

# GENESIS

## 21<sup>st</sup> Century Combat Management System for Perry-Class Frigates



A state-of-the-art combat management system to quickly, efficiently and effectively detect, identify, track and engage air, surface and subsurface threats across multiple radar and surveillance systems for optimum awareness and decision making.

### Benefits

- Reduces the footprint and complexity of the FFG 7 combat management system
- Uses powerful modern COTS computers and network technology
- Supports multiple radars and integrates data into a single coherent picture for optimum situational awareness
- Expands identification, detection and tracking capabilities
- Provides comprehensive intelligence quickly for improved decision making
- Easily supported, maintained and upgraded

### Enhanced Capabilities for Today's Threats

Threats continue to become more and more sophisticated. Modernized systems using the latest technologies for optimum air and sea situational awareness and decision-making are critical to protecting the U.S. and allied countries. With Raytheon Integrated Defense Systems' and HAVELSAN's GENESIS system, U.S. Navy-built FFG 7 ships operational around the world can significantly improve their combat intelligence and ability to take action to counter threats. The Turkish navy is already reaping the benefits.

### Modernized Configuration

GENESIS modernizes and expands the capabilities of the combat management system (CMS) used on FFG 7 ships, while leveraging its

original foundation to interface with the ship's sensors, weapons and platform data.

With GENESIS, all OJ-197 and OJ-194 consoles, as well as both weapon control consoles (WCC), are removed. The GENESIS Combat Information Center (CIC) features eight operator consoles with dual, vertical flat-panel displays; two tactical consoles with side-by-side displays; and a large screen display. Additional features include integrated video distribution with multiple topside cameras, customized Commanding Officer and Bridge displays and digital data recording.

The weapon support processor (WSP) is replaced with an open and distributed architecture CMS that runs on modern, commercial-off-the-shelf (COTS) processors and work-

stations. While the MK 92 fire control system remains the same, the AN/UYK-7 computer that was used as the WSP is reconfigured as a cold, backup replacement of the MK 92 weapon control processor (WCP).

GENESIS runs on a redundant Gigabit Ethernet LAN and interfaces with all weapon, sensor and platform systems through common subsystem interface units (SIU). A central interface unit (CIU) replaces both WCCs and is interfaced via an SIU to GENESIS, enabling all WCC functions to be performed by GENESIS consoles.

## Comparison of FFG 7 CMS Capabilities: Original vs. GENESIS

Original CMS Design	GENESIS Modernization
<ul style="list-style-type: none"> <li>■ Obsolete hardware systems compromise combat direction system reliability</li> </ul>	<ul style="list-style-type: none"> <li>■ State-of-the-art, COTS network, CPUs and computers have high mean time between failure</li> </ul>
<ul style="list-style-type: none"> <li>■ Small memory (386 KB) of the old, AN/UJK-7 WSP limits incoming targets to 64 tracks inhibiting intelligence</li> </ul>	<ul style="list-style-type: none"> <li>■ Modern COTS processors can track thousands of targets</li> </ul>
<ul style="list-style-type: none"> <li>■ Operator consoles are monochromatic with low resolution and very limited data manipulation and viewing capability. No map display or tactical figures</li> </ul>	<ul style="list-style-type: none"> <li>■ Consoles with two 21-inch, color, high-resolution displays can be customized like a desktop computer to encompass expanded surveillance through available TV cameras and a video distribution system</li> </ul>
<ul style="list-style-type: none"> <li>■ Manual tracking of air and surface targets limit the accuracy and number of tracks</li> </ul>	<ul style="list-style-type: none"> <li>■ Automatic detection and tracking with twice as many radars, as well as automatic correlation capability</li> </ul>
<ul style="list-style-type: none"> <li>■ Manual decoy launching capability is provided</li> </ul>	<ul style="list-style-type: none"> <li>■ Automatically identifies threats, selects and launches decoys and recommends course and speed to maximize decoy effectiveness</li> </ul>
<ul style="list-style-type: none"> <li>■ Phalanx Close In Weapon System (CIWS) operates only in autonomous modes</li> </ul>	<ul style="list-style-type: none"> <li>■ Phalanx search radar is integrated into GENESIS, and GENESIS has the ability to order Phalanx to engage a selected target. Also, GENESIS enables Phalanx to engage a MK 92 target</li> </ul>
<ul style="list-style-type: none"> <li>■ Limitations in processing and communication result in slow detect-to-engage (DTE) times</li> </ul>	<ul style="list-style-type: none"> <li>■ Air test target DTE time reduced by more than 50 percent</li> <li>■ Shore engagement reaction times reduced by more than 98 percent</li> </ul>
<ul style="list-style-type: none"> <li>■ Has limited future growth due to central processor architecture, outdated parts and technology</li> </ul>	<ul style="list-style-type: none"> <li>■ Open LAN architecture enables continuous enhancements and addition of new capabilities such as gunfire control, dual data links and more</li> </ul>
<ul style="list-style-type: none"> <li>■ Limited data link capability</li> </ul>	<ul style="list-style-type: none"> <li>■ Seamless Multi-Link capability with potential future growth</li> </ul>



Modern high-resolution, color consoles enable the viewing and tracking of targets from various radars with mapping and expanded detection, as well as engagement and symbol capabilities in user-friendly, customizable window views.



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