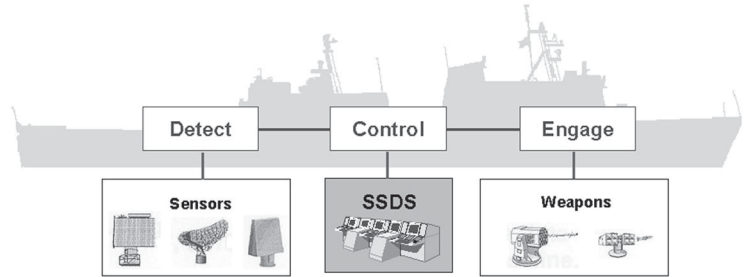


NAVY PROGRAMS

Ship Self Defense System (SSDS)

SUMMARY

- FY04 testing demonstrated that the Ship Self Defense System (SSDS) Mark 2 enhances ship performance; however, operators were at times unable to maintain situational awareness due to issues with track management, system design, reliability, and human factors. In some cases, SSDS performance regressed with each new software build. If this is unresolved before USS *Ronald Reagan* (CVN 76) deploys, this could hinder self defense capability.
- Implementation and testing of SSDS interfaces with Global Command and Control-Maritime and TPX-42A(V) remain deferred and unfunded, placing a greater burden on operators and potentially contributing to blue-on-blue engagements.
- Future operational test and evaluation (OT&E) of SSDS Mark 2 Mod 3 for LHD 8/LHA(R) requires a phase on the Self Defense Test Ship (SDTS).
- Future OT&E of SSDS Mark 2 Mod 1 for Evolved Seasparrow Missile integration requires a phase on the SDTS.



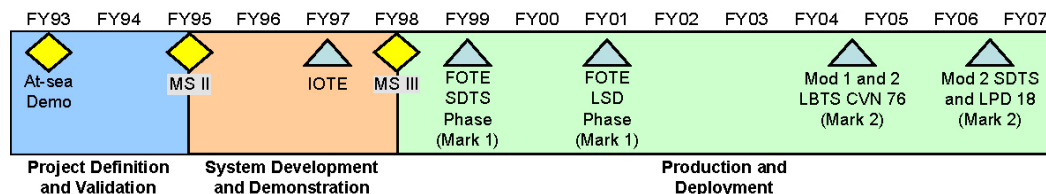
SSDS Mark 1 provides an automated and integrated detect-to-engage capability against anti-ship cruise missiles.

SYSTEM DESCRIPTION AND MISSION

The SSDS consists of two versions: Mark 1 – fielded in LSD 41/49-class ships, and Mark 2 – in development for CV/CVN class aircraft carriers, LPD 17 class amphibious ships, LHD class ships and LHA-replacement ships. SSDS Mark 1 provides an automated and integrated detect-to-engage capability against anti-ship cruise missiles. Mark 2 adds the command and decision functionality of the Advanced Combat Direction System Block 1. Mark 2 provides command and control capability and combat direction capability across the air, surface, undersea, strike, and command, control, and communications warfare areas. SSDS Mark 2 interfaces with the Cooperative Engagement Capability, thereby leveraging the tracking and sensor integration capabilities of the Cooperative Engagement Capability system.

SSDS Mark 2 has four variants. Mod 0 is a one-of-a-kind system installed on USS *Nimitz* (CVN 68). The other 11 aircraft carriers will use the Mod 1 system, fielded on USS *Ronald Reagan*. Mod 2 is for all LPD 17 class ships, beginning with *San Antonio* (LPD 17). LHD 1-class and LHA(R)-class ships will have Mod 3. The major differences in the Mods are in the sensors, weapons, and their integration for the different ship classes. With Mod 3B, SSDS will migrate to an open architecture system.

TEST AND EVALUATION ACTIVITY



In FY04, the SSDS program completed two land-based developmental tests of the Mod 1 system at the Ship Combat Systems Center, Wallops Island, Virginia, and concluded the Mod 1 land-based test phase. The Navy operational test agency conducted an operational assessment of readiness for OT&E, based on the last Mod 1 land-based test. Two Mod 1 developmental tests on CVN 76 and the first Mod 2 developmental land-based test are complete.

NAVY PROGRAMS

In July 2004, DOT&E approved the revised Mark 2 Test and Evaluation Master Plan (TEMP) for all Mark 2 Mod 1 CVN 76 test and evaluation phases, all Mark 2 Mod 2 LPD 17 developmental test and evaluation, and operational test and evaluation through the land-based test phase. As a condition of approval, the Navy must update the TEMP before Mark 2 Mod 2 LPD 17 OT&E, and resubmit it for Office of the Secretary of Defense approval. This update must address OT&E after Evolved Seasparrow Missile integration, open architecture implementation, Mod 3 development, and Threat D target availability.

TEST AND EVALUATION ASSESSMENT

During the past fiscal year, the schedule for SSDS Mark 2 Mod 1 OT&E shifted from 1QFY05 to 3QFY05. As outlined in the TEMP approved in FY04, OT&E for Mod 1 will consist of anti-ship cruise missile target tracking exercises, but no missile firings. Instead, the Navy will use missile firings during the CVN 76 Combat System Ship Qualification Trials/developmental test period in 2QFY05 to resolve OT&E critical operational issues. Although the SSDS program office intends to conduct the events under operationally realistic conditions, DOT&E stresses the importance of doing so in order to resolve the Critical Operational Issues fully before CVN 76 deployment.

Land- and sea-based developmental tests of the Mod 1 system in FY04 had mixed results. The tests demonstrated SSDS significantly enhances force command and control and own-ship self-defense, albeit against non-stressing targets. However, operators were at times unable to maintain situational awareness because of issues with track management, system design, reliability, and human factors. In some cases, SSDS performance in these areas regressed with each new software build under test. Although the SSDS program intends to address the higher priority problem areas in time to support OT&E, there are few opportunities remaining to test the fixes aboard CVN 76. For lower priority problems, fixes may not be in place before CVN 76 deployment because of the large number of issues remaining. Such large numbers could lead to workarounds, deferrals, and protracted build plans, and if unresolved before CVN 76 deploys, could hinder self defense capability.

In FY04, the Navy made no progress toward funding deferred SSDS Mark 2 interfaces that are critical to the ability of Mod 1 and Mod 2 ships to perform their missions. The original intent was to develop SSDS interfaces to important command and control systems, specifically Global Command and Control System-Maritime and the TPX-42A(V), but the program deferred development indefinitely due to a lack of funding. Without the interfaces, operators must manually fuse the air and surface pictures displayed on the SSDS console with the blue force pictures on the separate Global Command and Control System-Maritime and TPX-42A(V) consoles. This could severely impact how SSDS provides command and control for battle force operations and could increase the likelihood of blue-on-blue engagements.

Since the SSDS Mark 2 ships use short-range weapons, safe and effective OT&E requires the SDTS capability of remote operation during operationally realistic self defense scenarios. The SSDS TEMP partially addresses this concern with the addition of an SDTS test phase within the FY06/FY07 LPD 17 OT&E window. Future OT&E of the Mod 3 combat system in the LHD 8/LHA(R) Flight 0 configuration will require the SDTS, as will that for the Mod 1 combat system, when it is integrated with Evolved Seasparrow Missile.