

## 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, consisting of software and commercial off-the-shelf hardware, integrates sensor systems with engagement systems. SSDS will not improve capability of individual sensors, but enhances target tracking by integrating the inputs from several different sensors to form a composite track. Similarly, SSDS will not 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, chaff or decoy deployment, or some combination of these.

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 (ACDS) Block 1. Thus, SSDS Mark 2 is responsible for 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, thereby leveraging the sensor integration capabilities of this new system.

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

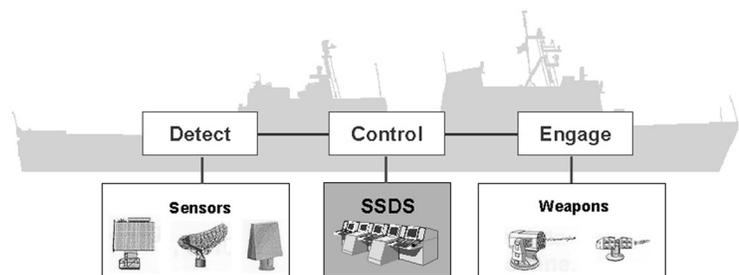
### TEST & EVALUATION ACTIVITY

Activity focused during FY02 on further definition of the overall Mark 2 Test and Evaluation (T&E) program, work on a Test and Evaluation Master Plan (TEMP) for Mark 2, and engineering and developmental testing of the Mod 0 version at the Ship Combat Systems Center, Wallops Island, Virginia, and also on board *Nimitz*.

### TEST & EVALUATION ASSESSMENT

SSDS Mark 2 Mod 0 engineering and developmental testing for *Nimitz* has been conducted without an approved TEMP. There has been no operational testing. Although it appeared that the *Nimitz* Battle Group would be included in Follow-on Test & Evaluation (FOT&E) of the CEC Block 1 and provide an opportunity to demonstrate Mark 2 Mod 0 capability, the Navy’s decision to accelerate deployment left too little time to conduct the FOT&E.

Because it incorporates ACDS Block 1 functionality, SSDS Mark 2 will require 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 area T&E 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 acceptable surrogates as targets. Since the systems on these ships are short-range air defense systems, safe and effective Operational Test & Evaluation (OT&E) requires use of a Self Defense Test Ship (SDTS) capable of



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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 Mark 2 needs to be combined with the SDTS phase of the LPD 17 operational evaluation, projected for FY06.

Through FY02, the Navy warfare sponsors for LPD 17 and SSDS Mark 2 resisted funding realistic operational testing of the LPD 17 combat system air defense, including SSDS Mark 2, on a SDTS due to the cost of installing SSDS Mark 2 and the associated radars and Rolling Airframe Missile (RAM) on a SDTS, plus the cost of targets, RAMs, and associated test range support. Without such testing, the LPD 17 operational evaluation and SSDS Mark 2 OT&E would be inadequate. In early November 2002, progress was made in solving this impasse, with the Program Executive Office for Integrated Warfare Systems (PEO(IWS)) agreeing that the LPD 17 combat system needed to be tested on the SDTS against threat ASCM-representative targets. Details of how representative the combat system on the SDTS must be are still being worked out. DOT&E requires the AN/SPS-48E radar on the SDTS since it will be one of the two primary radars that will be on LPD 17, but the PEO is recommending that it not be included on the SDTS.