MH-60R Multi-Mission Helicopter

The MH 60R Multi-Mission Helicopter, as tested, is operationally effective, operationally suitable, and survivable. The operational and live fire testing were adequate.

Test and analyses indicate that:
- The MH 60R test article successfully accomplished primary and secondary missions, constrained only by heavy workloads imposed on the aircrew sensor operator during primary missions, particularly in areas with dense target and radio frequency (RF) signal environments.
- The MH 60R is a damage-tolerant aircraft that can withstand multiple small-arms projectile hits, continue to fly, and often complete its mission with damage.

Program Overview

The MH 60R is the replacement for the current Navy SH-60B and SH-60F aircraft. It is designed and built to execute its primary missions of Under Sea Warfare (USW) and Anti-Surface Warfare (SUW) from large and small deck Navy combatant ships. Secondary missions include search and rescue (SAR), vertical replenishment (VERTREP), Naval surface fire support (NSFS), medical evacuation (MEDEVAC), very high frequency/ultra high frequency (VHF/UHF) communications relay (COMREL), logistics support, and personnel transport.

To fulfill its primary missions, the aircraft is equipped with:
- A digital cockpit and data processing system common with the MH 60S Fleet combat support helicopter.
- A newly developed APS-147 Multi-Mode Radar.
- A newly developed electronic support measures system.
- An integrated self defense system.
- A new acoustic processor supporting the airborne low frequency dipping sonar and sonobuoy signal processing requirements.
- A new forward-looking infrared system with laser designator.
- A legacy weapons suite consisting of door-mounted machine guns, Hellfire missiles, and torpedoes.

Operational Effectiveness

The MH 60R is operationally effective. It completed all primary and secondary missions in a realistic operational environment. The aircraft met or exceeded all threshold performance requirements. In most cases, the aircraft, avionics, and mission systems demonstrated enhanced capabilities to detect and prosecute missions against the most challenging targets-of-interest, as compared to legacy aircraft. However, with the increase in number, capabilities, and complexity of mission sensors without concomitant increase in the three-person flight crew size, there comes a noticeable increase in operator workload and training requirements.

Operational Suitability

The MH 60R is operationally suitable. It met all but one reliability, maintainability, availability, and reconfiguration metrics. The aircraft built-in test capability exhibited a false alarm rate of 28.8 percent, which was above the less than 20 percent threshold operational requirement. Eight of the 15 false alarms were attributable to the new APS 147 Multi-Mode Radar. It will be necessary to improve the software to reduce the false alarm rate within acceptable limits.

The operational availability metric was examined to ascertain the administrative and logistics delay times for receipt of spare/repair parts from the normal Navy Logistics Supply System during the test period. The average delay time was high at 20.93 hours. An average delay time of 10.34 hours would correspond to the commonly accepted operational availability metric value of 75 percent.

Survivability

The MH 60R, is survivable against projected threats. In its baseline configuration missions, it is more survivable than previous H-60 models. To reduce susceptibility, an integrated self defense countermeasures suite was added to the MH 60R. Flight tests demonstrated that the suite meets its effectiveness requirements. The MH 60R also benefits from the presence of self defense capable machine guns and a new radar with target imaging and threat recognition capability. The Joint Army-Navy UH/MH 60 LFT&E program conducted extensive live fire vulnerability testing over the life of the H-60 series

aircraft. This testing, combined with extensive combat usage data, established that with few exceptions, the H-60 aircraft family is robust and ballistically tolerant.

Recommendations

The Navy should:

1. Correct the software deficiencies that limit efficient mission accomplishment. This should include corrections to address false alarms associated with the APS-147 radar.
2. Correct operator-system interface deficiencies identified during operational evaluation (OPEVAL) and incorporate them in the next available Airborne Operating Program software release. This could entail changes in operator training.
3. Conduct a Follow-on Operational Test and Evaluation (FOT&E) to verify correction of software and system deficiencies, which cause the higher level of the sensor operator workload experienced during primary warfare missions.
4. Improve crew and system survivability by:
   - Inerting fuel tank ullage to prevent explosions from incendiary hits.
   - Reducing the potential for gearbox chip detector screen blockage resulting from ballistic hits to the main transmission assembly.
   - Correcting, as practical, the design deficiencies identified in the survivability evaluation in Section V.