

MH-60S Multi-Mission Combat Support 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 FY13. The first phase of P3I components completed operational testing in September 2009. The second phase of P3I components began operational testing 2QFY11 and is anticipated to complete in 1QFY12. The third phase of P3I components is expected to begin operational testing in 2QFY12.
- DOT&E issued a combined FOT&E report in November 2010 assessing the first phase of P3I implemented on the MH-60R and the MH-60S. The report rendered the following findings:
 - The MH-60S, as tested with the first phase of P3I components, is operationally effective for all missions with the exception of Surface Warfare (SUW) and Combat Search and Rescue (CSAR).
 - The MH-60S, as tested with the first phase of P3I components, is operationally suitable for all missions.
 - The MH-60S is survivable for all missions.
- The analysis of test data collected during combined MH-60R/S FOT&E of the second phase of P3I components is still in progress. No preliminary evaluation is available. DOT&E expects to issue a formal test report in 2QFY12.
- The analysis of test data collected during the operational assessment (OA) of the MH-60S Block 2A Airborne Mine Countermeasures (AMCM) System and the AN/AQS-20A Sonar Mine Detecting Set is still in progress. No preliminary evaluation is available. DOT&E expects to issue a formal test report in 2QFY12.

System

- The MH-60S is a helicopter modified into three variants (Blocks) from the Army UH-60L Blackhawk. It is optimized for operation in the shipboard/marine environment.
- The Blocks share common cockpit avionics and flight instrumentation with the MH-60R.
- Installed systems differ by Block based on mission:
 - Block 1 – Fleet Logistics. Precision navigation and communications, maximum cargo or passenger capacity
 - Block 2A/B – AMCM. AMCM systems operator workstation, tether/towing system, any one of five mine countermeasure (MCM) systems currently under development (including the AN/AQS-20A Sonar Mine Detecting Set and the Airborne Laser Mine Detection System (ALMDS))
 - Block 3A – Armed Helicopter. Tactical moving map display, forward-looking infrared with laser designator,



crew-served side machine guns, dual-sided Hellfire air-to-surface missiles, and defensive electronic countermeasures

- Block 3B – Armed Helicopter. Block 3A with addition of tactical datalink (Link 16)
- Pre-Planned Product Improvement (P3I) components add Link 16 and various communication, navigation, and command and control upgrades.

Mission

The Maritime Component Commander can employ variants of MH-60S from ships or shore stations to accomplish the following missions:

- Block 1 – Vertical replenishment, internal cargo and personnel transport, medical evacuation, Search and Rescue, and Aircraft Carrier Plane Guard
- Block 2 – Detection, classification, and/or neutralization of sea mines depending on which AMCM systems are employed on the aircraft
- Block 3 – CSAR, SUW, Aircraft Carrier Plane Guard, Maritime Interdiction Operations, and Special Warfare Support

Major Contractors

- Sikorsky Aircraft Corporation – Stratford, Connecticut
- Lockheed Martin Mission System and Sensors – Owego, New York
- Raytheon Company, Integrated Defense Systems – Tewksbury, Massachusetts
- Northrop Grumman Corporation – Melbourne, Florida

