NAVY / MARINE CORPS / COAST GUARD / MERCHANT MARINE

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SPECIAL REPORT

U.S. MARINE CORPS

September 2014 $5.00
NAVY LEAGUE OF THE UNITED STATES
www.navyleague.org

DISTRIBUTED OPERATIONS / OPTIMIZING MOBILE TECHNOLOGY

Small Craft, Big Missions

RHIBs, tactical boats are entering service with navies, coast guards and law enforcement agencies in large numbers

By EDWARD LUNDQUIST, Special Correspondent

No Longer One Size Fits All

On the high seas, small boats still are used for traditional purposes of compliance inspections, search and rescue, boarding and recovery when launched from ships. Their improved capabilities, however, are allowing them to extend their short range, arrive on scene quicker and keep up better with "go-fast" boats or other potential threats.

- Craft are being built for highly specialized and complex missions.
- High speeds require shock mitigation to protect crews.
- Many boats are deployed from larger platforms, like frigates or coast guard cutters, so boat handling is a challenge.

Specifications for naval, coast guard and maritime law enforcement rigid-hull inflatable boats (RHIBs) and small tactical boats call for better performance as well as improved safety to minimize crew fatigue and injuries. While many boats today are general purpose, there are some unique, mission-specific designs. Quite simply, small boats are becoming more complex, and taking on bigger missions.

"We've noticed more attention to human factor engineering on military vessels and work boats," said Jay Hoflich, co-founder and chief executive officer of Newton, Mass.-based ReconCraft and a former Coast Guard officer. "This has translated to specification requirements in the form of both small and large platform improvements, such as greater visibility for coxswains, shock-mitigation systems and improved electronic equipment."

The one-size-fits-all approach is losing popularity, Hoflich said.

"I believe this is a result of a more sophisticated market. Larger, faster and more durable RHIBs and vessels are being built for specific tasks that related to both the operating environments and mission criteria. We see more purpose-built vessels for specific customers and missions and less general vessels taken from the recreational or commercial markets that have been adapted or upgraded for military tasks," he said.

"Another trend is extended life-cycle improvements, such as diesel motors, sacrificial material applications and more aluminum vessels in lieu of composite," Hoflich said. "Although when it comes down to it, it's all about the purpose of the vessel.

"Even though land- and air-based technology is improving for surveillance and threat detection, the small boat will always be essential to act upon threats, as well as anti-terrorism and force-protection applications in coasts, harbors and rivers," he said. "Navies and coast guards will always need a vessel and operators' presence for waterborne deterrence and response. The new land- and air-based monitoring systems are amazing at improving tactical knowledge and sharing information, but without an actual presence on the water the technology will become useful for only forensic purposes," Hoflich said.

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In the Turks and Caicos Islands, the installation of a surveillance radar changed the way they conduct maritime security. Instead of patrolling in a larger boat to find smugglers and illegal fishermen, authorities now rely on the surveillance radar to indicate the presence of a potential threat and respond with smaller, faster boats.

Command and Control

Because of the complexity of small craft operations, even RHIBs need a robust command-and-control capability and connectivity to the shore or host ship. The C-Raid

system, made by Denmark-based Terma A/S, allows multiple units to share a common tactical picture, with input from navigation, positional and position-tracking sensors such as radar and an Automatic Identification System, and full-motion electro-optic/infrared video that displays all tracks in the operating area.

Saab Group's 9LV Combat Management System can include a situational awareness terminal with a RHIB module so the boat becomes an extension of the ship's sensors and effectors. An onboard tracker keeps the ship apprised of where the boat is at all times, and status and commands are shared over an encrypted radio data channel.

U.S. NAVY

The U.S. Navy's Riverine Command Boats (RCBs) are built by SAFE Boats International, based on a Swedish design, and used for maritime security and force protection in the Fifth Fleet area of operations. Here, Boatswain's Mate 3rd Class Christopher Larsen, assigned to Task Group 56.7.4, mans an M2HB .50-caliber machine gun aboard a RCB during a training exercise in the Arabian Gulf Jan. 21.

Oregon Iron Works (OIW) Inc. of Clackamas, Ore., has been selected by U.S. Special Operations Command to be the sole provider of the Combatant Craft Medium (CCM) Mk 1, a deal that could be worth up to $400 million through 2021. Reston, Va.-based Leidos will provide the low-observable systems, integration and testing of craft tactical computing systems, full life-cycle integrated logistics support, and incremental development and upgrades as a subcontractor to OIW.

The CCM Mk 1 is described as "a modern, clandestine, agile, adaptive, technically relevant, reliable and operationally capable combatant craft system," and is intended to replace the Mk V Special Operations Craft and the Naval Special Warfare Rigid Inflatable Boat.

The multirole CCM Mk 1 will have a four-man crew and will carry up to 19 passengers. Special Operations Command has a requirement for 30 craft that will be used for insertion and extraction of Special Forces personnel in a low- to medium-threat environment.

The 60-foot craft is designed by Michael Peters Yacht Design, Sarasota, Fla., for high speed and to provide a smooth ride and shock mitigation in high seas. OIW also plans to offer a commercial variant for high-speed near or offshore patrol and for Foreign Military Sales.

SAFE Boats International, Bremerton, Wash., makes aluminum craft with foam collars for buoyancy. Some models have open consoles, others have full climate-controlled cabins for crew comfort and some offer "walk-around cabins" that permit crew members to be on deck outside the cabin. The company makes a wide range of models for law enforcement and other first-responder missions.

