Apache Longbow Flies Toward Future With New Composite Rotor Blades

Flight-testing of new advanced composite rotor blades for the Boeing [NYSE:BA]-built AH-64D Apache Longbow logged an important milestone on Thursday, Nov. 6, as part of a program designed to enhance the performance of the aircraft while reducing its overall operating costs.

The flight test was a key milestone in the proposed Block III upgrades for the U.S. Army. Lasting 30 minutes, the test included a variety of forward, rearward and sideward maneuvers to confirm the structural integrity of the blades. All points on the test card were successfully completed. Produced by Boeing in Mesa, Ariz., the advanced composite rotor blades are designed to have longer service lives than the standard metal blades now in service on the AH-64D.

The test flight followed four years of development by Boeing and the U.S. Army/Industry Apache team. The new blades, flown by PVD001 the first production Apache Longbow, use advanced composites that were not available when the Apache Longbow was introduced in the early 1990s.

Use of advanced analytical tools led to significant cost reductions in the composite blade manufacturing process. In addition, the new blade is designed to result in a much longer operational life As a result the new main rotor blades will cost approximately 25 percent less than the current blades, and have almost double the operational life. That means an estimated 50 percent reduction in O&S costs.

The advantages of composite construction allowed the designers to incorporate more aerodynamically efficient airfoil shapes and a higher overall twist rate that will result in improved hover and forward flight performance for Apaches equipped with the new blades.

To further enhance the performance capability of the proposed Block III Apache, the new blade has been designed to the higher 3,400 maximum horsepower limit of the Block III upgraded drive system design. The composite blade has been extensively evaluated with full-scale component live fire tests to confirm that the new design will meet the same stringent ballistic tolerance requirements of the current design.

Flight testing is expected to confirm analytical predictions that the vibrations transmitted to the airframe from the new rotor design are at least as good as the current rotor and likely better in many operating regimes. The new blade design is expected to complete qualification testing in time for incorporation on the first Block III production aircraft.

Additional key elements of the U.S. Army's proposed Block III upgrades for the Apache Longbow include enhanced engines and drive systems, the Joint Tactical Radio System, increased situational awareness, improved target detection and acquisition and other enhancements that would enter production after the completion of the Block II upgrades in 2006.

The blade has been design to fit all fielded aircraft (AH-64A & AH-64D).

Boeing is delivering 269 AH-64Ds to the U.S. Army through the year 2006 under the second of two multi-year contracts. The first contract, Multi-Year I covered 232 Apache Longbows for a total of 501. Boeing builds AH-64D Apache Longbow helicopters for the U.S. Army and for several international defense forces.

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