Activity

- DOT&E issued a combined FOT&E report in November 2010 assessing the first phase of P3I implemented on the MH-60R and the MH-60S.
- Commander, Operational Test and Evaluation Force (COTF) commenced combined MH-60R/S FOT&E on the following three P3I components: Integrated Maintenance Diagnostic System, the Ground Proximity Warning System, and the Active Vibration Control system (MH-60S only). This second phase of P3I testing commenced in 2QFY11 and is anticipated to complete in 1QFY12. COTF conducted the testing in accordance with the DOT&E-approved test plan.
- All LFT&E activities have been completed and reported in the LFT&E Report to Congress in 2008.
- COTF conducted Phase A (Shore-based and Training Phase) of the planned OA of the MH-60S Block 2 AMCM System and the AN/AQS-20A Sonar Mine Detecting Set in FY11. COTF conducted the testing in accordance with the DOT&E-approved test plan. COTF conducted the OA in lieu of the IOT&E originally planned for early FY11.
- Phase B (Littoral Combat Ship (LCS) Ship-based Phase) of the planned OA is expected to be conducted in FY12, pending the availability of an LCS to support the testing.
- COTF planned the FY12 OA of the MH-60S Block 2 AMCM System and the Airborne Laser Mine Detection System (ALMDS). This OA will be conducted in lieu of the IOT&E originally planned for early FY11.
- The Navy rescheduled the IOT&Es to allow the additional time to correct deficiencies and change the test articles to the current production configuration; the tests will now coincide with the IOT&E of MCM Mission Package on the LCS in FY13.
- The analysis of test data collected during Phase A of the MH-60S Block 2A AMCM and the AN/AQS-20A Sonar Mine Detecting Set OA is still in progress. No preliminary evaluation is available. DOT&E expects to issue a formal test report in 2QFY12.
- Both developmental and operational testing of the AN/AQS-20A revealed the system is deficient in meeting required thresholds for False Classification Density (FCD) and Vertical Localization Accuracy in some modes. If the FCD and Vertical Localization deficiencies are not corrected prior to IOT&E they will adversely affect the operational effectiveness of AN/AQS-20A.
- Developmental testing of the ALMDS revealed the system is deficient in meeting the required threshold for FCD. If the FCD deficiency is not corrected prior to IOT&E it will adversely affect the operational effectiveness of ALMDS.

Recommendations

- Status of Previous Recommendations. The Navy has not satisfactorily addressed any of the eight previous recommendations. The Navy should still:
 1. Demonstrate Block 3A Armed Helicopter Weapons System (AHWS) operational effectiveness in the SUW mission to include sufficient day and night overwater Hellfire missile firings, which would exhibit the aircraft's ability to conduct attacks against threat-representative, evasively maneuvering, seaborne targets from all weapon stations at tactical ranges.
 2. Develop a plan to allow safe shipboard storage of Block 3A Armed Helicopter Weapons System kit components when not installed and in use on the aircraft.
 3. Determine aircraft carrier (CVN) shipboard compatibility of the MH-60S Armed Helicopter under operationally realistic conditions.
 4. Improve the APR-39A(V)2 Radar Warning Receiver effectiveness and consider increasing the number of ALE 47 Chaff/Flare dispensers.
 5. Develop and refine Link 16 employment tactics, techniques, and procedures to facilitate optimal employment of Link 16 functionality into MH-60S missions and verify results in future OT&E.
 6. Correct SUW deficiencies and verify correction through subsequent testing.
 7. Investigate and apply corrections to DALs deficiencies and verify corrections in future OT&E. Deficiencies include the inability to simultaneously receive Quickdraw situation reports and DALs location reports; the incompatibility of the Combat Survivor Evader Locator AN/PRQ-7 hand-held radio with DALs; and electromagnetic interference from the DALs infrared searchlight that induces navigational bearing errors.
 8. Investigate and apply corrections to APX-118 Transponder aircraft track angle information disparity deficiency and verify corrections in future OT&E.

Assessment

- The MH-60S, as tested with the first phase of P3I components, is operationally effective for all missions with the following exception: the MH-60S with Multi-spectral Targeting System is not operationally effective to conduct SUW and CSAR missions.
- The MH-60S, as tested with the first phase of P3I components, is operationally suitable for all missions. P3I testing identified suitability deficiencies with Link 16 and the Downed Aircrew Locator System (DALs) that did not diminish the overall suitability of the aircraft.
- The MH-60S is survivable for all missions.
- The incorporation of the first phase of P3I components in MH-60S aircraft did not alter the survivability of the aircraft. No dedicated LFT&E events were conducted in support of the MH-60S P3I testing.
- The analysis of test data collected during combined MH-60R/S FOT&E of the Integrated Maintenance Diagnostic System, the Ground Proximity Warning System and the Active Vibration Control system is still in progress. No preliminary evaluation is available. DOT&E expects to issue a formal test report in 2QFY12.

NAVY PROGRAMS

- FY11 Recommendations. The Navy should:
 1. Investigate solutions and correct AN/AQS-20A FCD and Vertical Localization deficiencies prior to IOT&E.
 2. Investigate solutions and correct the ALMDS FCD deficiency prior to IOT&E.
 3. Conduct LCS Ship-based phases of the planned OAs of the MH-60S Block 2 and AN/AQS-20A, and of the MH-60S Block 2 and ALMDS MCM systems to reduce risk to the LCS MCM Mission Package IOT&E.

NAVY PROGRAMS