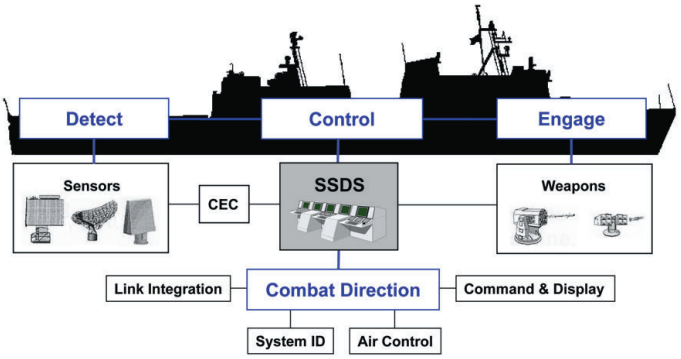
Ship Self Defense System (SSDS)

Executive Summary

- In FY05, a Ship Self Defense System (SSDS) Mark 2 Mod 1 single-ship Follow-on Operational Test and Evaluation (FOT&E) and a SSDS Mark 2 Mod 2 operational assessment were completed. Multi-ship FOT&E testing of SSDS Mark 2 Mod 1 should end in FY06.
- Tests to date have demonstrated that SSDS significantly enhances own-ship self defense and battle force command and control. However, SSDS/North Atlantic Treaty Organization (NATO) Sea Sparrow integration and reliability issues remain that, if uncorrected, could severely impact self-defense capability.



System

The SDSS integrates ship's tracking systems and weapons through a local area network.

- Mark 1 variant fielded as the combat system in LSD 41/49-class ships.
- Mark 2 variant has three mods:
  - Mod 1 is in development for CVN 68 class aircraft carriers.
  - Mod 2 is in development for LPD 17 class amphibious ships.
  - Mod 3 is in development for LHD class amphibious ships and LHA-replacement ships.

Mission

U.S. Navy surface forces use the SSDS to provide automated engagement doctrine for faster and more effective mission accomplishment.

- Mark 1 and Mark 2 are designed to provide automated and integrated detect-to-engage capability against anti-ship cruise missiles .
- Mark 2 will also provide faster and more effective command and control for air and surface warfare areas.

Activity

- Navy Commander, Operational Test and Evaluation Force (COMOPTEVFOR) conducted Mark 2 Mod 2 land-based operational assessment in April 2005.
- COMOPTEVFOR conducted Mark 2 Mod 1 single-ship FOT&E aboard CVN 76 in June 2005.
- Planning for Mark 2 Mod 1 multi-ship FOT&E with CVN 76 in October–November 2005 was conducted.
- Changes to the SSDS Test and Evaluation Master Plan (TEMP) are in progress to address Mark 2 Mod 2 LPD 17 FOT&E.
- All FY05 OT&E was conducted in accordance with DOT&E-approved test plans.

Assessment

- COMOPTEVFOR reports from the April and June tests are pending.
- All SSDS land- and sea-based testing in FY05 demonstrated progress in track management, reliability, and human factors with the incorporation of software fixes to address problems in these areas. However, due to safety limitations associated with tests on manned ships and at land-based test sites, testing has consisted primarily of manned aircraft and aerial target scenarios that were not fully stressing, thereby precluding a determination of the system's operational effectiveness. More stressing scenarios using anti-ship cruise missiles surrogates against the Self Defense Test Ship will occur during the SSDS Mark 2 Mod 2 FOT&E in FY06 and FY07. Not all anti-ship cruise missile surrogates outlined in the TEMP have been procured for this SSDS Mark 2 Mod 2 FOT&E.
- The SSDS Mark 2 Mod 1 single ship FOT&E assessed the self defense capability of the system. Fixes for a significant number of high-severity computer program trouble reports regarding SSDS/NATO Sea Sparrow Missile System integration and SSDS display reliability were not in place going into Mark 2 Mod 1 single-ship FOT&E. During that test, these uncorrected issues were observed to contribute at times to reduced track/engagement effectiveness. These issues will carry over to the CVN 76 deployment.
- The Mark 2 Mod 1 multi-ship FOT&E will primarily examine the system's command and control performance in an operational Carrier Strike Group environment.
- In the absence of deferred SSDS Mark 2 interfaces to the Global Command and Control System-Maritime and TPX-42A(V) command and control systems, operators must

manually fuse the air and surface pictures displayed on the SSDS console with the blue force pictures on the consoles thereby increasing the likelihood of blue-on-blue engagements.

Recommendations

The Navy should:

1. Address the outstanding computer program trouble reports for future CV/CVN deployments.
2. Procure all required anti-ship surrogates as outlined in the TEMP for the SSDS Mark 2 Mod 2 FOT&E in FY06-07.
3. Update the TEMP to address FOT&E of Evolved Sea Sparrow Missile integration with SSDS Mark 2 Mod 1 in addition to SSDS Mark 2 Mods in LHD 8, CVN 68, and LHA 6.
4. Initiate efforts to fund deferred SSDS Mark 2 interfaces to the Global Command and Control System-Maritime and TPX-42A(V) command and control systems.