Raytheon Demonstrates Unmanned Single-Sortie Mine Sweeping for Navy

The AQS-20C mine-hunting sonar in action at the U.S. Navy's ANTX 2019. Raytheon

ARLINGTON, Va. — Raytheon has demonstrated the ability to detect and identify a mine-like object and position an unmanned underwater vehicle to be in position to neutralize it, a company official said on Sept. 26.

The Aug. 29 "detect to engage" demonstration was one event in the Navy's ANTX (Advanced Naval Technology Exercise) 2019 held at Newport, Rhode Island.

"We view it as a tremendous success," Andy Wilde, director of strategy and business development for Raytheon Undersea, said in an interview with *Seapower*. He said it was a "great example of the great work the Navy and industry can do when we co-invest in critically important projects like this to solve very, very difficult problems."

Wilde cited the success as an example of a "high-velocity outcome" of a "best-of-breed" technology being rapidly prototyped and tested and able to be fielded very quickly, a process championed by former Chief of Naval Operations John M. Richardson.

Raytheon's AQS-20C towed sonar was pulled through the water by a surplus riverine craft acting as a surrogate for the Textron-built MCM unmanned surface vehicle (MCMUSV) that will be a component of the MCM mission package for the littoral combat ship (LCS).

Under the concept, an MCMUSV is launched from an LCS and

deploys the AQS-20C. Once a possible sea mine is detected by the AQS-20C's synthetic aperture sonar, a Barracuda expendable semi-autonomous mine neutralization unmanned undersea vehicle is — on the same pass — launched into the water from a A-size sonobuoylauncher on the MCMUSV.

The Barracuda deploys a float that serves as an RF datalink to the CUSV and an acoustic data link to the Barracuda. The tactical mission plan is downloaded from the LCS to the Barracuda via the CUSV. The Barracuda starts a search track and, once it acquires a mine, it maintains position at the mine. The operator on the LCS confirms the object is a mine and commands the Barracuda to detonate the mine with a charge. The MCMUSV would then continue its mission on its planned track.

During the demonstration, the towed AQS-20C detected a mine-like object moored in Narragansett Bay. The surface craft launched a Nemo, the prototype of the Barracuda developed with the Office of Naval Research. The Nemo located the mine-like object and hovered with it, keeping station. Having transmitted imagery of the mine-like object to the control station, the Barracuda was commanded to touch the mine-like object to simulate firing a shaped charge, Wilde said.

Wilde said the Barracuda has station-keeping technology that enables it to remain position to fire the shaped charge at the mine even in currents that cause a moored mine to sift position on its tether.

In an Aug. 15 interview, Wilde said that unmanned systems will revolutionize mine countermeasures (MCM) that currently take weeks or months to clear minefields and put minesweepers at risk. The Navy is developing an MCM mission package for the littoral combat ship that will rely largely on unmanned systems.

He also said the MCM mission concept could be expanded to

other missions, including by use of a B-size sonobuoy launcher with other payloads. The AQS-20C sonar is now in production. Raytheon is developing the engineering developmentmodels of the Barracuda and recently completed the Navy's preliminary designreview.

Wilde said Raytheon is in discussions with the Navy about other missions to which the Barracuda could be applied.