

# DELIVERING THE GOODS

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FEATURE ARTICLE

## Machinery Control

Improving Reliability, Commonality for Cutters  
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# Machinery Control and Monitoring System Will Generate Cost Savings and Commonality

By Linda M. Johnson

The U.S. Coast Guard is developing a new machinery control and monitoring system (MCMS) for certain cutters, including the National Security Cutter (NSC), that will improve reliability, provide common features and reduce costs for training, parts and maintenance.

The new system will be the third machinery control system installed on the NSC, which receives thousands of machinery signals at any given time. The NSC's first machinery control system

ownership of from the contractor as lead systems integrator," explained Ahmed Majumder, MCMS execution manager for the NSC. "We saw there were problems with the NSC's machinery control system and we fixed them."

The Coast Guard version of the MCMS has been installed on the first two NSCs, the Bertholf and the Waesche, and is scheduled to be installed on the third NSC, the Stratton, early next year. The Coast



**The Coast Guard is testing MCMS software at the Naval Ships Systems Engineering Station's lab in Philadelphia. U.S. Coast Guard photo.**

was installed by the shipbuilder, but when the Coast Guard took ownership of the cutter, the service redesigned and replaced the system to address various security and functionality issues with the hull, mechanical and electrical systems.

"The NSC's machinery control system is one of the first systems that the government took full

Guard has also installed an MCMS on refurbished 270-foot Medium Endurance Cutters (WMEC) that is based on a U.S. Navy system.

With these two machinery control systems fielded, the Coast Guard is pursuing the development of a new MCMS that will merge the versions used on the 270-foot

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WMECs and the NSCs into a common system that can be utilized on multiple cutters. The new MCMS can be installed on numerous ships with little re-development and is not tied to a particular operating system.

“The new machinery control system, still under development, will be platform independent, meaning the Coast Guard will be able to do a technology refresh or make enhancements for multiple platforms in one shot,” he said. “The goal of the platform-independent project is to have common architecture and features on more than one class of cutter so the control system has the same look and feel for the sailors who use it on different ships. We hope to start fielding the platform-independent control system in early 2013.”

## Components and Features

The MCMS manages most of a ship's systems, with the exception of a cutter's command, control, communications, computers, intelligence, surveillance and reconnaissance systems. It features an operating system that uses software to control and monitor a ship's equipment.

The system allows a single technician to control multiple components, such as a ship's engines, propulsion system, electrical system, air flow, valves, pumps and sensors. It replaces the functionality previously provided by manual, hydraulic and pressurized-gas devices.

“For example, an operator can use the machinery control system to turn pumps on or off to move liquids,” Majumder noted. “When a ship wants to transfer fuel from one tank to another, the machinery control system enables an operator to remotely control the valves and pumps used for fuel transfer operations. The system also allows the same operator to remotely monitor the tank level indicator so it can be filled to the desired level.”

The MCMS can also be used to monitor and log engine cylinder temperatures, speeds and power usage.



**The third NSC, the Stratton, departed the shipyard in early October. Photo courtesy of Huntington Ingalls Industries.**

In many cases, the system can automatically alert users to issues. These functions were previously performed by multiple watchstanders taking and evaluating manual log readings.

In the past, a cutter's machinery control system was tailored to a particular ship and was not flexible enough to be fielded on other cutters. Because of the way cutters used to be acquired, each cutter class had a unique machinery control system. These different control systems were difficult to support and upgrade, and they required operators to learn a new system for each class of vessel.

## Ship-to-Ship Commonality

The new MCMS will be easy to learn and feature similar software and icons from ship to ship. The Coast Guard is developing an in-house, government-owned system with common features and symbols that minimize the amount of new information an operator must learn when he or she transfers from one class of cutter to another.

“We're developing a large percentage, roughly 80 to 85 percent, of systems that can be reused on multiple ships. About 15 percent has to be tailored to a ship's specific systems, like a different type of engine or generator and the exact number of valves, tanks, etc.,” he explained.

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The new engine room of a refurbished 270-foot Medium Endurance Cutter. U.S. Coast Guard photo.

“Our biggest goal is to make the new machinery control system easier on the end user—the actual sailor—by giving them the same look and feel, providing consistency, improving usability and making life easier for them as they rotate from ship to ship,” Majumder said. “We also gain cost savings from being able to use the same Coast Guard-owned systems across the board. There is a big cost difference between the contractor developing a software load and the government developing a software load.”

The new MCMS will also use common computer hardware and network switches. “We’re trying to use the exact same hardware from ship to ship so we can minimize how many spares we need and use the same spares from ship to ship,” he noted.

## Partnering with the Navy

The Coast Guard is partnering with the Navy to use the same commercial off-the-shelf hardware that they use for their ships’ machinery control systems. “Teaming up with the Navy and with multiple Coast Guard platforms allows us to address obsolescence

issues as a whole and collectively come up with a solution for everybody,” Majumder said.

