

Breakthrough capability keeps subs, ships on safe track

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Interactive software that can dramatically cut the time it takes to plan safe submarine missions is crossing over to the surface fleet and is being installed this month on the guided-missile cruiser USS Mobile Bay (CG 53).

Sponsored by the Office of Naval Research (ONR), the technology adds speed and precision the process of finding the best routes around hazards in waterways around the world.

Sailors spend days or even weeks planning a successful navigation route for a mission. They collect maps and charts, analyze them, double check them and cross reference information that comes in various hard copy and digital forms.

Through partial automation and use of apps and widgets, ONR's Mission Planning Application technology can review thousands of chart markings in a fraction of the time, pinpointing potential hazards and creating optimal routes around rocks, reefs and other shallow spots. What now takes days could take just a few hours or less, freeing commanders to concentrate on safely executing the mission at hand.

"Our goal is for Sailors to be able to carry out a mission effectively and safely," said Dr. William "Kip" Krebs, program officer in ONR's Warfighter Performance Department. "This system merges a variety of crucial data so planners can integrate information ahead of time and the command team can focus on the critical operations at hand."

The easy-to-use tools synchronize navigation route plans to produce a visual composite of "what, when, where, why and how" for each mission. Relying solely on manual processes to gather, sort, search and maintain massive amounts of complex data is time consuming and subject to human error, officials say.

Last year, USS Guardian (MCM-5) ran aground partly because errors in nautical charts went unnoticed. In 2005, USS San Francisco (SSN-711) struck an undersea mountain that did not appear on a chart used by the submarine's crew. Information from other charts that noted discolored water—indicating a possible obstacle—was never transferred to the chart in use.

The installation on USS Mobile Bay will help researchers refine the mission planning technology for the surface ship community. ONR also will continue to work with the submarine community to ensure a successful transition to the fleet.

"This is a big deal for the submarine force," said Capt. John Zimmerman, program manager for Submarine Combat Weapons and Control Systems (PMS 425), which is working with ONR to get the software certified for use in the submarine fleet. "As a former commanding officer, I spent loads of time looking for the right charts, getting them approved and looking for all of those shallow spots, so the capability we're getting with this new system is critical."

The mission planning software was developed under the Capable Manpower Future Naval Capability program, which aims to deliver advanced technology to the fleet in just five years.

In addition to PMS 425, the Mission Planning Application system is the result of partnerships with Naval Research Laboratory, Naval Oceanographic Office, Space and Naval Warfare Systems Center

Pacific, Program Executive Office Integrated Warfare Systems, U.S. submarine force, Royal Australian Navy, and industry.

Experts will be discussing technologies like the Mission Planning Application and more at upcoming Naval Future Force Science and Technology EXPO in February 2015, where many of the innovative technologies coming to fruition for the Navy and Marine Corps will be on display.

Provided by Office of Naval Research

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