Boeing Rotorcraft Pilot's Associate Makes First Flight in Apache Longbow Prototype

With an eye toward the new millennium, a touch of Star Wars drama, and the sobering realization that this isn't science fiction, the futuristic rotorcraft pilot's associate (RPA) lifted off on its maiden flight last Friday.

The advanced cockpit management system -- reminiscent of the talking computer "sidekicks" made popular by science fiction television shows and movies -- will help combat helicopter pilots fly their helicopters and manage the battlefield of the future with greater effectiveness and increased survivability.

Friday's flight in a modified AH-64D Apache Longbow prototype validated that the advanced RPA cockpit has been successfully integrated into the Apache Longbow. Initial flight testing using the RPA as the primary mission equipment control system begins this month.

The RPA, which was developed by the Boeing Phantom Works, made its transition from concept to flying demonstrator over a 60-month development program that included extensive use of advanced simulation technologies.

The new RPA cockpit includes state-of-the-art controls and displays, including the Boeing-developed four-axis, full-authority advanced digital flight control system. Pilots view their status and controls via three large multipurpose color displays that give crews easy access to all flight and mission data.

The pilot can complete many tasks by speaking to the RPA, which recognizes verbal commands and reacts appropriately.

Pilot Chan Morse flew from the rear seat Oct. 2 while co-pilot Jim Adkins, in the modified front seat, monitored flight activities during two hours of envelope expansion flight tests at the Boeing rotorcraft facility in Mesa. Tests included hovering, and forward, sideward, and rearward flight. Top speed was 155 knots.

The RPA software system is designed to improve the survivability and lethality of the aircraft on combat missions by providing the pilot with a decision-aiding process based on artificial intelligence technology. The RPA, which will give air crews an invisible but always present "associate," will provide navigation and other support to air crews in flight during non-combat missions.

In addition to voice recognition, the RPA features an advanced helicopter pilotage system and advanced data fusion, where data from diverse sources is combined, evaluated and processed to maximize the usefulness of the information. The RPA-equipped Apache Longbow will undergo six months of flight-testing that will demonstrate the full range of the RPA's capabilities. Integration will continue through the end of the year with full demonstration flights scheduled for January and February 1999 at the U.S. Army's Yuma (Ariz.) Proving Ground.

"This flight ushers in a new generation in combat rotorcraft capability that will become essential in the next millennium as emerging technologies find their way onto the digital battlefield of the future," said Lee Daniel, RPA program manager for the Phantom Works in Mesa. "While Apache Longbow is recognized as a quantum leap ahead of the famous AH-64A Apache, RPA promises to make next-generation combat helicopters a quantum leap better than Apache Longbow."

The RPA was developed under an $80 million advanced technology demonstration contract with the U.S. Army Aviation Applied Technology Directorate at Fort Eustis, Va.

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