



# Delivering the Goods

News from the U.S. Coast Guard Acquisition Directorate

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## Research and Development Center Develops Cutting-Edge Applications to Help Coast Guard Achieve Missions

By Linda M. Johnson

**W**ASHINGTON—The U.S. Coast Guard's Research and Development (R&D) Center in Groton, Conn., is currently performing research, development, testing and evaluation on approximately 70 applications to help the Coast Guard develop solutions to improve performance of its multiple missions.

Two of the cutting-edge applications under development, Boat Trap and multi-mode detection devices, could help the Coast Guard enhance its port security and law enforcement missions. These technologies are modern alternatives for stopping noncompliant small boats, such as "go-fasts," and for detecting hidden contraband, such as illegal narcotics or explosives.

Boat Trap is an aircraft-deployed, non-lethal, small vessel entanglement and stopping system. The device features a propeller entanglement system whereby an entanglement net is manually dropped from a helicopter into the path of a fleeing boat, thus safely disabling the suspicious vessel. The Boat Trap system is part of a new generation of non-lethal and less-than-lethal technologies that give the Coast Guard more options in their defense against security threats, especially in crowded harbors.

"Non-compliant small boat threats have elevated the importance of less-than-lethal technology to stop non-compliant vessels," said Commander Eric Riepe, policy division chief for the Coast Guard Office of Law Enforcement. "Currently, the Boat Trap appears to have potential in stopping non-compliant vessels



Boat Trap can be deployed from Coast Guard helicopters in flight. Recently, the R&D Center and the Department of Homeland Security's Science and Technology Directorate successfully demonstrated Boat Trap against a 33-foot speed boat powered by twin 200 horsepower motors. *U.S. Department of Defense photo*

while executing Coast Guard law enforcement missions."

A prototype Boat Trap system recently completed a successful demonstration at the Marathon Coast Guard Station in Marathon, Fla. The demonstration included a series of drops of the Boat Trap device from a helicopter into the path of a 33-foot Eduardono go-fast boat with twin 200-horsepower Yamaha outboard engines traveling at 30 to 40 knots. The demonstration this past December mimicked real-life scenarios wherein the helicopter has no communication with the boat and the operator must successfully time the drop in the right spot and from the correct altitude.

Boat Trap was developed by the Coast Guard's R&D Center and Foster-Miller, Inc., in conjunction with the Department of Homeland Security's Science and Technology

Directorate and the Department of Defense's Joint Non-Lethal Weapons Directorate. The Coast Guard and the Joint Non-Lethal Weapons Directorate are developing the necessary documentation to move forward with the requirements-generation process.

### Multi-Mode Detection Devices

The R&D Center is also testing a device based on ion mobility

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spectrometry (IMS) technology to help boarding teams detect a nanogram, or one-billionth of a gram, of narcotic or explosive residue. The current device in use is a desktop system that can be calibrated to detect either narcotics or explosives but not both at the same time.

However, the R&D Center recently conducted field tests on several alternatives to the current system: desktop-based devices and handheld devices. All of these alternatives are multi-modal, which means they can detect narcotics and explosives simultaneously. The R&D Center will do an analysis of alternatives to examine the advantages and disadvantages of these technologies, and to determine which technology is best for the end user.

A report with conclusions from recent tests of dual-mode IMS devices and the technical recommendations necessary to move forward with the requirements-generation process is expected soon.

The Boat Trap and IMS multi-mode detection devices are just two examples of the progressive technologies being developed to help the Coast Guard to conduct



Boat Trap is a running gear entanglement system capable of fouling the propellers of boats traveling in excess of 30 knots. Potential applications of the device include port security and the interdiction of illegal drug smugglers. *U.S. Department of Defense photo*

its missions more effectively. The R&D Center's Port Security and Law Enforcement Branch Chief Rich Hansen explained that the R&D Center's role is "to serve as a technical advisor and make sure what is developed is useful to the Coast Guard and will meet

Coast Guard needs." Thus, the Coast Guard continually tests and evaluates technologies in order to develop sound, scientifically-based information that decision makers can use to provide mission solutions.■

## Coast Guard Marks Response Boat-Medium Deliveries, Continues Operational Test Missions

*By Hunter C. Keeter*

As the Coast Guard prepares to deliver its sixth Response Boat-Medium (RB-M), the service's Capabilities and Acquisition Directorates are conducting a vigorous operational test and evaluation of the new craft. The results of this testing will inform a decision to enter full rate production.

