

SeaRAM Evolved Ship Defense



SeaRAM Missile Defense System provides the highest level of ship self-protection with extended keep-out range capability and the ability to engage multiple targets.

Benefits

- Extends the inner layer battlespace, enabling ships to effectively engage future high-performance, supersonic, and subsonic threats
- Leverages the technology from Phalanx CIWS and RAM
- Combines RAM's superior accuracy, extended range, and high maneuverability with Phalanx's high resolution target detection and quick response capability
- Integral part of layered surface and anti-air self-defense capability

The SeaRAM Anti-ship Missile Defense System, under development by Raytheon Company (United States) and RAM-System GmbH (Germany), is an evolved Close-In Weapon System (CIWS) comprising key attributes of both the Phalanx CIWS and the Rolling Airframe Missile (RAM) Guided Weapon System. SeaRAM is designed to extend the inner layer battlespace and enable the ship to effectively engage future high-performance, supersonic, and subsonic threats. The system provides the highest level of ship self-protection with extended keep-out range capability and the ability to engage multiple targets. These important features strengthen the ship's ability to sustain its mission in the most challenging littoral environments.

Leveraged technology from Phalanx CIWS and RAM integrates elements of each system into the self-contained SeaRAM system. An 11-missile round RAM launcher assembly, loaded with RAM guided missiles,

replaces Phalanx's 20 mm gun. SeaRAM combines RAM's superior accuracy, extended range, and high maneuverability with the Phalanx Block 1B's high resolution search-and-track sensor systems and reliable quick-response capability.

SeaRAM is an affordable capability upgrade — an especially attractive option for those navies that have already deployed the Phalanx CIWS. SeaRAM fits the exact shipboard installation footprint of the Phalanx, uses the same power, and requires minimal shipboard modification. SeaRAM is also well-suited to new construction and requires minimal system integration because of its self-contained features. The integration risk is also minimized because RAM and Phalanx are already being deployed as a part of the U.S. Navy's integrated Ship Self-Defense System.

The SeaRAM system will be a complete and autonomous weapon system with its own

sensor suite, combat system and weapon. Like the Phalanx, only power and cooling water will be required from the ship. Based on the Phalanx Block 1B system, SeaRAM will include the latest version Ku-band search and track radar, and a new forward looking infrared (FLIR) imaging system. SeaRAM's sensor suite will provide multi-spectrum search and targeting capabilities for day and nighttime operations. Below decks the SeaRAM system will utilize the same control panel and consoles that are being deployed as part of Phalanx 1B upgrade, thus no changes in equipment space or footprint will be required. The consoles (local and remote) provide the operator with video images from the FLIR for threat detection/track. The operator can establish positive identification (ID) of precisely where or what the system is tracking. Each console contains a display, keyboard and joystick handle. For low velocity threats the operator is able to move the



mount, designate and engage the target. The local control station (LCS) houses the unique SeaRAM electronics and provides an interface to the SeaRAM. The LCS also provides the necessary FDDI, NTDS or 1553 interface to the ship's combat system, should it be required or desired.

Raytheon Company and RAM-System GmbH (RAM-SYS) developed a SeaRAM Operational Suitability Model to demonstrate the system's operational effectiveness and compatibility with ship systems. This model has undergone testing with the United Kingdom Royal Navy. Raytheon developed both the Phalanx and RAM systems. RAMSYS is Raytheon's partner

on the RAM program, collaborating on RAM design and production.

The SeaRAM team is employing a disciplined integrated product development, event-driven approach to maximize system effectiveness.



SeaRAM on HMS York during sea trials



RAM Specifications

Length:	9.3 ft	2.82 m
Diameter:	5 in	12.7 cm
Speed:	Supersonic	
Wing Span:	17.5 in	44.5 cm
Guidance:	Dual Mode	
Warhead:	10 kg	
Weight:	162 lb	73.6 kg

SeaRAM Weapon Group

Sensors

Search Radar:	Ku-band, Digital
Track Radar:	Ku-band, Pulse Doppler, Mono-Pulse
FLIR:	LWIR
ESM:	Integrated with ship's ESM or self-contained (optional)

Physical Specifications

Elevation:	-10° to +80°
Above-Deck Weight:	15,520 lbs (including missile rounds)
Train:	± 155°
Below-Deck Weight:	1,575 lb
Working Circle:	137 in
Missile Capacity:	11

Threat Coverage

Anti-ship cruise missiles, surface craft, helicopters, UAVs, fixed wing aircraft (all types)

Local Control Station (LCS)

Remote Control Station (RCS) in CIC



RIM 116B RAM Missile

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