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
- 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
- TL-29A Towed Arrays: Lockheed Martin – Syracuse, New York

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...
**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.