

## Black Hawk Upgrades (UH-60M) – Utility Helicopter Upgrade

### Executive Summary

- The Defense Acquisition Executive approved the Milestone C low-rate initial production decision to purchase up to 40 UH-60M aircraft on March 31, 2005.
- The Army has flown nearly 500 of the planned 650 developmental test hours.
- Technical risks include system-level integration, digital interoperability, and reliability. The UH-60M Test and Evaluation Master Plan is adequate to evaluate these technical issues and determine the operational effectiveness and suitability of the UH-60M Blackhawk.

### System

- The UH-60M is a recapitalized and upgraded UH-60 A or L model Black Hawk medium-lift helicopter.
- The program projects upgrade for 1,235 UH-60M Black Hawks.
- The Assault Helicopter Battalion is organized as three companies of 10 aircraft each.
- The UH-60M upgrades include:
  - A Common Avionics Architecture System for improved situational awareness
  - Power and Airframe improvements with monolithic machined parts, for increased lift and range over the A/L model Black Hawk
  - Enhanced laser warning and infrared suppression for anti-missile defense, and crashworthy fuel system to increase survivability

### Mission

- Assault Aviation and General Support Aviation Battalions will use this aircraft to conduct the following missions:



- Resupply the force through internal transport, and internal and external cargo lift capability
- Air Assault 11 combat soldiers or light vehicles and equipment less than 4,500 pounds
- Conduct aero medical evacuation
- Execute command and control
- The increased lift capability of the UH-60M enhances mission accomplishment by massing more combat assets with greater situational awareness than the UH-60 A and L models.

### Activity

- The Army conducted a Limited User Test in August 2004 to assess the integration of advanced avionics and software build C, which is designed to reduce pilot workload and increase pilot situational awareness. The Limited User Test results supported the Milestone C decision in March 2005 for a low-rate production of 40 aircraft.
- A combined contractor and government test team continued developmental flight and ground testing on three prototype aircraft. These tests included nearly 500 of the planned 650 developmental test hours and focused on the integration of advanced avionics, such as the Automated Flight Control System and Flight Management System. Ground

- testing included Electromagnetic Compatibility testing and qualification, initial integration testing of the Volcano mission equipment package, crashworthy external fuel system integration, and icing testing.
- The LFT&E strategy approved by DOT&E in May 2000 includes a waiver from full-up system-level testing. An alternate strategy combines efforts with the Navy's MH-60R and MH-60S programs, as well as DOT&E's Joint Live Fire Program. Joint Live Fire testing of the crashworthy external fuel system was completed in FY05, with testing of the onboard oxygen generation system and the new wide chord blades remaining under the Army Live Fire program. Related

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testing of the UH-60 engine compartments and the improved gear box is ongoing under the Joint Live Fire program.

## Assessment

- The UH-60M met three of four Milestone C entrance criteria. The UH-60M met or exceeded the entrance criteria for troop lift, external lift, and digitization. The UH-60M did not meet the reliability entrance criterion, and by the Army's current reliability growth model estimates, the reliability threshold for essential maintenance actions will not be met until 2010, three years after the full-rate production decision review.
- The UH-60M provides improved handling qualities over the UH-60 A/L aircraft, with digital cockpit enhancements and reduction of pilot workload.
- LFT&E results to date indicate improved survivability over the UH-60A/L aircraft.

- The UH-60M line-of-sight based communications system is not compatible with the current Army digital architecture. As with other platforms, it will be difficult for this program to provide the digital communications capabilities necessary to achieve required interoperability.
- Technical risks include digital interoperability and reliability.

## Recommendations

The Army should:

1. Integrate a satellite-based communication system that is compatible with the current Army digital architecture into the UH-60M to achieve the required interoperability.
2. Address reliability shortfalls.