"The logic is to put these boats in various locations around the United States—in heavy seas, cold weather, hot weather—and use them for law enforcement, escort and other routine missions," said Cmdr. Jeff Peters, deputy program manager

with the Acquisition Directorate's RB-M project office. "The Office of Boat Forces [in the Capabilities Directorate] has a checklist for these test stations and they will measure the feedback on how the RB-M operates in all missions and operational locations."

The 45-foot RB-M is one of three classes of craft that the Coast Guard is acquiring to modernize and standardize its boat forces. The others are the 25-foot Defender Class Response Boat-Small, which began deliveries in October 2003; and the 47-foot Motor Life Boats, which were

delivered between May 1997 and May 2003.

The RB-M, which began deliveries in March 2008, replaces the legacy 41-foot boats and several types of non-standard utility boats. On June 21, 2006, the Coast Guard awarded Wisconsin-based Marinette Marine Corp. a \$600 million contract for the design production and outfitting of RB-Ms. Five boats have been delivered to date, under low-rate initial production. The Coast Guard plans to purchase 180 RB-Ms.

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The first six RB-Ms, including hull No. 45606, which is to be delivered to Station Port Aransas this month, are identified as the primary operational test and evaluation platforms. These boats will be tested to ensure that they can successfully perform the Coast Guard's missions and that the craft are operationally effective (capable of performing typical small boat operations) and operationally suitable (from the standpoints of human factors engineering, maintenance and repair, support logistics and training).

"Every time we get underway, the coxswain fills out a form evaluating the ... characteristics we have observed underway," said Lt. Patrick J. Gallagher, commanding officer, Station New York, which received its first RB-M in December. "These reports are submitted to the Office of Boat Forces; they are very interested in what we have to say, and any recommendations we have."

Meanwhile, the Coast Guard continues to deliver boats under low-rate initial production and is analyzing feedback from RB-M operations. Operator reports from the six operational test and evaluation boats and subsequent deliveries will help the Coast Guard make a decision to enter full rate production as well as identify areas for improvements to the boats themselves.

The Acquisition Directorate follows a structured process in delivering RB-Ms to the field. Typically, 60 days before delivery, the project office provides sector and district leadership and station personnel with a presentation on the history of the project, defines the RB-M and its characteristics, and answers any preliminary questions.

Thirty days before delivery, the project gives the receiving station a technical presentation with supporting documentation on the boats, and specific information about the logistics system in place to support the RB-M user community.

After builder trials and other tests are complete, the RB-M manufacturers (Marinette Marine and Kvichak Marine, based in Washington State)



HUDSON RIVER, N.Y. (January 16, 2009)—An RB-M crew from Station New York assists police and other first responders during the rescue of U.S. Airways Flight 1549. The RB-M, currently undergoing operational test and evaluation, will replace the Coast Guard's 41-foot utility boats, which have been in service for more than 30 years.

*U.S. Coast Guard photo by Petty Officer 3rd Class Mark Jones*

transport the boat from their production facilities to the Coast Guard's delivery sites. At the time of delivery, a Coast Guard acceptance team meets the boat and ensures it meets specifications prior to handing it over to the station commander.

"We are not going to deliver the boat until we are satisfied with it; we want to make sure the boat is right ... and ensure that the boat meets contractual requirements," said Cmdr. Peters. "We also ensure that the project office and the station commanding officer agree that they understand the boat and can operate it safely."

### **Operator Input**

According to Lt. Gallagher, Station New York's crews have been impressed with what they have seen of RB-Ms "next generation" performance. Gallagher noted that one of the first things boat crews notice about RB-M is that the crew cabin has the look and feel of an aircraft's cabin. RB-M crews strap into shock absorbing seats and operate the boat with joysticks and multi-function displays. He attributed RB-M's design successes to the project having worked closely with boat operators during the design phase.

