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Combat Lessons Improve the CH-47F

Experience informs improvements to the CH-47 'Fox,' the newest Chinook



Written by: [Eric Tegler](#) on July 23, 2011
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A U.S. Army CH-47F Chinook helicopter flies over Afghanistan June 6, 2011. DoD photo by Cherie Cullen

The newest version of the venerable CH-47 Chinook, the CH-47F or "Fox" variant already has nearly four years of deployments to Iraq and Afghanistan behind it, and with more than 136 delivered, has shouldered much of the burden of tasks in Afghanistan. Its ability to deliver substantial numbers of troops and heavy loads of supplies in a "hot and high" environment has kept the Chinook, especially in its latest variant, at the forefront of U.S. Army helicopter aviation.

But far from resting on the aircraft's laurels, Boeing is acting on input from the field to improve the veteran twin-rotor helicopter.

In U.S. Army service the CH-47F is operational or near-operational with eight units either deployed to Iraq/Afghanistan or in CONUS.

"We are currently fielding [in] Hawaii, which will finish in September and we're fielding and training in Germany, which will be completed in December," says Mark Ballew, Boeing's director of business development, U.S. Army and Special Operations. "The aircraft are in Germany, they're going through their new equipment training process."

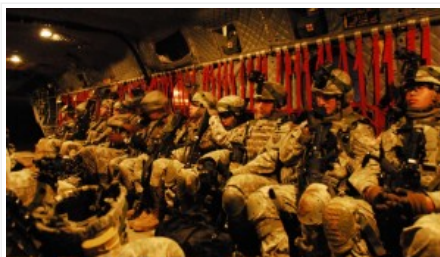
In cooperation with the Army, Boeing facilitates new equipment training. Upon receiving their complements of 12 to 13 aircraft, new CH-47F (Fox) units also get a new equipment training team that brings two aircraft simulators with it. The combined Army/Boeing team does all individual and collective training at the unit location over six months, ensuring that airframe and engine mechanics, avionics technicians, flight engineers and pilots are fully qualified.

Operators are finding the greatest benefits of the Fox in three elements, according to Boeing. The helicopter's reduced maintenance and operating workload, better situational awareness (SA), and overall flight safety have made it popular in the field. Boeing representatives and personnel from the Army's PM Cargo Helicopters Office debrief with each unit returning from deployment during its following work-up cycle.

"We sit down and have about a two-hour discussion walking [the unit operators] all the way through their deployment, asking about what we need to work on for potential improvements," Ballew explains.

The discussions yield real solutions, Ballew adds. Army units have pointed out that on missions where cargo delivery and troop transport are simultaneously undertaken, the floor rollers of the F's Internal Cargo Handling System can be problematic.

"So we're figuring out how to [design] a roller system where you can have the rollers exposed for cargo and within a couple minutes [retract] the rollers so they're hidden inside the floor. That's in process



An assault team from the 3rd Brigade Combat Team, 10th Mountain Division waits to take off in a CH-47F Chinook helicopter assigned to Bravo Company, Task Force Lobos, 1st Air Cavalry Brigade, 1st Cavalry Division, during a mission

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assault exercise at Fort Polk, La., Nov. 18, 2010. U.S. Army photo by Sgt. Richard Wrigley

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Other requests for modifications to the Fox's digital cockpit symbology are being addressed, but Ballew says its crews are largely delighted with its Rockwell Collins Common Avionics Architecture System (CAAS) and Digital Automatic Flight Control System (DAFCS).

"The CAAS cockpit really improves situational awareness. I'm able to sit at my desk and plug in my flight route, to note the locations I'm going to, to [factor in] any known air space or enemy air defense information. We can plug that into the cockpit and I can make mission changes while en route. It gives you a moving map on which you can see the route and what locations you need to avoid."

"DAFCS gives [the pilots] great assistance in low-speed handling environments. You can move the aircraft in one foot increments either laterally or vertically with the push of a button. In high dust areas where the CH-47F often operates in Afghanistan and Iraq, DAFCS increases flight crew safety and allows them to do missions that they probably could have done before but which would have been higher risk."

Built on Boeing's Ridley Park (Philadelphia) production line, the CH-47F order book includes the 464 new and remanufactured units for the U.S. Army plus export orders, enough to keep the line open for the next decade. Since production began in the early 1960s, the Ridley line has produced 1,179 Chinooks, and Boeing recently committed \$130 million to modernize it, the largest capital investment for Boeing Defense in the last 18 months.

The company continues design studies and improvements for aircraft, the latest of which, with the "Common Rotor Blade," leverages a different blade shape to demonstrate a more than 1,500-pound lift improvement, remaining compatible with the existing Chinook rotor hub. It may be integrated as soon as 2015-16.

"We haven't survived for 50 years by not looking at what's next," Ballew says. "We fully expect the H-47 to be operating into the 2040-2045 time frame."

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