DARPA UPdate

Defense Advanced Research Projects Agency

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DARPA Director to Christen ACTUV Prototype Vessel

Deputy Secretary of Defense Robert Work and senior U.S. Navy leadership to join the Agency in celebrating highly autonomous unmanned ship that could revolutionize U.S. maritime operations

DARPA today is holding a christening ceremony for the technology demonstration vessel it has developed and built through the Agency's Anti-Submarine Warfare (ASW) Continuous Trail Unmanned Vessel (ACTUV) program. Taking place in Portland, Oregon, the event marks the vessel's formal transition from a DARPA-led design and construction project to a new stage of open-water testing to be conducted jointly with the Office of Naval Research (ONR). The christening, to include the traditional breaking of a ceremonial bottle over the bow by DARPA Director Arati Prabhakar, signifies the beginnings of an entirely new class of ocean-going vessel—one able to traverse thousands of kilometers over the open seas for month at a time, without a single crew member aboard. Potential missions include submarine tracking and countermine activities.

"Although ACTUV will sail unmanned, its story is entirely about people," said Scott Littlefield, DARPA program manager. "It will still be Sailors who are deciding how, when and where to use this new capability and the technology that has made it possible. And we could not have overcome the massive technical challenges to reaching this point without the creative, committed teamwork of our commercial partners and the Office of Naval Research."

In addition to Littlefield and Prabhakar, scheduled speakers at today's dockside ceremony include the Honorable Robert Work, Deputy Secretary of Defense; Rear Admiral Robert Girrier, Director, Unmanned Warfare Systems (OPNAV N99); and Rear Admiral Mathias Winter, Chief of Naval Research, Innovation Technology Requirements and Test & Evaluation (OPNAV N84).

The ceremony will culminate with Prabhakar's swinging of the ceremonial "champagne" bottle (the contents will be non-alcoholic) to christen the vessel "Sea Hunter." The name both describes the technology demonstrator's envisioned capabilities and also harks back to DARPA and Navy ship-development programs of years past, such as the Sea Shadow prototype vessel developed in the 1980s.

ACTUV is a 130-foot twin-screw trimaran, designed for enhanced stability in all kinds of weather. It has a number of unusual features because it does not need to accommodate people. For example, interior spaces are accessible for maintenance but aren't designed to support a permanent crew.

But of broader technical significance is that ACTUV embodies breakthroughs in autonomous navigational capabilities with the potential to change the nature of U.S. maritime operations. Through at-sea testing on a surrogate vessel, ACTUV's autonomy suite has proven capable of operating the ship in compliance with maritime laws and conventions for safe navigation—including International Regulations for Preventing Collisions at Sea, or COLREGS. ACTUV accomplishes this feat through advanced software and hardware that serve as automated lookouts, enabling the ship to operate safely near manned maritime vessels in all weather and traffic conditions, day or night.

ACTUV is designed to normally operate under sparse remote supervisory control but can also serve as a remotely piloted vessel, should the mission or specific circumstances require it. In either case, it would operate at a fraction of the cost of manned vessels that are today deployed for similar missions.

In September 2014, DARPA signed a Memorandum of Agreement (MOA) with the Office of Naval Research to jointly fund an extended test phase of an ACTUV prototype. DARPA will collaborate with ONR to fully test the capabilities of the vessel and several innovative payloads during open-water testing scheduled to begin this summer off the California coast after preliminary checkout and movement to San Diego. Pending the results of those tests, the program could transition to the U.S. Navy by 2018.

"The Memorandum of Agreement is just one example of the strong relationship that exists between DARPA and the Office of Naval Research, where we are working together on a number of important projects," said Brad Tousley, director of DARPA's Tactical Technology Office, which oversees ACTUV. "We look forward to strengthening and extending the relationship with ONR as we start testing ACTUV in San Diego later this spring and work jointly toward providing pivotal new capabilities for the Navy."

Image Caption: *DARPA today is holding a christening ceremony for the technology demonstration vessel it has designed, developed and built through the Agency's Anti-Submarine Warfare (ASW) Continuous Trail Unmanned Vessel (ACTUV) program. Taking place in Portland, Oregon, the event marks several recent successes in a program that seeks to develop an entirely new class of ocean-going vessel—one able to traverse thousands of kilometers over the open seas for months at a time, all without a single crew member aboard while still remaining under human supervision at all times. Click below for high-resolution image.*

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Anti-Submarine Warfare (ASW) Continuous Trail Unmanned Vessel

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ACTUV Prototype Vessel during On-Water Tests in Portland, Ore.