"Sitting down and putting your

hands on the controls, you see very quickly that this boat's controls are very intuitive; they are very simply laid out and easy to use," Gallagher said. "Once you get underway, it is obvious that real boat operators had a heavy hand in developing this platform; this wasn't designed in a vacuum. They had a lot of input from operators and put a lot of thought into the RB-M."

The RB-M is also different from legacy boats in that its coxswain's and crewman's seats have identical controls and displays. This allows the vessel commander and crewmen to pass control back and forth easily. In legacy platforms, the coxswain would have to get out of the seat and change places with a crewman to pass control. Now that can be done while maneuvering, at the press of a button.

Another intrinsic feature of RB-M is the craft's environmental control. Fatigue and environmental conditions are among the major hazards faced by Coast Guard boat crews during typical 8 to 10 hour patrols. They must accomplish their missions regardless of weather or rough seas. The RB-M helps protect its crews from exposure through cabin and rescue compartment air conditioning and heating, and also from rough seas with shock absorbing seating. ■

## Acquisition News Briefs

### All Systems GAO

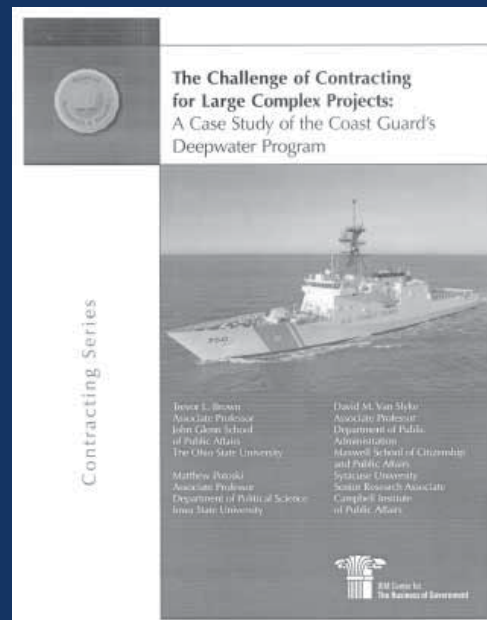
The Sentinel-class patrol boat acquisition is set to move forward following a ruling by the Government Accountability Office (GAO) that upheld the Coast Guard's decision to award the project's contract to Bollinger Shipyards, Inc., of Lockport, La. In 2011, the Coast Guard plans to take delivery of a lead vessel, which will support operational test and evaluation of the Sentinel-class. The Sentinel is one of three new classes of vessels (including the National Security Cutter and the Offshore Patrol Cutter) that will modernize the Coast Guard's cutter force.



Bollinger Shipyards' artist conception of the Sentinel

### Lessons Learned

A report from the IBM Center for the Business of Government outlines three major lessons to be learned from the Coast Guard's experience with the Integrated Deepwater System acquisition program. Published in December, the report found that effective management of a complex acquisition program requires: "an expanded and more highly skilled acquisition workforce; a better understanding of risk; and an investment in learning." The Assistant Commandant for Acquisition, Gary T. Blore said that the IBM team "got it right and [I] agree that these three precepts are necessary to the success of any large, federal acquisition enterprise." Blore went on to note his confidence that the Coast Guard's acquisition reforms "have fully incorporated the authors' recommendations, and we are a much better organization for having done so." A link to the full text of the report: <http://www.businessofgovernment.org/pdfs/BrownReport.pdf>



Acquisition Reform, Policy and Process Driven

### Modern Hercules

In February, the fifth of six Coast Guard HC-130J long range surveillance aircraft will begin a process of "missionization" at Lockheed Martin's Greenville, S.C. facility. The missionization project uses common technologies with those of the new HC-144A Ocean Sentry medium range surveillance aircraft. The HC-130J missionization adds new equipment, including a surface search radar, a forward-looking infrared (FLIR)/electro-optical sensor, satellite and emergency response radios, and modernizes the aircraft flight deck operator's station. In November, the Coast Guard exercised contract options for the missionization of the last two HC-130Js. When completed, the aircraft will join the others stationed at Elizabeth City, N.C.



HC-130J undergoing missionization