

From Months to Days: How the FMD Pit Stop Program Revolutionized U.S. Navy Engine Maintenance



Executive Summary

The U.S. Navy faced a significant challenge with its engine maintenance procedures, which were plagued by lengthy timelines, unpredictable costs, and a growing backlog of deferred work. The traditional "open and inspect" method often extended overhauls from weeks to many months, reducing fleet availability. Fairbanks Morse Defense (FMD) introduced the Pit Stop Program, an innovative strategy inspired by the efficiency of NASCAR pit crews. By using advanced planning, standardized overhaul kits, and a closed-loop parts refurbishment system, FMD dramatically reduced maintenance periods, enhanced cost predictability, and improved overall fleet readiness. Successful implementation on multiple U.S. Navy vessels, including the USS Ashland and USS Gunston Hall, has proven the program's effectiveness, cutting overhaul times by over 60%.

The Challenge: Breaking the Maintenance Bottleneck

The U.S. Navy was grappling with a substantial deferred maintenance backlog, estimated to exceed \$2 billion. A primary contributor to this issue was the conventional "open and inspect" approach to engine overhauls. Under this model, a ship would enter its maintenance period, and only after its engines were disassembled could technicians determine which components needed repair or replacement.

This reactive process created a cascade of delays. Ordering parts after inspection led to long lead times, while unexpected discoveries could expand the scope of work and budget. What was scheduled as a routine overhaul could stretch for six to nine months, sidelining critical assets and straining resources. For vessels like the Landing Ship Docks (LSDs), these delays frequently pushed maintenance far beyond scheduled windows, compromising operational availability and mission readiness. The process was inefficient, costly, and unpredictable.

The Solution: A NASCAR Mindset for Naval Readiness

Drawing inspiration from the high-speed precision of a NASCAR pit crew, Fairbanks Morse Defense and the U.S. Navy developed the Pit Stop Program. The core idea was to shift from a reactive maintenance model to a proactive, standardized one. Instead of waiting to diagnose issues, FMD's strategy anticipates them.

The Pit Stop Program is built on three key features:

- **Advanced Planning:** Leveraging deep OEM expertise and performance data, FMD pre-identifies high-wear components likely to need replacement during an overhaul. This eliminates guesswork and creates a predictable scope of work before the vessel even arrives for service.
- **Pre-Staged Overhaul Kits:** Based on the plan, FMD assembles standardized, OEM-certified part kits. These kits contain all necessary components for the overhaul, plus contingency parts for unexpected issues. The kits are shipped to the vessel ahead of the maintenance window, ensuring technicians have everything they need on day one.
- **Closed-Loop Refurbishment:** During the overhaul, technicians swap out the pre-identified components with new ones from the kit. The removed parts are sent back to an FMD service center, where they are inspected, refurbished, certified with a full OEM warranty, and placed into inventory for future Pit Stop kits. This sustainable, closed-loop system ensures a ready supply of reliable parts.

By treating engine overhauls like a planned pit stop rather than an exploratory surgery, FMD enables maintenance to be completed within shorter availability windows, removing engine work from the critical path of major naval overhauls.

The Results: Unprecedented Speed and Efficiency

The Pit Stop Program was piloted with the Naval Surface Warfare Center's (NSWC) Philadelphia Division across four Whidbey Island-class LSDs, delivering transformative results.

- **USS ASHLAND:** Overhauled three Ship Service Diesel Generators (SSDGs) in under 26 days each. This was achieved by leveraging OEM-certified components salvaged from the decommissioned USS Whidbey Island.
- **USS PEARL HARBOR:** Completed a full SSDG overhaul in an identical, remarkably fast 26-day turnaround.
- **USS OAK HILL:** Two Main Propulsion Diesel Engines (MPDEs) were overhauled in a combined 52 days, a task that would traditionally take the better part of a year.
- **USS GUNSTON HALL:** A complex MPDE overhaul, including additional warranty work, was finished in just 38 days.

The Results: (Cont.)

Across these vessels, the Pit Stop Program achieved a 60% faster maintenance turnaround compared to traditional methods. It has established a new benchmark for efficiency, proving that overhauls taking up to nine months can now be consistently completed in under two.

The Pit Stop strategy is a game changer in operational availability. FMD's expertise allows us to restore engines to operational standards within our tight maintenance windows, ensuring our vessels remain ready."

- U.S. Navy Maintenance Partner

The Conclusion: Revolutionizing the Future of Naval Maintenance

The FMD Pit Stop Program is more than an incremental improvement; it is a fundamental shift in maintenance philosophy. By prioritizing logistical discipline, data-driven planning, and repeatable execution, FMD has proven that a proactive approach can solve long-standing challenges in the maritime industry. Every day saved in the shipyard is another day a vessel can be at sea, projecting power and ensuring national security. The Pit Stop Program demonstrates that with the right mindset, the U.S. Navy can keep its fleet in the race—prepared, ready, and maintaining a decisive edge.