The Coast Guard has been leveraging the Naval Ship Systems Engineering Station (NAVSSSES) lab in Philadelphia to do software testing that was previously done on the NSC itself. On the ship, NSC technicians found a five-minute, real-time delay in the tank indicator’s ability to report depth levels. This made it hard for operators to determine a tank’s fullness without manually checking its level while it was being filled.

This discovery led the lab to develop a fix that allowed the tank indicator to near-instantaneously monitor tank fluid levels. The Coast Guard incorporated this software fix into its version of the MCMS that has been installed on the first two NSCs.

The Coast Guard’s Mission Effectiveness Project, which has been refurbishing several classes of legacy cutters—including the 270-foot WMECs—has

**“By having a similar system on multiple platforms, we reduce the cost of training, lifecycle support and maintenance. It’s a lot easier and cheaper to have one manual and one training class that cover multiple ships.” - Ahmed Majumder**

also been using the NAVSSSES lab to ensure the common architecture and machinery control systems will work on multiple cutter classes, including the 270-footers, the 282-foot Alex Healy and the 418-foot NSCs.

There is also the potential for common architecture and machinery control systems among the refurbished 270-footers, the NSCs and the Coast Guard’s newest classes of cutters that have yet to be delivered, the Offshore Patrol Cutter and the Fast Response Cutter.

## Second Cutter Boat RFP Hits the Street

On Sept. 16, the Coast Guard issued a request for proposal (RFP) from boat builders for the 11-meter Long Range Interceptor II (LRI-II) cutter boat. Cutter boats are small, maneuverable boats that are launched and recovered from the deck of a parent cutter and are used to extend the cutter's range.

The Coast Guard plans to purchase up to 10 LRI-IIs, eight of which will be deployed from the National Security Cutter (NSC) and two of which will either be spares or for other government agencies. Industry proposals are due Nov. 2.

The cutter boat project also includes the 7-meter Over the Horizon IV (OTH-IV) boat. Each NSC will carry three cutter boats, one LRI-II and two OTH-IVs. Earlier this summer, the Coast Guard awarded four firm fixed-price production contracts to deliver the first test OTH-IV boats. The Government Accountability Office dismissed a protest of the contract awards Sept. 19, which has allowed work to resume on the test boats.

Each awardee will deliver one test OTH-IV boat to the Coast Guard no later than Feb. 2, 2012, for competitive evaluation. The Coast Guard will then select one boat for additional production and for operational test and evaluation activities. The Coast Guard



When launched from a parent cutter, cutter boats help extend the cutter's range. U.S. Coast Guard photo.

plans to acquire up to 101 OTH-IVs, including up to 20 boats for Customs and Border Protection (CBP) and 10 boats for the U.S. Navy.

For more information on cutter boats, please visit [www.uscg.mil/acquisition/boats](http://www.uscg.mil/acquisition/boats).

## Response Boat-Small Contract Awarded

On Sept. 26, the Coast Guard awarded a contract valued at approximately \$13 million to Metal Shark Aluminum Boats of Jeanerette, La., for the production of 38 replacement Response Boats-Small (RB-S). The new RB-S incorporates improvements in accessibility, maintenance technologies and passenger safety—including better visibility and shock-mitigating seating for the gunner position—that will allow the Coast Guard to execute its missions more effectively and efficiently.



The current RB-S fleet is nearing the end of its 10-year service life and needs to be replaced. U.S. Coast Guard photo.

In February, the Coast Guard awarded two fixed-price contracts to begin the replacement of its current RB-S fleet, which is nearing the end of its 10-year service life. Under the terms of the contract, each builder produced a minimum of one boat based on a proven hull design and delivered that boat to Coast Guard in June. The Coast Guard then tested and validated each boat over the summer and down-selected one boat that provides the best overall value to the government.

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This contract allows the Coast Guard to purchase up to 500 replacement boats. Up to 470 boats will be delivered to shore units to perform a variety of law enforcement and homeland security missions. Up to 20 boats may be ordered by CBP and up to 10 boats by the Navy. The RB-S replacement is one of the largest boat buys of its type for the Coast Guard.

For more information on the RB-S, please visit [www.uscg.mil/acquisition/RBS](http://www.uscg.mil/acquisition/RBS).

## Atlantic City Celebrates MH-65D Fleet



An MH-65D sits in the hangar at Coast Guard Air Station Atlantic City. U.S. Coast Guard photo.

The Coast Guard held a ceremony on Sept. 16 at Air Station Atlantic City, N.J., recognizing the enhanced mission capabilities of its MH-65D Short Range Recovery Helicopter fleet. Air Station Atlantic City maintains the Coast Guard's largest MH-65D fleet, with 10 newly updated MH-65Ds responsible for supporting missions throughout New York, New Jersey, Pennsylvania, Delaware, Maryland, Washington, D.C., and parts of Virginia.

The Dolphin has been undergoing a series of overhauls, the latest of which is upgrading the MH-65C to the MH-65D by replacing obsolete components and unsupportable equipment with modern digital systems.

Rear Adm. John Korn, the Coast Guard's Assistant Commandant for Acquisition; Rear Adm. Dean Lee, commander of the Coast Guard's 5th District; and U.S. Rep. Frank LoBiondo, R-N.J., chairman of the House Subcommittee on Coast Guard and Maritime Transportation, each gave remarks at the ceremony.

