

SH-60(R) MULTI-MISSION HELO UPGRADE



Navy ACAT IC Program

Total Number of Systems:	188
Total Program Cost (TY\$):	\$5633.4M
Average Unit Cost (TY\$):	\$25.778M
Full-rate production:	1QFY03

Prime Contractor

Lockheed Martin

SYSTEM DESCRIPTION & CONTRIBUTION TO JOINT VISION 2010

The SH-60R Multi-Mission Helicopter Upgrade (formerly called LAMPS MK III Block II Upgrade) consists of a Service Life Extension Program (SLEP), avionics improvements, and new or improved mission sensors. The SLEP entails the remanufacture of SH-60B, SH-60F, and some HH-60H airframes currently in the fleet for a resultant life extension of 10,000 hours and a maximum gross take-off weight increase from 21,884 pounds to 23,500 pounds. The program develops the Airborne Low Frequency Sonar (ALFS) and increases sonobuoy acoustic signal processing capability by initial EMD use of the UYS-2A Enhanced Modular Signal Processor and final EMD incorporation of a commercial-off-the-shelf acoustic processor. The acoustic suite will improve USW mission effectiveness against the quiet submarine threat in both deep and shallow water environments. The aircraft will employ a multi-mode radar (MMR) that includes inverse synthetic aperture radar (ISAR) imaging and periscope detection modes. Other improvements include the ALQ-210 electronic support measures (ESM), a fully integrated self-defense (ISD) system, a forward looking infrared (FLIR) sensor with laser designator, and armament capability to launch Hellfire missiles. The SH-60R and CH-60S will incorporate the "Common Cockpit" which consists of multi-functional displays, keysets, and a complex client-server based tactical

data processing system. The Upgrade represents a significant avionics modification to the SH-60 series aircraft by enhancing USW, ASUW, surveillance and ID and power projection, thereby supporting the operational requirements of *full-dimensional protection*.

BACKGROUND INFORMATION

The SH-60R Multi-Mission Helicopter Upgrade entered EMD in FY93 and combined the mission functions of the predecessor SH-60B and SH-60F baseline aircraft. A series of cost, budget, and technical issues have prompted program restructures. On May 14, 1999, ASN(RDA) issued an Acquisition Decision Memorandum (ADM) that approved exit criteria for the first three SH-60R LRIP lots in FY00, FY01, and FY02. The ADM also designated two of the LRIP lot 1 aircraft to be used as test aircraft and approved exit criteria for full-rate production. The current program consists of four phases. *Phase one* installs the ALFS, UYS-2A acoustic processor, displays, and control key sets in a SH-60B test aircraft and focuses both DT and OT on mechanical dipping performance of the ALFS system. Limited acoustic performance will be tested due to the immaturity of the acoustic system's development software. ALFS DT completed in late June 1999 and OT is scheduled October-November 1999. *Phase two* of the program consists of DT and DT Assist on the two prototype SH-60R test aircraft starting in December 1999 and continuing through the late March 2000 LRIP-1 decision milestone. Full functional capability of the Common Cockpit, MMR, and acoustic system will not be available due to software development schedules. ESM, ISD, and weapons systems will not be installed during this phase. *Phase three* testing will include all MMR operating modes, additional acoustic modes, and ESM. This phase consists of combined DT/OT and independent OT test periods, results of which will support the March 2001 LRIP-2 decision. During *Phase four* the SH-60R test aircraft will be fully functional and undergo concurrent TECHEVAL with ALFS from August 2001-March 2002 in support of the LRIP-3 decision. Concurrent OPEVAL of SH-60R and ALFS will follow, in support the October 2002 SH-60R Milestone III decision.

The Hellfire missile Integration Program Upgrade to the SH-60B and HH-60H aircraft was designated for LFT&E in March 1995. Extensive ballistic testing had been conducted on the H-60 series of helicopters during development and later under the Joint Live Fire Program. A waiver from full-up, system level testing was granted in July 1996. The LFT&E Alternative Plan for the SH-60B and HH-60H included an evaluation of the vulnerability of these H-60 variants based on those past tests. The SH-60R variant was specifically identified as a "covered" upgrade in January 1998. The Navy determined that the waiver granted to the SH-60B and HH-60H aircraft did not apply to the SH-60R, and that a separate waiver must be requested. Since the SH-60R program is currently in EMD, the Acquisition Executive is precluded from granting a waiver without first obtaining legislative relief from the requirement that waivers must be granted prior to a program entering EMD.

TEST & EVALUATION ACTIVITY

Developmental Testing-level tests, focused on the mechanical features of the acoustic system installed in the SH-60B, occurred during FY99. Preliminary findings from the 24 test flights and 133 transducer dips indicate residual reel optical marker faults, intermittent transducer timing problems, cable-drum mis-wraps on take-up, and acoustic processor software freeze problems. Resolution of these problems is underway and the commencement of OT will depend on determination of corrective actions.

Limited stand-alone DT-level testing of the MMR in the prototype SH-60R resulted in a successful demonstration that the system could form ISAR images and detect targets in the long-range search mode. OT-level testing has not occurred during FY99.

The Navy completed the SH-60B and HH-60H vulnerability evaluation and DOT&E is currently reviewing it. DOT&E is writing a LFT&E report to Congress based on this analysis. Efforts on the SH-60R are just starting. The SH-60R TEMP with attached Alternative LFT&E Plan is being revised to reflect the May 1999 ADM. The Alternative LFT&E Plan includes a review of aircraft modifications to determine whether they pose the potential to significantly change aircraft vulnerability and whether additional LFT will be required. The Navy is pursuing a waiver from full-up, system-level live fire testing; however, legislative relief is needed to allow a waiver since this program has entered EMD.

TEST & EVALUATION ASSESSMENT

SH-60R programmatic and schedule changes during the MMR, ALFS, and Common Cockpit system development, have made it difficult to finalize a TEMP. However, the Program Manager has been forthright in reporting technical and schedule issues to the Systems Test IPT to facilitate test plan adjustments. Combined CT and DT, as well as combined DT and OT, are also being planned wherever feasible.

