Evolved SeaSparrow Missile (ESSM)

Executive Summary

- The January 2004 DOT&E Beyond Low-Rate Initial Production Report stated that the Evolved SeaSparrow Missile (ESSM) was operationally suitable on DDG 51 Class Destroyers with the Aegis 6.3 software baseline, that operational effectiveness was undetermined, and that the ESSM warhead was lethal. The Navy proceeded to full-rate production and fielding of ESSM without demonstrating the missile's operational effectiveness.
- Results of FOT&E testing in 2005 and 2008 have not demonstrated the operational effectiveness of ESSM against a number of anti-ship cruise missile (ASCM) classes, small surface threats, and low velocity air threats. The FOT&E identified significant problems regarding the integration of ESSM into Ship Self-Defense System (SSDS)-based combat systems.

System

- The ESSM is a medium-range, ship-launched guided missile designed for self-defense against ASCMs.
- The ESSM is a cooperative development among 13 nations.
- The ESSM is currently installed on DDG 51 Flight IIA Destroyers and on aircraft carriers equipped with the SSDS Mk 2 Mod 1 Combat System. The Navy is planning for future ESSM installations in CG 47 Class Cruisers, LHA 6 Class Amphibious Assault Ships, and the DDG 1000 Class Destroyers.

Mission

The Navy surface forces use the ESSM for self-protection primarily against supersonic, low-altitude ASCMs. A secondary mission for ESSM on ships equipped with the SSDS Mark 2 Mod 1/4 is self-protection against small surface craft and low velocity air threats.

Prime Contractor

- Raytheon

Activity

- Commander, Operational Test and Evaluation Force conducted FOT&E of ESSM in February 2008 on the USS *Ronald Reagan* (CVN 76) in accordance with a DOT&E-approved test plan. Due to reduced availability of Fleet assets, reduced availability of test assets, weather issues that compromised test safety, and problems with other SSDS combat system elements, the FOT&E test period was not completed. Tests not completed include the following:
  - Testing against supersonic, high-diving ASCMs
  - Testing against low velocity air threats
  - Testing against a raid of several simultaneous, subsonic ASCMs
  - Testing against a maneuvering surface craft
- The Navy awarded a development contract for a Threat D surrogate target in August 2008.

Assessment

- ESSM operational effectiveness against supersonic high-diving ASCMs, a single supersonic sea-skimming maneuvering ASCM, a stream raid of supersonic sea-skimming maneuvering ASCMs, raids of several simultaneous subsonic ASCMs, low velocity air threats, and maneuvering surface craft remains undetermined.
- Initial indications are that significant problems regarding integration of ESSM into SSDS-based combat systems exist.

- ESSM operational effectiveness in the presence of electronic jamming remains undetermined.
- ESSM operational suitability on SSDS Mk 2 Mod 1-equipped platforms is undetermined.
- FOT&E is planned for FY09 with an Aegis combat system to demonstrate missile performance:
  - Against a stream raid of supersonic, low-altitude, maneuvering ASCMs
  - Against supersonic, high-diving ASCMs
  - In the presence of electronic jamming
  - After the missiles have undergone shipboard storage for the requisite duration

Recommendations

- Status of Previous Recommendations. The Navy closed one of the two recommendations from FY06 and has made progress towards resolving the other.
- FY08 Recommendations. The Navy should:
  1. Complete all planned FOT&E tests in accordance with the DOT&E-approved test plan.
  2. Acquire credible supersonic high-diving and supersonic sea-skimming ASCM surrogate targets in time to support FOT&E of ESSM with the Aegis combat system in FY09.
  3. Acquire a credible Threat D surrogate target to support future ESSM FOT&E testing.