Ship Self Defense System (SSDS)

The Ship Self Defense System (SSDS) is designed to expedite the detect-through-engage process on amphibious ships and aircraft carriers against anti-ship cruise missiles (ASCMs). SSDS consists of software and commercial off-the-shelf hardware and is intended to integrate sensor systems with engagement systems. SSDS is not designed to improve capability of individual sensors but enhances target tracking by integrating the inputs from several different sensors to form a composite track. Similarly, SSDS is not designed to improve capability of individual weapons, but expedites the assignment of weapons for threat engagement and provides a "recommend engage" display for operators, or if in automatic mode, initiates weapons firing, electronic jamming, and chaff or decoy deployment.

The SSDS variant in development is the Mark 2 system. The original Mark 1 system was designed to provide an automated and integrated detect-to-engage capability against ASCMs. The SSDS Mark 2 system expands upon this capability by subsuming the command and decision functionality of the Advanced Combat Direction System Block 1. Thus, SSDS Mark 2 facilitates command and control and combat direction encompassing the multi-warfare missions of air, surface, undersea, strike, and command, control, and communications warfare. Since SSDS Mark 2 is being installed with the Cooperative Engagement Capability (CEC), the tracking functionality of CEC is being used to leverage the sensor integration capabilities of this new system.

The SSDS Mark 2 system will be the combat direction system for CV/CVN class aircraft carriers and LPD 17 and LHD 1 amphibious ships. The Mark 1 system has been introduced into the Fleet in dock landing ships (LSD 41/49); full-rate production of SSDS Mark 1 was authorized in March 1998. SSDS Mark 2 has four planned variants. Mod 0 is installed in *USS Nimitz* for one deployment. Mod 1 will be installed in all carriers, including *USS Nimitz*, beginning with *USS Reagan* in 2003. Mod 2 will be installed in all LPD 17 class ships, beginning with *USS San Antonio*. Mod 3 will be installed in LHD 8. The major differences in the Mods are in the sensors and weapons for the ship classes. Beyond Mark 2, SSDS is planned to migrate to an open architecture system.

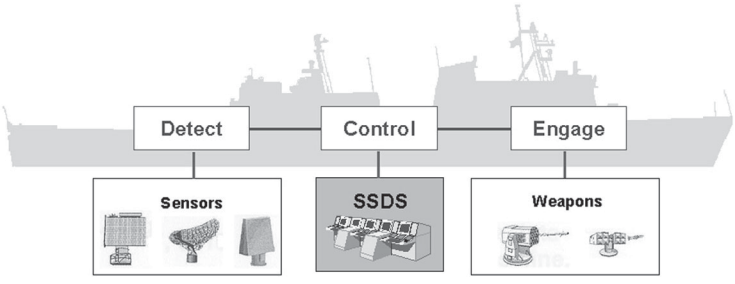
TEST & EVALUATION ACTIVITY

Activity during FY03 focused on further definition of the overall Mark 2 test and evaluation program, work on a Test and Evaluation Master Plan (TEMP) for Mark 2, and engineering and developmental testing of the Mod 1 version at the Ship Combat Systems Center, Wallops Island, Virginia, and on board *USS Reagan.*

TEST & EVALUATION ASSESSMENT

As was the case with the *USS Nimitz* in FY02, the Navy conducted SSDS Mark 2 engineering and developmental testing for *USS Reagan* FY03 without an approved TEMP. There has been no operational testing.

Because it incorporates Advanced Combat Direction System Block 1 functionality, SSDS Mark 2 will require an assessment of performance in several warfare areas, depending on the ship class. These warfare areas include air, surface, strike, amphibious, and others. Further, the air warfare test and evaluation requires an additional phase to assess ship self defense against ASCMs. This requires Mark 2 integrating the sensor and engagement subsystems of the applicable ship class combat systems while engaging ASCMs or adequate surrogate targets. Since the systems on these ships use short-range weapons, safe and effective OT&E can only be accomplished with a Self Defense Test Ship (SDTS) capable of being remotely operated during operationally realistic ship air defense scenarios. Given that the LPD 17-class ship is the first forward-fit installation using SSDS Mark 2, this OT&E of



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Mark 2 must be combined with the SDTS phase of the LPD 17 operational evaluation, projected for FY06-FY07. Delaying the testing will result in several ships being deployed with combat systems that have not been adequately tested.

DOT&E's concerns on this issue are clear. DOT&E approval of TEMPs and operational test plans for LPD 17 and SSDS will hinge on an adequate OT&E strategy. An adequate strategy includes a separate SDTS phase within the FY06-FY07 LPD 17 OPEVAL window with an LPD 17-representative combat system engaging threat-representative ASCM targets with Rolling Airframe Missiles.