The military services operate a variety of models, including the Riverine Command Boat (RCB), built from a Swedish design. The fully enclosed RCB conducts command and control, tactical mobility and fire-support operations in hostile riverine and littoral environments.

The RCB has twin Scania diesel engines mated with water jets and is equipped with an insertion and extraction bow door. The RCB can be heavily armed with manned and remotely operated unmanned weapon mounts.

SAFE Boats also is the builder of the U.S. Navy's Coastal Command Boat and Mk VI.

Hoflich said ReconCraft's amphibious interceptor vessel represents a complete paradigm shift in coastal and riverine operations. Powered by twin 335-horsepower twin-turbo diesels and Hamilton water jets, it also has an all-wheel-drive amphibious system that can operate on land and even climb hills. It can reach speeds of 40-plus knots on water, and 12 mph on land.

"On the water, it is a high-speed interceptor and command center," Hoflich said. "On land, it facilitates safe personnel transfers, covert reconnaissance and maneuvers up steep hills to provide its sensors with a height of eye equivalent to a warship."

U.S. Customs and Border Protection (CBP) is looking for industry to provide its new coastal interceptor vessels (CIVs) that will be 42-foot boats powered by four 300-horsepower outboard engines and able to achieve speeds of 60 knots and have a 400 nautical mile range. CIV missions include patrol, Interdiction, special operations and port security support.

The high speed will enable CBP marine interdiction agents to pursue suspect vessels and intercept, board, search and arrest violators, and seize the vessel and or contraband if needed.

Safe Seating

High speeds and rough water can lead to slamming motions and injury from shock and vibration. According to naval engineer and consultant John Kamen, a retired Navy captain, shock-mitigating suspension seating has become a necessity.

There are a variety of products on the market, including those offered by SHOXS of Saanichton, British Columbia, Canada; Shockwave Seats of Sidney, British Columbia; Seaspension Technologies of Largo, Fla.; and Ullman Dynamics of Gothenburg, Sweden. Also offering specialized seating are U.K.-based companies Scot Seats of Kilmarnock in Scotland, Coastal Pro of Sheffield and Vortec Systems of Bromley.

"The Shockwave ICE [integrated control environment] consoles add cockpit shock mitigation and comfort as well as mission flexibility. SHOXS seats are also popular. Ullman seats are widely used internationally and are breaking into the U.S. market," he said.

Metal Shark Aluminum Boats of Jeanerette, La., is introducing an automated ride-control system, Kamen said.

"As the craft rolls and pitches, specially modified interceptors correct for the motion of the craft. This substantially reduces shock, improves ride comfort and reduces shock-related injuries."

Efficient hull designs combined with professional-quality components and equipment can create an excellent craft, but people make it function at sea. Human factors need to be considered for all manual and electronic tasks performed on a planing craft.

John Haynes, operations director of U.K.-based Shock Mitigation said, "The professional RHIB and high-speed craft sector needs a human factors strategy or crews will not be capable of doing their job when underway, and their passengers will not be fit to fight or able to perform tasks when they arrive at their destination.

"The definition of shock mitigation is to make a violent collision or impact less intense," he said. "With an effective shock-mitigation strategy, the helmsman, crew and passengers benefit from increased comfort and reduced injury while the organization has increased operational efficiency. Technical human factors solutions need to include responsive controls for the coxswain and ergonomic workstation layouts for crew members. Professional boat crews need to develop specialist skills to operate fast response craft effectively in this rapidly changing environment. Training coxswains and crews to understand the forces involved and to work with, not against, the sea should be the basis of any fast boat operation."

Launch and Recovery

Many boats are deployed from larger platforms, like frigates or coast guard cutters, so boat handling becomes an issue.

Rolf Andreas Wigand, managing director of VESTDAVIT AS in Laksevåg, Norway, makers of specialized davits for navies and coast guards, and the offshore industry, said telescopic davits can allow boats to be moved around and stowed in the overhead of the recess.

"You can move boats around and the deck is free for working," he said. "The versatility and flexibility becomes more elegant."

While some navies are launching and recovering boats with stern ramp solutions, Wigand said it is safer and better to use side-launched boats and off-board systems.

"We believe stern ramps take up too much space. The bigger the ship, the more difficult it is to retrieve boats in rough conditions because you have more movement in the stern of larger vessels," he said.

However, getting people into and out of boats alongside a ship using a ladder can be dangerous. Stepping out of a boat that has just run up a stern ramp is safer, easier and drier.

The U.S. Coast Guard's National Security Cutter carries three boats, including the Long Range Interceptor (LRI) and the Cutter Boat Over-the-Horizon IV (OTH-IV), carried aft in the stern boat deck. The third boat, an OTH IV or Mk 3 Zodiac RHIB, is carried amidships and launched and recovered over the side using a standard two-hook davit.

The Long Range Interceptor II (LRI II) comes from Metalcraft Marine U.S. Inc., of Cape Vincent, N.Y., and Brunswick Commercial and Government Products, of Edgewater, Fla. SAFE Boats is the manufacturer of the OTH-IV.

"We have a contract award for 101 boats," SAFE's Kevin Rowlee said.

"Launch and recovery of the LRI II can be conducted independent of sea state, as long as the shiphandler is as good as the boat handler," Brunswick's Kelly Webb said. ■

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U.S. Customs and Border Protection's Office of Air and Marine conducts patrols in Puget Sound using 38-foot interceptors from Safe Boats International. The boats can achieve speeds greater than 50 knots.