MH-60R Multi-Mission Helicopter

Executive Summary
- Combined MH-60R/S FOT&E on Pre-Planned Product Improvement (P3I) components commenced in FY08 and is expected to continue into the latter half of FY11. This P3I effort, with associated software changes, is expected to mitigate operator workload problems found in the 2005 IOT&E that stemmed from mission system complexity and software deficiencies.
- While the MH-60R is a covered system for purposes of LFT&E, the ongoing P3I component integration effort does not affect the approved LFT&E Strategy, which has been completed. With few exceptions, the MH-60R was found to be robust and ballistically tolerant.

System

The MH-60R is a ship-based helicopter designed to operate from Cruisers, Destroyers, Frigates, Littoral Combat Ships, or Aircraft Carriers. It is intended to replace the SH-60B and SH-60F.
- It incorporates dipping sonar and sonobuoy acoustic sensors, multi-mode radar, electronic warfare sensors, a forward looking infrared (FLIR) sensor with laser designator, and an advanced mission data processing system.
- It employs torpedoes, Hellfire air-to-surface missiles, and crew-served mounted machine guns.
- It has a three-man crew: two pilots and one sensor operator.

Mission

The Maritime Component Commander employs the MH-60R from ships or shore stations to accomplish the following:
- Under Sea Warfare, Anti-Surface Warfare, Area Surveillance, Combat Identification, and Naval Surface Fire Support missions previously provided by two different (SH-60B and SH-60F) helicopters
- Support missions such as Search and Rescue at sea and (when outfitted with necessary armament) maritime force protection duties

Prime Contractor
- Sikorsky Aircraft Corporation, Stratford, Connecticut

Activity
- FOT&E (OT-IIIA) on the first phase of P3I components completed in September 2009 per the DOT&E-approved Test and Evaluation Master Plan and test plan. Nine of a total of 16 components scheduled to be integrated into the MH-60R were tested during this first increment. Although initial results are available, the final report from the Navy's Operational Test Agency (OTA) is not expected until December 2009.
- FOT&E for the remaining seven components is expected to complete sometime in FY11.
- The Navy released a quicklook message in January 2009 to alert the fleet of early test deficiencies with P3I components selected to support an early deployment with Carrier Strike Group THREE.
- In September 2009, the Navy's OTA submitted a MH-60R P3I Anomaly Report, a recourse to provide timely test failure and/or deficiency information to the Program Office.
- All LFT&E activities have been completed and reported in the Live Fire Test and Evaluation Report to Congress.

Assessment
- No significant improvement in crew workload during surface warfare engagements has been realized compared to previous testing.
- The addition of Link 16 allows the MH-60R to share sensor data directly with other battle group participants. However, inaccurate data fusion of link participant locations with the helicopter's sensors combined with incorrect track classifications degrades situational awareness. This requires constant attention from an already busy crew to maintain a stable picture.
- The Automatic Video Tracking (AVT) feature of the Multi-Spectral Targeting System (MTS) FLIR fails to meet tracking and engagement thresholds. The MTS failed to successfully engage threat representative high-speed targets with Hellfire missiles because the AVT failed to maintain lock with the auto-tracker. Attempts to manually track the target to provide terminal guidance proved too challenging.

- APX-118 Elementary Mode-S surveillance capability (providing an aircraft-unique 24-bit address identifier) is not certified and Mode-S Level 2 enhanced surveillance information fails to meet the threshold by not transmitting accurate track angle rate to traffic controllers.
- Although not a P3I component, the dipping sonar and primary component for the helicopter's Undersea Warfare (USW) mission, called the Airborne Low Frequency Sonar (ALFS), has experienced frequent miswrapping of its reel and cable assembly. Recent testing recorded five failures in 21 days of USW mission tasking. Poor reliability of this system has prevented testing the new configuration in the USW mission.
- The vulnerability assessment from LFT&E established that, with few exceptions, the MH-60R is robust and ballistically tolerant. The LFT&E program has been reported as complete.

Recommendations

- Status of Previous Recommendations. The Navy addressed two of the three previous recommendations. The remaining recommendation is still valid.
- FY09 Recommendations. The Navy should:
  1. Continue to pursue software and hardware enhancements to reduce the operator workload and allow the crew to focus more on mission execution.
  2. Resolve data fusion inaccuracies related to Link 16 by correcting integration problems between the precise participant location identifier and the aircraft's own sensors.
  3. Pursue a correction to the AVT feature of the MTS (FLIR) to increase the probability of a successful Hellfire engagement of a smaller, high-speed maneuvering vessel.
  4. Obtain a certification for elementary Mode-S and resolve the deficiency with the Level 2 enhanced surveillance to comply with new air traffic regulations and increase safety of flight.
  5. Identify the cause and corrective action to resolve the frequent failures of the ALFS reel and cable assembly.