

AH-64D Longbow Apache & Longbow Hellfire Missile

The AH-64D Longbow Apache is a remanufactured and upgraded version of the AH-64A Apache attack helicopter. The primary modifications to the Apache are the addition of a millimeter-wave Fire Control Radar (FCR) target acquisition system, the fire-and-forget Longbow Hellfire air-to-ground missile, updated T700-GE-701C engines, and a fully integrated cockpit. In addition, the aircraft has improved survivability, communications, and navigation capabilities. Most existing capabilities of the AH-64A Apache are retained.

The AH-64D is being fielded in two configurations. The full-up AH-64D includes all of the improvements listed above. The other version of the AH-64D does not have the FCR, Radar Frequency Interferometer, or the improved engines. The AH-64D without FCR is more affordable yet remains capable of employing Longbow Hellfire missiles autonomously or in cooperation with the FCR-equipped AH-64D. Five hundred and one AH-64A Apaches in the fleet are to be upgraded to the AH-64D configuration. Approximately half (227) will be equipped with the FCR.

The Longbow Hellfire missile is a radar-guided version of the laser-guided Hellfire anti-tank, air-to-ground missile and is managed by the Army as a separate program. The Longbow Hellfire missile features an active millimeter wave seeker and a dual tandem warhead designed to defeat reactive armor. Either the FCR or the Target Acquisition and Designation Sight can be used to provide target location data to the missile prior to launch. The Longbow Hellfire missile can engage both moving and stationary vehicles.

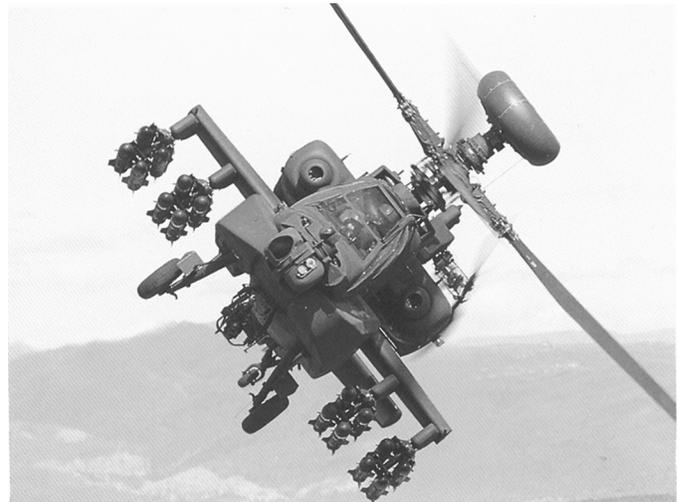
The mission of the attack helicopter is to conduct precision strike, armed reconnaissance, and security in day, night, or adverse weather conditions across the entire battle space through the entire spectrum of combat.

The 1995 combined Longbow Apache and Longbow Hellfire Initial Operational Test & Evaluation compared the AH-64D Longbow Apache with the baseline AH-64A Apache aircraft. Both the Longbow Apache and baseline Apache units conducted missions against a battalion-sized enemy ground force augmented with formidable air defenses while a real-time casualty assessment system imposed realistic friendly and enemy losses. The AH-64D force was significantly more lethal and survivable than the AH-64A force, primarily as a result of major improvements in situational awareness, reduced exposure to enemy air defenses, and increased engagement ranges.

As the ongoing procurement and fielding of the Longbow Apache continues, the configuration of the aircraft will change with the goal of improving system reliability and survivability. The changes include the aircraft's new portable fire extinguisher, the possible integration of the Suite of Integrated Infrared Countermeasures (with a focus on the advanced flare dispenser and the advanced flares), and the integration of the internal auxiliary fuel system, which is a new crashworthy and ballistically tolerant fuel tank and ammunition magazine, located internal to the aircraft.

TEST & EVALUATION ACTIVITY

As reported last year, during operations in Poland (October 2000), 19 of 43 Apache Aircraft sustained damage from firing debris from Hellfire missiles with Alliant Tech rocket motors. The affected Hellfire missiles were suspended for training /peacetime use and were coded for wartime use only. During the past year, the Army has identified the cause of the ejected debris from the Hellfire Missile Motor produced by Alliant and developed, applied, and tested the solution to the ejection debris problem. Qualification testing of the redesigned missile was satisfactorily completed in



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ARMY PROGRAMS

March 2002. Retrofit and fielding of the redesigned motors has begun.

Concerns with the accuracy and adequacy of the published performance tables for the AH-64D prompted the initiation of Airworthiness and Flight Characteristics (A&FC) testing of the AH-64D Longbow Apache in February 2002. Anticipating completion in March of 2003, A&FC testing will require approximately 300 flight hours and is being conducted at Fort Rucker, Alabama. Additionally, the test team will conduct handling qualities testing and test the latest software releases for the Embedded Global Positioning System, Inertial Navigation System, and the Flight Management Computer. The Army is developing an internal auxiliary fuel system ballistic vulnerability test plan to ensure that this configuration does not adversely affect the survivability of the helicopter. DOT&E will continue to monitor the development and testing of these configuration changes.

TEST & EVALUATION ASSESSMENT

Possible upgrades to the AH-64D helicopters include improvements to the Longbow fire control radar, new engines and transmission, new composite rotor blades, expanded digital situational awareness, connectivity with unmanned aerial vehicles, and electronic warfare self-protection. If these initiatives are funded, DOT&E will consider requirements for additional operational testing.

The Live Fire Test & Evaluation (LFT&E) Integrated Product Team reviewed all of the changes to the Apache helicopter since full-up system level LFT&E in 1995, and has agreed that they do not effectively change the vulnerability of the aircraft. The only outstanding LFT&E requirement is the completion of the engine fire detection and suppression system (FDSS) test, and the ballistic vulnerability subsystem test of the internal auxiliary fuel system. The former test, required by the Apache Longbow Test and Evaluation Master Plan, was deferred so that it could be conducted with the Army Aviation Halon replacement. Currently, the Army is preparing an event design plan describing the necessary Live Fire Testing and analysis efforts required to address the testing of both the FDSS and the internal auxiliary fuel system. Since a suitable drop-in halon replacement has not yet been identified, the Program Management Office has agreed to conduct this test with the existing Halon 1301 system. The Army intends to use an operational representative, but not flight worthy, ground test article to conduct this series of tests in FY04.