

Phalanx Close-In Weapon System



Phalanx

The last line of defense against today's modern littoral and anti-ship threats.

Benefits

- System can be interfaced with virtually any ship combat system
- Provide target designation for other shipboard weapons
- FLIR provides a unique capability to search, track, and engage littoral warfare threats

Modern surface combatants are vulnerable to a growing number of Anti-Ship Missile (ASM) and unique littoral warfare threats. In response, the United States Navy (USN) and an ever expanding list of foreign customers have continued to develop an effective and efficient counter to these threats – Raytheon's Phalanx Close-In Weapon System. With over 890 systems produced for 23 nations, production contracts in place to carry further development into the 21st century, and evolutionary improvements being fielded, Phalanx is the weapon of choice for today's close-in ship defense requirement.

Phalanx combines a proven 20-mm M61A1 Gatling gun, firing Armor Piercing, Discarding Sabot (APDS) rounds at a selectable 3000/4500 spm, with an advanced search and track Ku-band RADAR featuring closed-loop spotting technology, to provide autonomous target detection and engagement. The system can also be interfaced

with virtually any ship combat system and can provide target designation for other shipboard weapons, such as Raytheon's Rolling Airframe Missile (RAM).

The Block 0 configuration provides basic anti-ship missile defense against today's low altitude, subsonic, non-maneuvering ASM. Additionally, the Block 0 system acts as the basis for an overhaul and upgrade process to more capable configurations including Block 1A, Block 1B and Raytheon's SeaRAM Evolved Close-In Weapon System.

The Block 1A configuration incorporates a new High Order Language computer and a number of other enhancements to provide enhanced fire control capability against modern, highly maneuverable ASM in a variety of scenarios. Block 1A is also the basic configuration for efficient integration into a Combat Data System such as the USN's Ship Self Defense System (SSDS).

The Block 1B Surface Mode configuration builds on the existing capabilities of Block 1A with the addition of new Optimized Gun Barrels (OGB) for an improved dispersion pattern and an integrated Forward Looking Infrared System (FLIR). The Phalanx FLIR provides a unique capability to search, track, and engage littoral warfare threats, while simultaneously providing a significant improvement in ASM engagement ranges.

The Threat

Today, surface combat is most likely to occur in near shore, littoral environments. This scenario places ships and their crews at risk to an increased number of threats including small, fast gun boats, standard and guided artillery, helicopters, mines and a variety of shore-launched anti-ship missiles. These threats demand a new generation of ship defense capabilities — **Phalanx Block 1B**.



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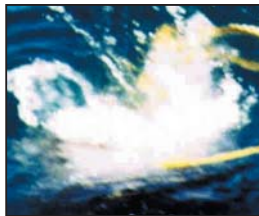
Scale UAV



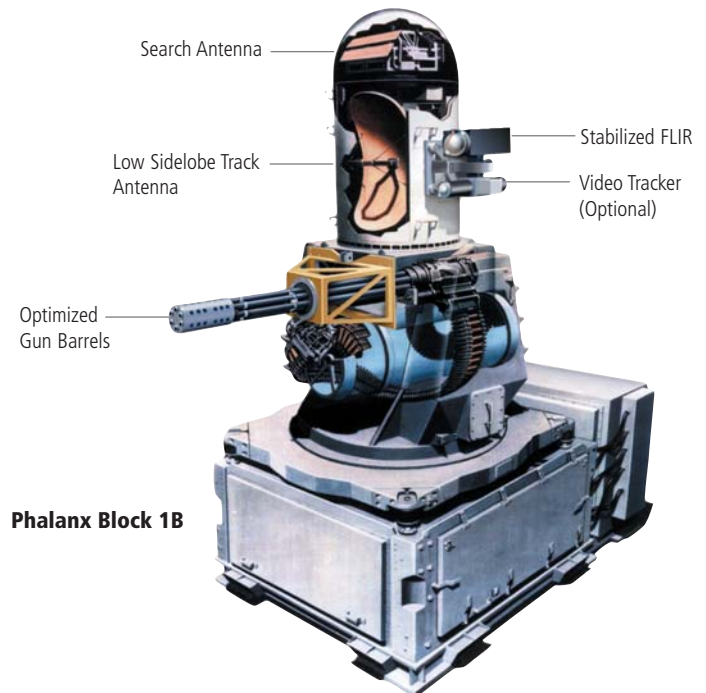
Personal Watercraft



Small Boat Threat



Surface Mine



Phalanx Block 1B

The Solution

Raytheon's Phalanx Block 1B Surface Mode is a complete weapon system to counter threats of today and tomorrow. With an integrated FLIR and operator control panels merged with a proven anti-ship missile defense capability, the Block 1B system is unique in the world. The system has been thoroughly tested in real world scenarios against a variety of ship defense threats and will soon be deploying on U.S. Navy vessels.

Optimized Gun Barrels

The original M61A1 gun barrels were designed for short bursts and are subject to wear and increased dispersion patterns. The new OGBs are 18 inches longer, substantially thicker and include both a barrel brace and muzzle restraint to improve life expectancy and projectile dispersion patterns. In addition, the optional Enhanced Lethality Cartridge (ELC) will provide a 50 percent increase in penetrator mass.

Phalanx FLIR

To provide its unique Surface Mode tracking and engagement capability, Phalanx Block 1B

incorporates a Thermal Imager with Automatic Acquisition Tracking. The system operates in the 8–12 micron wavelength and is mounted on a stabilized pedestal attached to the existing Phalanx Track Antenna radome. This system provides a reliable day/night passive search and track capability against slow-speed air threats and surface craft, while improving Anti Air Warfare performance in multi-path and glint environments via enhanced angular track accuracy (50–100 microradians) against the high-G maneuvering ASM.

Operational Features

- Autonomous detect, prioritization, track, engagement and kill assessment of air targets from wave-top to steeply diving
- Day/night detect, identification, track and engagement, and kill assessment of surface craft and low-speed aircraft
- Remote designation available from other ships' sensors against air and surface targets
- Interface and control to provide fire-control and search sensor engagement capability for other shipboard gun and missile systems
- Worldwide logistics, training and depot-level maintenance
- Automated/Integrated Test system including moving end-to-end target simulation capability
- Affordable and fits virtually any ship without major ship alteration

Phalanx Specifications

Gun:	M61A1 20-mm cannon
Gun Drive:	Pneumatic
Magazine:	1550-round enhanced lethality cartridge
Mount Drive:	Electric
Fire Rate:	Dual Fire rate, 3000 or 4500 spm
Electric Power:	3-phase, 440 V, 60 Hz, 18 kW in Search, 70 kW in Track
Weight:	14,500 lb
Search Radar:	Ku-band, digital MTI
Track Radar:	Ku-band, pulse Doppler monopulse
E/O Sensor:	FLIR Imaging system with Automatic ACQ Tracker
Seawater Cooling:	20 gpm, 30 psig

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