

Armed Reconnaissance Helicopter (ARH)

Executive Summary

- The Army reported Acquisition Baseline Program schedule breaches to IOT&E, Milestone C Decision Review, and First Unit Equipped on May 16, 2007.
- On February 21, 2007, the fourth System Development and Demonstration (SDD) aircraft made a forced landing near the Bell test facility due to fuel starvation of the engine. The aircraft sustained major structural and component damage. This mishap forced a halt to Armed Reconnaissance Helicopter (ARH) flight testing until investigators found foreign debris in the fuel tank to be the cause of the mishap.
- The Army issued a stop-work order for the ARH on March 21, 2007, due to system development and integration, cost and schedule concerns. The Army lifted the stop work order on March 28, 2007, and continued the program to preclude high start-up costs.
- The Army held a special Systems Acquisition Review Council (ASARC) in May 2007 to consider options in the procurement of the ARH to replace OH-58D Kiowa Warrior helicopters. The ASARC decided to continue with Bell Helicopter/Textron as the prime contractor for the ARH.
- The complexity of ARH system integration has added 6 to 8 months to the schedule.
 - Milestone C: From September 2007 to April 2008
 - IOT&E: From February 2009 to September 2009
 - Full-rate production: From May 2010 to July 2010
 - First Unit Equipped: From July 2010 to December 2010
- The Army's ARH Replan Strategy adds additional aircraft (from 368 to 512) to replace selected Army National Guard Apache helicopters with ARH. The Replan strategy includes additional test vehicles, as well as a pre-planned product improvement to the rotor system.
- The ARH program completed live fire testing of several components under static conditions during FY07 and plans for additional testing for component and subsystems during FY08.

System

- The ARH is a replacement for the OH-58D helicopter. The ARH is largely based on the commercial Bell Helicopter 407 design and incorporates new designs for several major components.
- The ARH integrates the Common Avionics Architecture System cockpit with target acquisition sensor systems for day, night, and marginal weather operations.



- The ARH will have a 50 caliber machine gun, and be able to fire 2.75-inch aerial rockets and Hellfire missiles. The ARH will have armored crew stations and will employ Aircraft Survivability Equipment, to include radar, laser, and missile warning systems and chaff/flare dispensers.
- The new acquisition objective is 512 aircraft (up from the original objective of 368) with a full-rate production decision in 3QFY10. The increase will equip Army National Guard Apache Helicopter units with ARHs. The Army plans to have 10 ARH per troop and 30 per squadron.

Mission

- A Regimental Aviation Squadron, as part of the Multi-Functional Aviation Brigades, employs ARH to conduct aerial armed reconnaissance for collection of combat information and intelligence about enemy and terrain.
- ARH squadrons also provide security and early warning against enemy observation or attack for ground maneuver forces.
- Other ARH troop missions include:
 - Command and control
 - Communications relay
 - Convoy security
 - Nuclear/chemical surveys

ARMY PROGRAMS

Activity

- SDD test activities continue to evaluate flight performance and integration of mission equipment (navigation, communications, weapons, and survivability equipment) onto a modified, off-the-shelf Bell 407 aircraft.
- The test and evaluation of the Honeywell HTS-900-2 engine and the Brite Star II, Target Acquisition Sensor Suite integration has continued since November 2006.
- On February 21, 2007, the fourth SDD aircraft made a forced landing near the Bell test facility causing major structural and component damage to the aircraft. This mishap forced a halt to ARH flight testing until investigators found foreign debris in the fuel tank to be the cause of the mishap.
- The Army issued a stop-work order for the ARH on March 21, 2007, due to cost and schedule concerns. The Army lifted the stop work order on March 28, 2007, to continue the program and preclude high start-up costs.
- The Army reported Acquisition Baseline Program schedule breaches to IOT&E, Milestone C Decision Review, and First Unit Equipped on May 16, 2007.
- The Army held a special ASARC in May 2007 to consider options in the procurement of the ARH to replace OH-58D Kiowa Warrior helicopters. The ASARC decided to continue with Bell Helicopter/Textron as the prime contractor for the ARH.
- The Army's ARH Replan Strategy adds additional aircraft (from 368 to 512) to replace selected Army National Guard Apache helicopters with ARH.
- The ARH Test and Evaluation Master Plan (TEMP) and acquisition strategy will be updated for a Milestone C decision scheduled for June 2008.
- Component live fire testing began in 2006 with several subsystems including main and tail rotor components, the main transmission, and the proposed cockpit armor system. Other ballistic testing with applicability to ARH completed under the DOT&E Joint Live Fire program (OH-58D fuel and cockpit subsystems, and seat armor). These tests were conducted on components under static conditions and the results will be used in planning the more realistic dynamic system-level tests later in the program.
- HTS-900-2 engine
- Ballistic Armor
- Transmission modified for rotor brake and torque sensor
- Aircraft Survivability Equipment
- Rotor Hub modified for blade folding
- Landing Gear narrowed to accommodate weapons stores
- Ballistically tolerant Fuel Cell
- Integrated communications with Improved Data Modem
- Targeting and Acquisition Sensors
- Software Blocking
- Armament Systems and Weapons pylon design
- The ARH continues as an event driven program focused on the Replan execution, two Limited User Tests (LUT), and flight testing.
- The critical path to the 1QFY08 LUT #1 is the associated risk in developmental and integration testing of the Target Acquisition Sensor System (TASS).
- The complexity of ARH system integration has added 6 to 8 months to the schedule.
 - Milestone C: From September 2007 to April 2008
 - IOT&E: From February 2009 to September 2009
 - Full rate production: From May 2010 to July 2010
 - First Unit Equipped: From July 2010 to December 2010
- Developmental and integration testing delays have caused a two-year lapse for the Army to update the ARH TEMP. The TEMP update is ongoing.
- The LFT&E strategy includes full-up system-level testing and will be updated with platform-specific details. Component/subsystem live fire testing is providing an adequate understanding of ballistic impact and damage results. Subsequent dynamic testing during the full-up system-level test series in FY08 should provide adequate live fire data.

Assessment

- The Milestone B decision authority approved an accelerated ARH program schedule based on the Army acquisition strategy that capitalized on commercial off-the-shelf and non-developmental items. Since Milestone B in July 2005, the Army learned that the selected ARH design requires a more significant development and integration effort than originally envisioned. Systems/subsystems that required development and/or integration include:

Recommendations

- Status of Previous Recommendations. The Army is addressing FY06 recommendations to monitor aircraft performance and integration, and to allow sufficient time to correct problems before IOT&E.
- FY07 Recommendations. The Army should:
 1. Continue to monitor the performance and integration of ARH components to allow development and delivery of a production representative aircraft for the execution of two LUTs.
 2. Expand the scope of the LUTs to include completion of the armed reconnaissance mission with an armed aircraft and aircraft survivability equipment.