For more information on the MH-65, please visit <http://www.uscg.mil/acquisition/MCH>.

did  
you  
know

**The Coast Guard's fifth National Security Cutter will be named for Joshua James. James is credited with saving more than 600 lives along the New England coastline over a nearly 60-year career with the U.S. Life Saving Service.**

## Acquisition Profile: Desiree Sylver-Foust

### Contracting Officer Division Chief, Major Systems Acquisition

By Michael Valliant

Car salesmen have met their match in Desiree Sylver-Foust. The Coast Guard Acquisition Directorate's contracting officer division chief for major systems acquisition, Sylver-Foust is a keen negotiator.

"Our office buys the National Security Cutter (NSC), all the aviation and surface assets, aircraft, and handles foreign military sales," Sylver-Foust said. "And I try to get the ultimate deal."

But buying an NSC is not like buying a car. The process starts with a sponsor and a program office determining the Coast Guard's needs and the requirements that must be met. The contracting office then takes those requirements and makes sure they are met, fine-tuning them to eliminate any ambiguity and ensuring the request for proposal is ready to be competed.

How long the process takes varies based on the item's complexity, dollar value and how firm the requirements are.

"Our process includes market research to find out who the vendors are that build the types of things the sponsor needs, if there is something already commercially available that meets the requirements, and to determine what type of schedule we are looking at," Sylver-Foust said.

In the case of the NSC, this process can take 12 to 18 months. With five NSCs under contract now, the requirements have become firm and the contracting office has a good idea of what to look for. They were able to negotiate the contract for NSC 4, the Hamilton, as a firm fixed-price contract—a first for the NSCs and a major accomplishment.

Sylver-Foust points out that going through the process once before doesn't mean it will go the same way the next time. And this is one of the things she enjoys about her job.

"Work is vastly different every day. Every procurement is different, even if you've done it before," she said.

Sylver-Foust has worked in contracting for the federal government for nearly 20 years; she started working with the Coast Guard in June 2005. Born and raised in Washington, D.C., she received her bachelor's degree from Bowie State University and her master's degree from the University of Maryland. She has been married for 19 years and she and her husband have two young daughters.

As the Coast Guard recapitalizes its fleet of cutters and aircraft, working in contracting for the Coast Guard is a fast-paced job.



**Desiree Sylver-Foust, Contracting Officer Division Chief, Major Systems Acquisition. U.S. Coast Guard photo by Petty Officer 1st Class Andrew Kendrick.**

To balance her mind outside of work, Sylver-Foust is an accomplished artist, working primarily with acrylic paints.

"Painting started off as a hobby to relax, but now I do at least one studio or gallery exhibition a year," she said. "My work is mostly based on music or things I've seen while traveling."

Sylver-Foust's experience in contracting and her tenure with the Coast Guard are an example of the efforts the service is taking to professionalize its acquisition workforce. The service is bringing the right people to the table who are ensuring that the Coast Guard acquires the best possible assets at the best possible price.





*Master Chief  
Petty Officer Brett Ayer*

## ASK THE MASTER CHIEF

**Q.** I was told that you are planning to replace the engineering control console on the 270-foot Medium Endurance Cutters (WMEC). Is it true that it will be like the system on the National Security Cutter (NSC)?

**A.** Yes, we are. And better than that, we've already started. It's not the same system as the one on the NSC, called the Machinery Control and Monitoring System, but it does have a similar look and feel.

We've been working with the Surface Forces Logistics Center, the Engineering and Logistics Directorate and Naval Sea Systems Command in Philadelphia on the development and installation of a new Main Propulsion Control and Monitoring System that has a common user interface with the same look and feel. A key goal as we acquire new assets and update legacy assets is commonality. In this case, commonality means that when an operator or technician transfers from one platform to another, he or she should not have to re-learn an entirely new system from scratch.

No two cutters will ever be exactly the same—because the engineering systems are not the same—but the user experience should be as close to the same as possible from cutter to cutter. If a particular symbol on the screen represents a lube oil control valve on one cutter, it should be the same symbol on our other cutters. The same is true for the screen layouts and menus. This is what we're trying to accomplish.



**The 270-foot Medium Endurance Cutter Thetis is moored at the Coast Guard Yard in Baltimore while it undergoes refurbishment via the Mission Effectiveness Project. U.S. Coast Guard photo.**

We've already installed the system on two 270-footers and we're going forward with installs on the remaining 270-foot WMECs as our Mission Effectiveness Project continues. We're also working with Force Readiness Command to update the training simulator at Training Center Yorktown, Va.

The ultimate goal is to update as many of our existing cutters as possible with this same user interface and to include the system in new production of future cutters.

*To submit a question for an upcoming Acquisition Directorate newsletter, please e-mail Master Chief Petty Officer Brett F. Ayer directly at [Brett.F.Ayer@uscg.mil](mailto:Brett.F.Ayer@uscg.mil) or [acquisitionweb@uscg.mil](mailto:acquisitionweb@uscg.mil).*