

Ship Self-Defense for LSD 41/49

Executive Summary

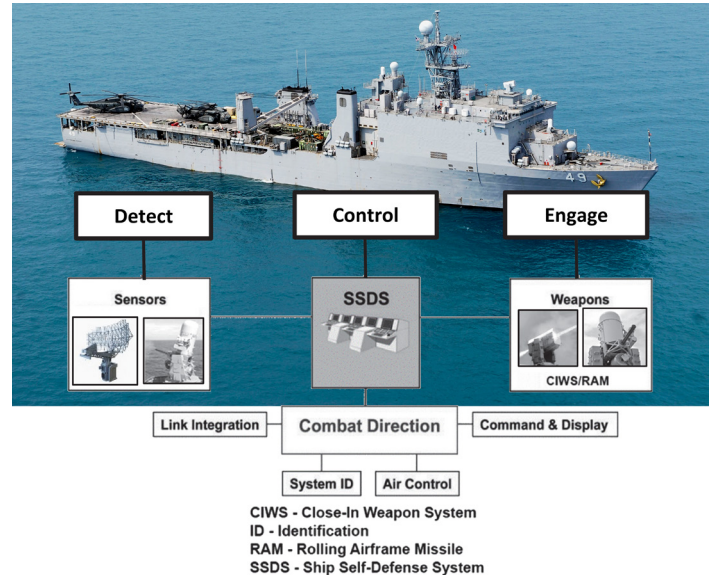
- The Navy postponed gun and missile firing operational tests planned for June 2016 from the Self-Defense Test Ship (SDTS) equipped with the Ship Self-Defense System (SSDS) MK 2 Mod 5 Combat System due to initial concerns about possible poor performance and the desire to conduct detailed predictive analysis before proceeding with testing.
- The Navy's detailed predictive analysis is scheduled for completion in October 2016. A total of four missile firing and two gun firing operational test scenarios from the SDTS are planned. One missile firing scenario from the SDTS is scheduled for December 2016. The remaining three missile firing and two gun firing operational test scenarios from the SDTS are scheduled for no earlier than FY19.
- DOT&E intends to issue an SSDS MK 2 Mod 5 Early Fielding Report to Congress once the first SSDS MK 2 Mod 5-equipped LSD 41/49 ship deploys in late 2016. An additional two SSDS MK 2 Mod 5-equipped LSD 41/49 ships are planned to deploy in FY17 with at least one more planned to deploy in FY18. The report will state that there is a paucity of operational test results to support any assessment of the self-defense capabilities of the LSD 41/49 class ships equipped with the SSDS MK 2 Mod 5 Combat System and that the Navy is deploying those ships with unknown self-defense capabilities.

System

- Surface ship self-defense for the LSD 41/49 class ship is addressed by several legacy combat system elements (including the AN/SPS-49A(V)1 and Close-in Weapon System Radars that are the primary self-defense radars) and three acquisition programs:
 - Ship Self-Defense System (SSDS)
 - Rolling Airframe Missile (RAM)
 - Surface Electronic Warfare Improvement Program (SEWIP)

SSDS

- SSDS is a local area network that uses open computer architecture and standard Navy displays to integrate a surface ship's sensors and weapons systems to provide an automated detect-track-engage sequence for ship self defense.
- SSDS MK 1 is the legacy command and control system for LSD 41/49 class ships.
- SSDS MK 2 has six variants:
 - Mod 1, used in CVN 68 class aircraft carriers
 - Mod 2, used in LPD 17 class amphibious ships
 - Mod 3, used in LHD 7/8 class amphibious ships
 - Mod 4, used in LHA(R) class amphibious ships
 - Mod 5, used in LSD 41/49 class amphibious ships
 - Mod 6, in development for CVN 78 class aircraft carriers



RAM

- The RAM, jointly developed by the United States and the Federal Republic of Germany, provides a short-range, lightweight self-defense system to defeat anti-ship cruise missiles (ASCMs).
- There are three RAM variants:
 - RAM Block 0 uses dual-mode, passive radio frequency/infrared guidance to home in on ASCMs.
 - RAM Block 1A adds infrared guidance improvements to extend defense against ASCMs that do not emit radar signals.
 - RAM Block 2 adds kinematic and guidance improvements to extend the capability of RAM Block 1A against newer classes of ASCM threats.

