

U.S. Navy Moves Ahead On Carrier-based Drone

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“The system will be a critical part of the future [carrier air wing] and will enhance carrier capability and versatility for the Joint Forces Commander through the integration of a persistent, sea-based, multimission aerial refueling Unmanned Aircraft System,” says Capt. Beau Duarte, MQ-25 program manager.

To that end, the Navy last year awarded four companies—Boeing, Lockheed Martin, Northrop Grumman and General Atomics—concept refinement contracts that will inform an upcoming request for proposals (RFP) for engineering and manufacturing development. The RFP is expected this summer, with a contract award following in 2018.

As President Donald Trump signals he wants to significantly boost defense spending as part of an effort to improve military readiness, the Navy may be feeling even more pressure to fast-track the new platform. Sen. John McCain (R-Ariz.), the powerful chairman of the Senate Armed Services Committee, urged the Navy to accelerate MQ-25 to reach initial operational capability in the next five years, according to a recent white paper of recommendations for the five-year defense plan.

“As advanced, long-range air defense systems proliferate, the carrier air wing needs aircraft with greater range that can penetrate advanced defenses and conduct strike and intelligence missions,” McCain wrote in the white paper. “The Navy must proceed rapidly to develop a carrier-based unmanned aircraft to perform these missions.”

As of Feb.6, the Navy has not responded to the white paper, according to a service spokeswoman.



The U.S. Navy tested the X-47B Unmanned Combat Air System demonstrator onboard the aircraft carrier George H.W. Bush in 2013. Credit: U.S. Navy

But the concept of an unmanned refueling/ISR platform presents a problem: The design elements required for a tanker and a surveillance aircraft are fundamentally at odds. An ISR aircraft needs to fly at high altitudes for long periods, so a large wingspan and efficient engine design are essential. ISR assets generally don't carry much fuel internally, as this adds weight to the platform. By contrast, a tanker must carry enough fuel to tank all of the carrier air wing's strike aircraft, requiring a larger engine.

Naval aviation planners and industry are working on finding the "sweet spot" for MQ-25 to fulfill both missions, said Vice Adm. Mike Shoemaker, commander of Naval Air Forces, during an event in Washington last year.

Also at issue is how stealthy MQ-25 needs to be for the future operating environment. Although a recent top-level Pentagon review concluded survivability would not be a key requirement, the Navy is looking to see if there is a way to capitalize on certain existing "shapes" to make the platform less vulnerable, according to Shoemaker.

"If you look at where we've been with many of the industry partners, there are some shapes that they've designed already that help in that survivability piece," says Shoemaker. "I think there are ways to take advantage of some of the shapes already out there."

Although he did not mention specific industry players, Shoemaker says there are several existing designs that could serve as a baseline for the MQ-25. The Navy will likely consider the four proposals offered by General Atomics, Boeing, Lockheed and Northrop for the previous iteration of the carrier-based UAV, the Unmanned Carrier-Launched Airborne Surveillance and Strike program.

The competition for MQ-25 will likely come down to a traditional wing-body-tail design like General Atomics and Boeing's proposals, or the tailless, flying-wing airframe offered by Lockheed and Northrop, shaped much like the U.S. Air Force's B-2 stealth bomber.

Shoemaker suggests that the Navy is at least considering a stealthy shape for MQ-25, arguing that a tanker forward-deployed to hostile territory could be vulnerable.

"If you look at the way you would conduct mission tanking, you have got to push something out ahead of everybody to get it on station so you can launch your other airplanes," Shoemaker says. "If you send the MQ-25 out by itself, and it does not have survivability, you have got to know where you are sending it so it's not going to get shot down."

While Shoemaker cautions that "stealth tanker, those two don't go together on MQ-25," there are steps the Navy could take to evolve a tanker UAV into a survivable strike platform itself.

It would be relatively easy to modify a tanker to carry weapons—simply swap out the fuel carried internally for bombs. And, if MQ-25 is based on a flying-wing design, already optimized for stealth, the Navy could add radar-absorbing coating to maximize survivability.

