



Full Speed to the Fleet

**Powered by Military-Industry
Partnerships**

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AS CHINA RACES TO ASSERT ITSELF IN THE PACIFIC, ITS RAPID ADVANCES IN AIR-TO-AIR, SURFACE-to-air, and anti-ship kill chains challenge America's historic advantage in military technology. Keeping pace with China's capabilities requires streamlining America's byzantine military acquisition process. One of the greatest challenges is building a process that expedites the traditionally measured pace of testing and tactics development while still ensuring that new technologies are tactically effective and operationally suitable. Meeting that challenge requires partnerships that allow simultaneous testing, tactics development and the integration of urgently needed capabilities into deploying units.

Electronic Attack Squadron 138 (VAQ-138) is an operational EA-18G Growler squadron that spearheaded the integration of new weapons into the Pacific theater. In a single year, the squadron aided the maturation of a major aircraft software upgrade, a 3D-printed device that significantly multiplies the Growler's jamming power, the first ever air-to-surface network-enabled weapons, and a revolutionary leap in anti-ship cruise missile technology.

Bowman and DiMarco fly EA-18G Growlers for the U.S. Navy's expeditionary Electronic Attack Squadron 138 (VAQ-138) based at Naval Air Station Whidbey Island, Washington state. Bowman is Mission Planning Officer and DiMarco is Training Officer for the VAQ-138 program.



VAQ-138 is currently deployed with the technology it helped develop. Its success proves the power of partnerships between industry, test squadrons, weapons schools and deployable units to move capability out of the lab and into the fleet. By implementing administrative support, the Department of Defense (DoD) has an opportunity to transform VAQ-138's experience into a repeatable process. Two projects best illustrate the rewards and challenges of pushing technology directly to operational units: Batwing, a Navy Speed to the Fleet Initiative, and the Long-Range Anti-Ship Missile, which fulfills a Joint Urgent Operational Need.

Batwing

Batwing is an upgraded antenna that dramatically increases the effective power of the Growler's jamming pods. Engineers at the Naval Air Warfare Center (NAWC) designed the antenna and produced a prototype in just 2 weeks. The Navy selected Batwing for the Speed to the Fleet process—a program designed to demonstrate new capabilities in fleet units. One year later, the first 3D-printed production articles were ready for installation

in fleet jets. The Speed to the Fleet instruction outlines the Navy's desire to allow operational units to develop concepts of employment and provide evaluations of new systems.

In Naval Aviation, those normally are roles for the Naval Air Warfare Development Center and the Air Test and Evaluation Squadron. Both organizations expressed concern that a fleet squadron might lack the expertise and capacity to evaluate Batwing. The pace of Speed to the Fleet accepted risk that the product might malfunction or that operators might fail to employ them optimally without vetted tactics.

VAQ-138 and VAQ-135 received Batwing antennae from the initial production run. During consecutive Red Flag exercises, the squadrons had opportunities to evaluate the antennae against trained adversaries in scenarios that mimicked deployed combat operations. The program moved so quickly that the developmental test report was still in draft; there was little data available about Batwing's specific capabilities and limitations. A personal connection between VAQ-138 and the developmental



The EA-18G Growler is the world's only tactical electronic attack aircraft. Growlers can locate and jam enemy ships, aircraft, radars and communications, as well as fire air-to-surface and air-to-air missiles.

Photo by LCDR Richard Rosenbusch, USN

testers allowed the squadron to review some test data before its official release. That data was critical to maximizing Batwing's performance and improving the value of data gathered at Red Flag.

VAQ-135 had a test pilot and a former operational test director on staff, but VAQ-138 had no aircrew with test experience. To aid in gathering data, the squadron invited a team of operational testers to fly during Red Flag. The Growler weapons schools were unable to send aircrew; however, tactics instructors worked remotely with the squadrons to develop rough guidelines for tactical employment.

The coordinated effort yielded tremendous success. Both squadrons performed well at their exercises, and Batwing was a key contributor. Employment by fleet squadrons in challenging scenarios validated bench testing and allayed fears that the increased power might overheat some components. It also showed the antennae were effective and suitable for combat while building confidence among the same fleet aviators and maintainers expected to deploy with them. Had the Batwings gone to the test squadron or weapons schools vice operational squadrons, neither would have had the opportunity to immediately test them under the same realistic conditions. The combination of pushing Batwing directly to VAQ-135 and VAQ-138 while enlisting the support of testers and tactics developers proved the fastest means of pushing combat capability into deploying squadrons.

Long-Range Anti-Ship Missile

The Navy designed Speed to the Fleet to push relatively simple or mature capabilities like Batwing into operational

units. In contrast, a Joint Urgent Operational Needs Statement is a way for Combatant Commanders to express an immediate need for capabilities that might still require extensive research and development. That was the case for Long-Range Anti-Ship Missile (LRASM), which emerged from a critical gap in America's ability to attack China's high-end surface ships. Developed by the Defense Advanced Research Projects Agency, LRASM is a quantum leap in technology when compared to the Navy's legacy Harpoon missiles. The missile features the ability to intelligently locate targets, maneuver around threats, and evade advanced surface-to-air missiles systems.

To fire LRASM at safe distances from threat warships, the launching platform requires an initial cue to the target ship. The only platform currently programmed to pass that data is the Growler. Declaring LRASM ready for combat required validating the ability for the Growler to send a cue to a B-1B Lancer bomber carrying LRASM. What initially seemed a simple task proved technically and logistically complex. As the program neared the final test, it had never successfully sent and received targeting using the software currently employed in fleet aircraft.

VAQ-138 supported the test while deployed to the Pacific, aided by VAQ-141 aboard the aircraft carrier USS *Ronald Reagan*. The squadrons needed to gather data about the technical challenges and form a solution. The greatest hurdle was identifying all the experts across Navy and Air Force test squadrons, contractors and intelligence sources. Each had a piece of the puzzle, but no organization had assembled them into a coherent whole. Once armed with technical data and recommendations from the testers, VAQ-138 developed and demonstrated a process for passing a cue to LRASM.

Not only was it the first successful test for LRASM, it was a groundbreaking process for translating national intelligence into tactical targeting. Tactics instructors at Air Force and Navy weapons schools packaged that process into fleet training, completing a major milestone that allowed LRASM to achieve early operational capability.

A Repeatable Process

Accelerating Batwing and LRASM acquisition required completing testing and tactics development using fleet resources. Over the year that VAQ-138 supported acquisitions, the squadron completed a pre-deployment training cycle, six major large-force exercises, a 6-month Global Reaction Force rotation, and the first 4 months of a deployment. VAQ-138 had no aircrew with test experience and only two Growler Tactics Instructors. There was credible risk that the squadron lacked the capacity and expertise to complete its operational tasks while supporting acquisitions. Success required building partnerships between organizations to share information and skills. Building those teams and gathering information from multiple organizations was the most time-consuming task for VAQ-138.

Building a repeatable process requires a framework for supporting evaluation in fleet units. The DoD must create a process for packaging testing and tactics development data and personnel with the technology it is pushing into operational units. Administrative commands must shepherd the process and facilitate communication between disciplines. This is particularly important when working across warfare domains, where personal relationships and common mental models are less likely to ease ad hoc collaboration.

The need for rapid acquisition will not subside, nor will the inherent risk of that speed. VAQ-138 formed partnerships that reduced the risk, and the results are clear. The Batwing and LRASM efforts proved that testing, tactics development and integration into deployable units can occur simultaneously. Partnerships across the acquisition, tactics development and operational communities facilitate rapid deployment of urgently needed combat capabilities.

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