SEWIP

- The SEWIP is an evolutionary development program providing block upgrades to the AN/SLQ-32 electronic warfare system to address critical capability, integration, logistics, and performance deficiencies.
- There are three major SEWIP block upgrades:
 - SEWIP Block 1, which is used on LSD 41/49 class ships, replaced obsolete parts in the AN/SLQ-32 and incorporated a new, user-friendly operator console, an improved electronic emitter identification capability, and an embedded trainer.
 - SEWIP Block 2 incorporates a new receiver antenna system intended to improve the AN/SLQ-32's passive electronic warfare capability.

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- SEWIP Block 3 is in development and will incorporate a new transmitter antenna system intended to improve the AN/SLQ-32's active electronic warfare capability.

- SEWIP-improved AN/SLQ 32 as the primary electronic warfare sensor and soft-kill weapons system for air defense (to include self defense) missions.

Mission

- Naval Component Commanders use SSDS, RAM, and SEWIP, as well as many legacy systems, to accomplish ship self-defense missions.
- Naval surface forces use the:
 - SSDS to provide automated and integrated detect to engage ship self-defense capabilities against ASCM, air, and surface threats.
 - RAM to provide a short-range hard-kill engagement capability against ASCM threats.

Major Contractors

- SSDS (all variants): Raytheon – San Diego, California
- RAM (all variants): Raytheon Missile Systems – Tucson, Arizona; RAMSys – Ottobrunn, Germany
- SEWIP
 - Block 1: General Dynamics Advanced Information Systems – Fair Lakes, Virginia
 - Block 2: Lockheed Martin – Syracuse, New York
 - Block 3: Northrop Grumman – Baltimore, Maryland

Activity

- The Navy postponed gun firing and missile firing operational tests planned for June 2016 from the SDTS equipped with the SSDS MK 2 Mod 5 Combat System due to initial concerns about possible poor performance and the desire to conduct detailed predictive analysis before proceeding with testing.
- The Navy's detailed predictive analysis is scheduled for completion in October 2016. A total of four missile firing and two gun firing operational test scenarios from the SDTS are planned. One missile firing scenario from the SDTS is scheduled for December 2016. The remaining three missile firing and two gun firing operational test scenarios from the SDTS are scheduled for no earlier than FY19.
- The first SSDS MK 2 Mod 5-equipped LSD 41/49 ship deploys in late 2016. An additional two SSDS MK 2 Mod 5-equipped LSD 41/49 ships are planned to deploy in FY17 with at least one more planned to deploy in FY18.

six required missile/gun firing operational tests (December 2016) to support deployments of the first four LSD 41/49 ships equipped with the SSDS MK 2 Mod 5 Combat System. There is, therefore, a paucity of operational test results to support any assessment of the self-defense capabilities of the LSD 41/49 class ships equipped with the SSDS MK 2 Mod 5 Combat System and the Navy is deploying these ships with unknown self-defense capabilities. The assessment of the self-defense capabilities of the LSD 41/49 class ship equipped with the SSDS MK 2 Mod 5 Combat System cannot be completed until all planned operational tests are conducted. SDTS scheduling constraints will delay completion of the remaining five required missile/gun firing operational tests until FY19 at the earliest when most, if not all, LSD 41/49 ships equipped with the SSDS MK 2 Mod 5 Combat System will have been deployed.

Assessment

- The Navy's reluctance to proceed with any operational testing as scheduled in June 2016 over concerns of highlighting poor system performance is troubling because the ability of these deploying ships' to defend themselves in a conflict is unknown and the root causes of any performance problems and the potential for correcting those problems also remains unknown. The resulting delay now allows for conduct of only one of the

Recommendations

- Status of Previous Recommendations. This is the first annual report for this program.
- FY16 Recommendation.
 1. The Navy should complete all planned operational tests of the LSD 41/49 ship class equipped with the SSDS MK 2 Mod 5 Combat System as soon as possible and prior to further ship deployments.