

## MH-60R Multi-Mission Helicopter

The MH-60R Multi-Mission Helicopter program originally consisted of a Service Life Extension Program (SLEP) for existing SH-60B, SH-60F, and some HH-60H aircraft. Aircraft remanufacture, avionics improvements, and new or improved mission sensors were the major system changes until cost considerations in FY01 resulted in redefinition of the program to include new production aircraft. The program includes the AN/AQS-22 Airborne Low Frequency Sonar with increased sonobuoy acoustic signal processing capability intended to improve undersea warfare mission effectiveness against submarines in both deep and shallow water environments. The program also includes the AN/APS-147 Multi-Mode Radar with Inverse Synthetic Aperture Radar imaging and periscope detection modes of operation. Other improvements include the AN/ALQ-210 electronic support system, a fully integrated self-defense system, the AN/AAS-44 Forward-Looking Infrared sensor with laser designator, and the ability to launch Hellfire missiles. The MH-60R will have the Common Cockpit that consists of multi-functional displays and a complex client-server based tactical data processing system. The program represents a significant avionics modification to the SH-60 series of aircraft intended to enhance undersea and surface warfare, surveillance and identification, and power projection.

The program entered Milestone II development in FY93 with the requirement to combine the missions of both the SH-60B and SH-60F aircraft into the MH-60R mission configuration. A 1999 Operational Assessment of an advanced development model AN/AQS-22 sonar system installed in an SH-60B test aircraft concluded that the system was potentially operationally effective and suitable. Two prototype YMH-60R test aircraft have supported contractor and developmental testing from early FY00 through FY02. The tests have focused on the Common Cockpit system and each of the developing mission systems.

The Assistant Secretary of the Navy, Research, Development and Acquisition, approved the current Acquisition Program Baseline schedule on March 14, 2002, to include the decision for new production aircraft instead of remanufactured aircraft.

DOT&E designated the MH-60R as a covered system in 1998 for Live Fire Test and Evaluation (LFT&E). The Assistant Secretary of the Navy (Research, Development and Acquisition) (ASN(RDA)) granted a LFT&E waiver to the MH-60R under an extension of a July 1996 memorandum. Ongoing analyses of H-60 aircraft and recommendations of subject-matter experts identified voids in the LFT&E database for the H-60 family of aircraft. The Army and Navy established a joint LFT&E test program for the UH-60M, MH-60S, and MH-60R development programs to address the data voids. The joint effort recognized the high degree of commonality among the H-60 variants' structural and dynamic components. The two Services provided components and an airframe to be used as test articles and initiated static and dynamic testing in 2001. The joint LFT&E program will continue into FY05.



*The MH-60R multi-mission helicopter will combine the missions of existing SH-60B and SH-60F helicopters into a single aircraft.*

# NAVY PROGRAMS

## TEST & EVALUATION ACTIVITIES

The second of three phases of contractor/Navy developmental tests began in FY01 and continued into FY02. The tests focused on the radar, electronic support measures, and Common Cockpit software systems' maturity growth. The third phase of contractor/Navy developmental tests began in November 2002 and will be followed by an Operational Assessment from April through July 2003. A six-month Operational Evaluation is scheduled to begin in May 2004. The Army and Navy joint LFT&E test program has conducted both static and dynamic tests on aircraft components and on the YCH-60 test aircraft. This testing was conducted at the Army's Aberdeen Proving Ground, Aberdeen, Maryland, and at the Naval Air Warfare Center, China Lake, California. Approved revisions of the March 1992 Operational Requirements Document and the January 1994 Test and Evaluation Master Plan are expected in mid FY03.

## TEST & EVALUATION ASSESSMENT

Integration of mission systems with the Common Cockpit program software has proven difficult. The two pilots and sensor operator can be easily overwhelmed if the auto-detect, auto-classify, and tactical operator aids do not function correctly. Development of mature stable software in the radar, electronic support system, acoustic sensor system, and Common Cockpit has been more complex than originally estimated. The development and test effort has found and corrected problems, but this has resulted in test-fix-test periods that may eventually impact the schedule. The testing process identified immature technology limitations in the Automatic Periscope Detection algorithm development for the radar. This radar feature was postponed and will be added in the future as a preplanned product improvement.

Design problems in the radar traveling wave tube amplifier (TWTA) have limited the Navy to two systems to support contractor proof of compliance testing and Navy developmental testing. The quality of repair of the single source TWTA components has been poor. Periodic shortages of mission computers have also adversely impacted the development schedule.

The joint LFT&E program is adequately resourced and will provide the required information to adequately evaluate the survivability of the MH-60R.