

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. The first phase of P3I components completed operational testing in September 2009.
- The MH-60R, with tested P3I components, is operationally effective for all missions with the exception of Surface Warfare (SUW).
- The MH-60R, with tested P3I components, is operationally suitable for all missions.
- The MH-60R is survivable for all missions. No dedicated LFT&E events were conducted in support of the MH-60R P3I testing. The incorporation of P3I components in MH-60R aircraft did not alter the survivability of the aircraft.

System

The MH-60R is a ship-based helicopter designed to operate from Cruisers, Destroyers, Frigates, Littoral Combat Ships, and 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 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.

Activity

- FOT&E on the first phase of P3I components completed in September 2009. Commander, Operational Test and Evaluation Force (COTF) conducted testing in accordance with the DOT&E-approved Test and Evaluation Master Plan and test plan. COTF tested 9 of the 16 components scheduled to be integrated into the MH-60R during this first increment. The following nine MH-60R P3I systems were of sufficient maturity for test during FOT&E:
 - Link 16
 - Multi-spectral Targeting System (MTS)
 - Mk 54 Torpedo Digital Interface
 - Selective Availability Anti-spoof Module Embedded GPS/Inertial
 - GPS Antenna System
 - Modifications to the Avionics Operational Program to control Single Channel Ground and Airborne Radio System operation through the Operator System Interface



Mission

The Maritime Component Commander employs the MH-60R from ships or shore stations to accomplish the following:

- SUW, Under Sea Warfare (USW), 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

Major Contractors

- Sikorsky Aircraft Corporation – Stratford, Connecticut
- Lockheed Martin Mission System and Sensors – Owego, New York

- Modifications to the Avionics Operational Program to control satellite communications with Demand Assigned Multiple Access operation through the Operator System Interface
- APX-118 Transponder system that adds a new mode, Mode-S surveillance capability (providing an aircraft-unique 24-bit address identifier), to the existing modes 1, 2, 3/A, C, and 4 of the legacy APX-100. This is not a tactical system and is currently used solely for communication with civilian air traffic control authorities.
- Active Vibration Control (AVC) designed to replace the current passive vibration absorbers on the MH-60R and MH-60S aircraft. The function of the AVC is to attenuate the vibrations induced into the helicopter by the operation of the rotor system.
- FOT&E for the remaining seven components is expected to complete in FY11.

NAVY PROGRAMS

- All LFT&E activities have been completed and reported in the Live Fire Test and Evaluation Report to Congress in 2008.

Assessment

- The addition of Link 16 allows the MH-60R to share sensor data directly with other battle group participants and provides increased situational awareness for all units participating in the network while conducting SUW and USW missions. However, during the conduct of SUW missions, the enormous amount of track information and sensor data presented to the three-man crew over-saturated the sensory and cognitive skills of the operators, decreasing their ability to discern critical information from within all the information presented. This required the use of numerous workarounds that ultimately led to frequent loss of situational awareness as crews were forced to filter out critical sensor data to maintain a sustainable task load.
- The MH-60R with the installed AN/AAS-44C(V) Multi-spectral Targeting System upgrades is not operationally effective for SUW.
- The Mk 54 Torpedo Digital Interface P3I allows for successful integration of the Mk 54 torpedo with the MH-60R.
- APX-118 Mode-S surveillance information fails to meet the Federal Aviation Administration (FAA) threshold

for certification by not transmitting accurate track angle information to civilian air traffic controller authorities. As a result, the FAA would not certify the APX-118 Mode-S surveillance capability for communication with traffic controllers.

Recommendations

- Status of Previous Recommendations. The Navy satisfactorily addressed three of the four previous recommendations. The Navy should identify the cause and corrective action to resolve the frequent failures of the Airborne Low Frequency Sonar reel and cable assembly.
- FY10 Recommendations. The Navy should:
 1. Investigate and apply corrections to Link 16 deficiencies to include possible changes to employment tactics, techniques, and procedures. The Navy should verify corrections in FOT&E.
 2. Correct and test deficiencies revealed in conducting SUW during testing.
 3. Investigate and apply corrections to APX-118 Transponder aircraft track angle information disparity deficiency and verify corrections in FOT&E.