA system ready to proceed to IOT&E.
- DOT&E approved the IOT&E test plan for SURTASS/CLFA on September 4, 2012, and agreed to use operationally realistic test and exercise data collected during a scheduled fleet exercise, Valiant Shield 12, which commenced on September 10, 2012, in the Western Pacific, as well as a dedicated test phase not associated with Valiant Shield 12.
- In September 2012, COTF and DOT&E commenced IOT&E on the SURTASS/CLFA system installed on USNS *Effective* (T-AGOS-21). Testing focused on SURTASS/CLFA contribution to coordinated ASW against threat diesel and nuclear submarines and included both passive and active sonar from multiple air and sea platforms. IOT&E will complete in FY13.
- The Navy acquired and installed one engineering developmental model and two production CLFA systems on three of the five Western Pacific-based T-AGOS ships. Installation of the CLFA system on remaining T-AGOS ships is not planned.

Assessment

- The conduct of IOT&E during an operationally relevant fleet exercise, Valiant Shield 12, allowed data collection that will provide insight into the effectiveness of SURTASS/CLFA as a primary contributor to theater ASW. The data will allow assessment of the ASW commander's ability to utilize SURTASS/CLFA contact reports with other ASW assets to protect surface ships and prosecute threat submarines.
- Due to a limitation in submarine support availability, substantially less data were obtained to support evaluation of the long-range active detection capability against threat-representative submarines than was planned. Additional testing is required to allow an adequate assessment.
- The analysis of test data collected during the combined SURTASS/CLFA IOT&E and Valiant Shield 12 fleet exercise is still in progress. No preliminary evaluation is available. DOT&E expects to issue a formal test report in FY13 after completion of IOT&E. The Navy has executed testing completed thus far in accordance with the DOT&E-approved test plan.

Recommendations

- Status of Previous Recommendations. The Navy and Program Office are satisfactorily addressing previous recommendations. The Navy implemented the FY11 recommendation to conduct IOT&E during a fleet exercise. The Program Office continued system development consistent with FY11 recommendations. Correction of deficiencies identified in COTF's and DOT&E's operational assessment reports will be validated during IOT&E.
- FY12 Recommendation.
  1. The Navy should complete remaining IOT&E to include a follow-on test event that allows an adequate determination of long-range active detection capability against threat-representative submarines.