

MQ-25 Stingray Carrier Based Unmanned Aerial System (CBUAS)



Since achieving Milestone B (MS B) in August 2018, a series of technical delays led the MQ-25 Program Office to submit a request for fiscal reprogramming in FY23, and Congress granted that request in 2QFY24. The Navy will submit an updated MS B TEMP as well as a MS C TEMP to DOT&E for approval in FY25.

SYSTEM DESCRIPTION

The MQ-25 Stingray Carrier-Based Unmanned Aerial System (CBUAS) is composed of the MQ-25A Stingray air vehicle (Group 5 unmanned aircraft system (UAS)) and the Unmanned Carrier Aviation Mission Control System (UMCS) MD-5 Ground Control Station (GCS). The UMCS is the system-of-systems required for MQ-25 air vehicle and payload command and control. The MD-5 GCS, developed by the U.S. Government, is composed of Lockheed Martin's Skunk Works® Multi Domain Combat System (MDCX™), which is the Air Vehicle Pilot operating consoles and associated computing systems, and U.S. Government-developed communications, networking, and other ancillary equipment. The MQ-25 is intended to enhance carrier air wing (CVW) warfighting capabilities as a dedicated carrier-based tanker with a secondary maritime intelligence, surveillance, and reconnaissance (ISR) role. MQ-25 will assume the organic tanking mission currently performed by the F/A-18E/F. The MQ-25 is intended to integrate manned and unmanned operations while maturing complex sea-based command, control, communication, computers, and intelligence UAS technologies to support future UAS development to pace emerging threats.

MISSION

Commanders will utilize the MQ-25 to provide tanking and ISR capabilities to the carrier strike group, extend CVW strike range and alleviate the persistent, sea-based ISR gap, while introducing and integrating organic unmanned aviation into the CVW.

PROGRAM

The MQ-25 CBUAS is composed of the MQ-25A Stingray air vehicle, an Acquisition Category IB program; the MD-5 UMCS, an Acquisition Category II program; and additional systems, capabilities, and facilities needed to enable operations. The MQ-25 will be the first operational, carrier-based, fixed-wing, and catapult-launched UAS.

In the DOT&E-approved MQ-25 MS B TEMP, the MS C decision was to occur in FY23 and be informed by an operational assessment (OA) based on testing up to and including initial sea trials. In December 2022, based on production delays, the Navy issued an updated Acquisition Decision Memorandum which revised the MS C criteria to use information from an early operational assessment (EOA) that would be based on data collected between June 2019 and December 2021 that utilized a Boeing-owned, -operated, and -funded MQ-25A Stingray prototype.

The prototype test program was a 30-month, risk-reduction effort with ground and flight

events executed at Mid-America Airport in Mascoutah, Illinois; ground events at Naval Air Station Norfolk, Virginia; and an underway (non-flight) deck-handling demonstration onboard USS *George H. W. Bush* (CVN 77) in December 2021, which concluded the program. While the prototype demonstrated in-flight refueling capability and was taxied under its own power on the flight deck, there are significant differences between the prototype and the MQ-25A Engineering Development Model design. These differences include internal structures, fuel system design, communications, and network architecture, and for later test articles, obsolescence updates for some internal hardware that need to be incorporated before production model delivery. Moreover, the prototype was flown with a Boeing ground station, not the Lockheed Martin-produced UMCS ground station planned for use with fleet aircraft. At the time of testing, the Navy did not intend the prototype test program to inform an EOA, and DOT&E did not observe the testing. Developmental risk reduction activities are in progress at both Boeing-owned and U.S. Government-owned software and hardware integration labs.

Due to an extension of the engineering and manufacturing development phase, as well as delays with MQ-25A Stingray production of test air vehicles, MS C did not occur in FY23. The MQ-25 program office is currently in the process of completing and submitting an updated MS B TEMP

to DOT&E for approval, which is expected to arrive in FY25.

» **MAJOR CONTRACTORS**

- Boeing Defense, Space & Security – St. Louis, Missouri (MQ-25A Stingray)
- Lockheed Martin Corporation – Marietta, Georgia (Multi-Domain Combat System)

TEST ADEQUACY

DOT&E has not approved any operational test plans for MQ-25. Once the MS B TEMP update is approved, the Navy should submit to DOT&E for approval a test plan which includes an adequate OA. An adequate OA should be conducted using operationally representative air vehicles and include the MQ-25's primary operational environment: carrier-based flight operations. As a result, this OA should use non-prototype air vehicles and incorporate all test events up to and including initial sea trials.

PERFORMANCE

» **EFFECTIVENESS, SUITABILITY, AND SURVIVABILITY**

Insufficient data are currently available to evaluate the MQ-25 operational effectiveness, suitability, and survivability.

RECOMMENDATION

The Navy should:

1. As recommended in the FY23 Annual Report, submit an update to the MS B TEMP to DOT&E for approval.