Vertical Take-Off and Landing Unmanned Aerial Vehicle (VTUAV) (Fire Scout)

Executive Summary

- The Navy stopped production of the MQ-8B air vehicle after procuring 30 MQ-8Bs. The program focus now shifts to the MQ-8C air vehicle (also known as the "Endurance Upgrade") as a Rapid Deployment Capability. The Program Office is considering plans to transition the MQ-8C into the Vertical Take-Off and Landing Unmanned Aerial Vehicle (VTUAV) Program of Record. This will replace the Schweizer 333 (MQ-8B) airframe with the Bell 407 (MQ-8C).
- The Test and Evaluation Master Plan (TEMP) approved in 2007 is outdated and does not contain a clear path to successful development, integration, and testing of the MQ-8B or the MQ-8C-based Fire Scout system.
- In August, one Fire Scout system completed a 28-month deployment to the Regional Command North area of operations in Afghanistan. The system flew 5,100 hours supporting U.S. and allied forces.
- Operational testing demonstrated that the program successfully integrated the Advanced Precision Kill Weapon System (APKWS) aboard the MQ-8B. Additional sea-based testing is required before the Navy can field a sea-based, weaponized unmanned aerial system in response to the U.S. Naval Forces Central Command request for a Rapid Deployment Capability.
- At the end of FY13, the Navy conducted a Military Utility Assessment in support of transitioning control of the majority of the MQ-8Bs to the U.S. Navy's Fleet Forces Command. Once Fleet Forces Command receives control of the MQ-8Bs, the Program Office will reduce its involvement in the day-to-day activities required to fund, train, equip, and support deployed Fire Scout detachments.

System

- The Fire Scout is a helicopter-based tactical unmanned aerial system comprised of up to three MQ-8 air vehicles with payloads, a shipboard integrated Ground Control Station with associated Tactical Common Data Link, and the UAV Common Automatic Recovery System.

- The Navy intends the Fire Scout with the MQ-8B airframe to have the following capabilities:
  - Combat radius – 110 nautical miles
  - Endurance at combat radius – 3 hours on station
  - Target Identification – small fast-attack boats at 6 kilometer range
  - Initial payload consists of the AN/AAQ-22D Bright Star II electro-optical and infrared imaging system with laser designator
- The Navy plans to replace the Schweizer 333 (MQ-8B) airframe with the Bell 407 (MQ-8C) airframe. MQ-8B vehicles are planned to deploy on Littoral Combat Ships (LCS) and will be phased out via attrition.

Mission

Aviation detachments equipped with VTUAVs perform reconnaissance, surveillance, target acquisition, and communications relay missions in support of littoral Anti-Submarine Warfare, Anti-Surface Warfare, and Mine Warfare operations. System deployments during 2013 provided reconnaissance and surveillance to units conducting combat operations ashore and maritime commanders conducting anti-piracy operations.

Major Contractor

Northrop Grumman – San Diego, California

Activity

- Between 2006 and 2013, the VTUAV program flew over 10,000 MQ-8B flight hours. Of the 30 MQ-8B aircraft procured, 5 have been lost and are no longer flyable (one was a maintenance trainer, one was lost during operations in Libya, two were lost to design failures, and one was lost flying into icing conditions).

- The Navy has stopped production of the MQ-8B air vehicle after procuring 30 MQ-8Bs. The program focus now shifts to the MQ-8C air vehicle (also known as the "Endurance Upgrade") as a Rapid Deployment Capability. The Program Office is considering plans to transition the MQ-8C into

the VTUAV Program of Record. This will replace the Schweizer 333 (MQ-8B) airframe with the Bell 407 (MQ-8C).
- The Navy continues to use the MQ-8B to support development of additional payloads for the Navy and other DoD customers.
- The Navy is continuing development of the MQ-8C air vehicle in response to a Special Operations Command Joint Universal Operational Needs Statement.
  - In 2012, the Navy issued a sole source contract to Northrop Grumman for $262.3 Million for 2 developmental aircraft and 6 low-rate initial production aircraft. The Navy plans to conduct a Quick Reaction Assessment in 4QFY14.
  - The Navy plans to transition the MQ-8C from a Rapid Deployment Capability to the VTUAV Program of Record. The current plan is to procure 96 MQ-8C aircraft; 14 are under contract.
- In June 2013, the Navy conducted operational testing of the APKWS aboard the MQ-8B at China Lake, California, in accordance with a DOT&E-approved TEMP and test plan.
- In August 2013, one VTUAV system completed a 28-month deployment to the Regional Command North area of operations within Afghanistan. The system flew just under 5,100 hours supporting U.S. and allied forces. The system has returned to the United States for refurbishment and to support testing, training, and deployments with the Navy.
- At the end of FY13, the Navy conducted a Military Utility Assessment in support of transitioning control of the majority of the MQ-8Bs to the U.S. Navy's Fleet Forces Command. Once Fleet Forces Command receives control of the MQ-8Bs, the Program Office will reduce its involvement in the day-to-day activities required to fund, train, equip, and support deployed VTUAV detachments. The Navy has begun efforts to integrate the Telephonics 1700B-Plus Search, Surveillance, Tracking, Imaging and Weather Avoidance Radar System into the MQ-8B air vehicle. The AN/ZPY-4(V)1 is intended to detect and track maritime surface targets and cue the electro-optical and infrared sensor.
- Fire Scout continues to deploy aboard the Navy's *Oliver Hazard Perry* class of frigates. The MQ-8B system is providing Special Operations Forces some Intelligence, Surveillance, and Reconnaissance capability. Each detachment consists of four MQ-8B air vehicles that support the Navy's forward presence mission and Special Operations Forces. Frigate deployments will continue into 2015. MQ-8B deployment on LCS will commence in 2014; MQ-8C will deploy on LCS in 2015.
- Other VTUAV developmental testing during 2013 focused on software upgrades to correct deficiencies identified during deployment and previous testing and address parts obsolescence.

Assessment
- The TEMP approved in 2007 is outdated and does not contain a clear path to successful completion of IOT&E. The TEMP does not address the transition from the MQ-8B to the MQ-8C as the VTUAV Program of Record. DOT&E has concerns regarding the scope of operational testing the Navy intends to conduct to support the MQ-8C Milestone C decision.
- Operational testing demonstrated that the Navy successfully integrated the APKWS aboard the MQ-8B. MQ-8B operators successfully launched 12 APKWS rockets with 11 rockets hitting the designated targets. The sole miss is attributable to an APKWS guidance system malfunction.
- Additional sea-based testing is required before the Navy can field a sea-based, weaponized unmanned aerial system in response to the U.S. Naval Forces Central Command request for a Rapid Deployment Capability.
- Analysis of the Military Utility Assessment is not yet complete. DOT&E will make an assessment of the MQ-8B transition when all data are available.

Recommendations
- Status of Previous Recommendations. The Navy has made satisfactory progress on the FY12 recommendations. Continued frigate deployments have allowed detachments to optimize Tactical Common Data Link performance. While the Navy will not conduct an IOT&E on the MQ-8B air vehicle, the recent MQ-8B Military Utility Assessment will highlight risk areas as the Navy transfers these systems to Fleet Forces Command.
- FY13 Recommendations. The Navy should:
  1. Place a high priority on ship availability to complete testing of a sea-based, weaponized unmanned aerial system.
  2. Update the TEMP to describe operational testing that addresses the transition from the MQ-8B to the MQ-8C as the VTUAV Program of Record.