

Surface Electronic Warfare Improvement Program (SEWIP)

Executive Summary

- The AN/SLQ-32 Electronic Warfare System (EWS), equipped with the Surface Electronic Warfare Improvement Program (SEWIP) Block 1A upgrade, is substantially improved in the primary areas of detection, recognition, classification, response time, logistics supportability, and human systems integration.
- Preparations for a Milestone B decision for the SEWIP Block 1B increment continue with DOT&E participation.

System

- The SEWIP is an incremental development program that is intended to improve the electronic warfare capability of the Navy's AN/SLQ-32 EWS.
- The first increment (Block 1A) consists of an improved operator console and replacement of obsolete digital processors and tracking modules.
- The second increment (Block 1B) consists of modifications to improve emitter identification, situational awareness, and crew training.



Mission

Navy surface ships will use SEWIP to enhance their AN/SLQ-32 EWS anti-ship missile defense, counter-targeting, counter-surveillance, and electronic data collection capabilities.

Activity

- The Commander, Operational Test and Evaluation Force conducted operational testing of the AN/SLQ-32 EWS with the SEWIP Block 1A upgrade from June - October 2005. The testing was conducted onboard USS *Ramage* (DDG 61) in the Virginia Capes operating area.
- Testing included operationally representative activities and scenarios using representative Navy enlisted operators.
- Hardware/software reliability and hardware maintainability tests were emphasized to ensure correction of deficiencies found during previous operational assessments.
- All operational testing was conducted in accordance with DOT&E-approved test plans.
- DOT&E issued a Beyond Low-Rate Initial Production (BLRIP) report for SEWIP in June 2006.
- Preparations for a Milestone B decision for the Block 1B increment of SEWIP continue with DOT&E participation.

Assessment

- The AN/SLQ-32 EWS, equipped with the SEWIP Block 1A upgrade, is substantially better than the legacy equipment in the primary areas of detection, recognition, classification, response time, logistics supportability, and human systems integration.

- The test duration was not sufficient to demonstrate with high confidence that the hardware reliability threshold was attained.
- Although an improvement over the legacy system, stressing scenarios with high pulse densities and large numbers of emitters uncovered some deficiencies in properly recognizing and classifying emitters.
- Software reliability demonstrated during the test period is comparable to the legacy system reliability, but was below the stated requirement. Software reliability maturity indicators project that the requirement will be met with the software to be provided for the system's initial operating capability.
- The aerial targets used during the test period do not have the capability to fully represent the profiles, maneuvers, or threat seeker fidelity resident in actual anti-ship cruise missiles.
- Per the June 2006 DOT&E BLRIP report, the SEWIP Block 1A upgrade does not make the AN/SLQ-32 EWS operationally effective or suitable. It does, however, significantly enhance its ability to protect Navy ships by improving situational awareness and engagement support in addition to laying a good foundation for future upgrades. An operational evaluation of the full AN/SLQ-32 EWS will be conducted in conjunction with a future SEWIP block upgrade that includes improvements to the antenna/receiver system.

Recommendations

- Status of Previous Recommendations. The Navy has not resolved the following recommendation from the FY05 Annual Report:
FY05 #1: DOT&E recommended that the Navy update the Capability Development Document and Test and Evaluation Master Plan to reflect the SEWIP Block 1B program in preparation for a Milestone B review. This recommendation remains valid.
- FY06 Recommendation. The Navy should:
 1. Review and modify the SEWIP detection and classification algorithms to correct deficiencies discovered while operating in dense pulse and emitter environments. Verify the correction of these deficiencies during follow-on operational test and evaluation.
 2. Continue to collect in-service SEWIP Block 1A hardware reliability data to gain a higher degree of confidence regarding achievement of this requirement.
 3. Continue to review and modify the SEWIP software to improve its reliability. Verify the correction of this deficiency when the deployment-ready software has been delivered to the initial operating capability ship.
 4. Use a location other than the Virginia Capes operating areas for conduct of the SEWIP Block 1B operational test and evaluation in order to assess performance in an electromagnetic propagation environment that differs from that seen in the SEWIP Block 1A operational test. The Navy should review SEWIP Block 1A performance in this new environment.
 5. Develop threat representative aerial target/threat seeker combinations and/or procure actual threat anti-ship cruise missiles for more realistic testing of future SEWIP block upgrades and other electronic warfare systems.