

MQ-8 Fire Scout

Executive Summary

- The Navy Commander, Operational Test and Evaluation Force (OPTEVFOR) and Air Test and Evaluation Squadron ONE (VX-1) conducted the IOT&E on the MQ-8C Fire Scout Endurance Baseline Increment from April 2018 through March 2019.
- The IOT&E was adequate to assess the operational effectiveness, suitability, and cyber survivability of the MQ-8C to execute the intelligence, surveillance, and reconnaissance (ISR) and surface warfare (SUW) mission areas.
- The Navy achieved Initial Operational Capability in June 2019.
- DOT&E assessed MQ-8C performance in a September IOT&E report to Congress and the Secretary of Defense.
- The Navy procured 38 total air vehicles with no further procurement planned.

System

- The MQ-8C is a helicopter-based tactical unmanned aerial system that supports ISR, SUW, and mine countermeasures (MCM) payloads primarily on Littoral Combat Ships (LCS), but the system can be employed from other suitably equipped aviation capable ships.
- The Navy plans to replace the MQ-8B airframe (Schweizer 333) with the MQ-8C airframe (modified Bell 407), which has a much improved endurance and payload capacity.
- LCS components supporting the MQ-8C airframes are permanent installations on the host platform and consist of two Mission Control Systems (MCS), one Data Link Suite, and two Unmanned Air Vehicle Common Automatic Recovery Systems. System interoperability is achieved using the Tactical Control System software embedded in the MCS and the host ship's command, control, communications, computers, collaboration, and intelligence architecture.
- The Navy is incrementally integrating varied mission payloads into the MQ-8C airframe:
 - The Endurance Baseline Increment that achieved IOC in June 2019 integrates the following capabilities:



- AN/AAQ-22D BRITE Star II multi-sensor imaging system with electro-optical/infrared (EO/IR) cameras and laser range finding and target designation
- Automated Identification System
- Tactical ISR Remote Broadcast omnidirectional datalink
- Ultrahigh frequency (UHF)/very high frequency (clear or secure) voice communications package
- The SUW Increment integrates a maritime search radar as well as Inverse Synthetic Aperture Radar and Synthetic Aperture Radar imagery capability.
- The MCM Increment is the final increment that integrates the Coastal Battlefield Reconnaissance and Analysis system and a Data Mission Payload.

Mission

Commanders employ naval units equipped with MQ-8C airframes to provide ISR, target acquisition capability, communications relay capability, in support of LCS SUW and MCM operations.

Major Contractor

Northrop Grumman – San Diego, California

Activity

- OPTEVFOR and VX-1 completed both land- and sea-based testing in accordance with the DOT&E-approved test plan. IOT&E consisted of 192.0 hours of system operating time and 35 flight sorties conducted April 2018 through March 2019 at Webster Outlying Field (WOLF), Saint Inigoes, Maryland, and on board the USS *Coronado* (LCS 4), on the Point Mugu Sea Range. The land-based phase focused on overland surveillance and intelligence gathering, the ability of the MQ-8C to detect, classify, and identify overland contacts

of interest, and provide accurate target location data for further action. The sea-based phase focused on independent operations from an LCS with an emphasis on ISR and SUW mission areas. OPTEVFOR designed the test events to evaluate the ability of MQ-8C to detect, classify, and identify maritime targets.

- OPTEVFOR conducted the cybersecurity Cooperative Vulnerability and Penetration Assessment on the MQ-8C air vehicle from April 12 – 20, 2018, at WOLF.

FY19 NAVY PROGRAMS

OPTEVFOR conducted the system-of-systems Adversarial Assessment from June 29 to July 11, 2018, on board the USS *Coronado* at Naval Base San Diego, California.

- DOT&E provided an IOT&E report to Congress and the Secretary of Defense in September 2019.
- IOT&E for the SUW Increment is scheduled for FY20-21.

Assessment

- During flight operations, the MQ-8C Endurance Baseline variant demonstrated a significant improvement in endurance over the legacy MQ-8B.
- The MQ-8C routinely transited through cloud layers and operated in light rain with no adverse effects.
- The air vehicle demonstrated effective UHF communication relay capability and consistent, reliable, and effective command and control with no lost-link recoveries required during IOT&E testing.
- Although there are marked improvements in endurance over the MQ-8B, the Navy and DOT&E assessed the MQ-8C system as not operationally effective, not operationally suitable, and not cyber survivable.

- Primary degraders that led to this assessment included the overall air vehicle reliability, image quality and system performance of the BRITE Star II EO/IR system, and the poor reliability and inconsistency of the Tactical Common Data Link (TCDL). The TC DL is the conduit for payload video and control. Excessive operator workload coupled with an immature supply support system also contributed to the assessment of not operationally suitable.
- The Program Office has established a Tiger Team with fleet representation to increase readiness and reliability of the MQ-8 system of systems. The team's focus is to address the three primary deficiencies/failures (TC DL, BRITE Star, and cyber).

Recommendations

1. The Navy should correct all TC DL and BRITE Star II operational deficiencies.
2. OPTEVFOR should verify the correction of operational deficiencies during FOT&E.