



A U.S. Marine Corps MV-22B Osprey executes a vertical takeoff from the flight deck of the amphibious assault ship *USS Wasp* as another waits to launch during flight operations in the Atlantic Ocean.

DOD PHOTO BY PETTY OFFICER 3RD CLASS TIMOTHY BENSKEN, U.S. NAVY

Set to soar

V-22 Osprey's year includes new focus on fleet operations

Going to this month's Farnborough International Airshow in the United Kingdom? Look for the Bell Boeing V-22 Osprey tilt-rotor aircraft, which will be a featured performer at the event.

Its starring role is, however, merely the latest of several milestone events and ceremonies marking the Osprey's new status following successful operational evaluation in mid-2005. These events culminated in U.S.

Defense Department approval for full-rate production, fleet operations and deployment.

Here's a look at the V-22's active first six months of 2006.

- In February, Defense Secretary Donald Rumsfeld and Marine Commandant Gen. Michael Hagee rode in an MV-22 to Camp Lejeune, N.C., to attend the establishment of the new Marine Corps Special Operations Command.

At the standup ceremony, VMX-22, the Marine tilt-rotor test and evaluation squadron, performed jump takeoffs from confined areas, conversions from helicopter to airplane mode, high-speed fixed-wing approaches and automatic hover.

- On March 1, at the Bell Boeing Osprey completion facility in Amarillo, Texas, the U.S. Air Force Special Operations Command took delivery of the first CV-22 Osprey configured for combat operations. That aircraft, CV-22 No. 1007, is the first Block B/10 Osprey built to meet Air Force Special Operations mission requirements.

The Air Force's 71st Special Operations Squadron accepted the new aircraft to support aircrew training at Kirtland Air Force Base, N.M., as the unit prepares for full operation in 2009.

The CV-22 is similar to the Marine Corps MV-22 but incorporates capabilities that enable the multimission aircraft to perform low-level high-speed flight and other Special Operations missions. The U.S. Air Force will purchase at least 50 CV-22s.

- Also in early March, Marine Medium Tiltrotor Squadron 263 (VMM-263) celebrated its redesignation as the Marines' first MV-22 fleet squadron. The ceremony at Marine Corps Air Station New River, N.C.,

A U.S. Air Force CV-22 Osprey aircraft prepares to land on the flight line at Holloman Air Force Base, N.M., in May. The Osprey and its crew were taking part in the filming of the movie "Transformers."

signals the Osprey's first operational service. VMM-263 will fly the MV-22 in combat assault and other combat support missions when it is fully operational in 2007, with plans to deploy to Iraq before midyear. "Next year, we're going to put [the V-22] into combat with great confidence," said Lt. Gen. John Castellaw, Marine Deputy Commandant for Air.

• Air Force Lt. Gen. Donald J. Hoffman, Military Deputy in the Office of the Assistant Secretary of the Air Force for Acquisition, visited Boeing Rotorcraft Systems in Philadelphia in May for briefings on the Bell-Boeing V-22 Osprey program.

"There has been a magnificent turnaround on the V-22 program in the past two years," Hoffman noted during his visit. "Everyone on the program deserves credit and congratulations not only for the great aircraft but for the improvement in affordability."

As the Osprey program gears up for full-rate production and fleet operations, it's on track to meet or exceed its commitment for a \$58 million MV-22 price by 2010. The cost-reduction initiatives that support reaching this cost target (see story at right) not only create demand from U.S. military customers but also from allied armed forces around the world. ■

Keep it lean

A look at some of the cost-reduction initiatives on the V-22 program

CRI 987: V-22 aft cart. New design permits transport, inspection, deflash and first assembly jig load. Eliminates parts-handling steps and flow time, increases shop safety.

Savings: \$6,000 per aircraft, \$2 million over program life

CRI 120: Small-part moving line. Moving fabrication line utilizing reusable curing bags and automated tool storage rack has reduced fabrication man-hours by one-third.

Savings: \$27,000 per aircraft, \$7 million over program life

CRI 1005: Reusable curing bags. Elastomeric vacuum bags save compaction cure preparation time, eliminate disposable nylon bags. Applicable to all hand layups on fabrication tables.

Savings: \$50,000 per aircraft, \$15 million over program life



U.S. AIR FORCE PHOTO BY AIRMAN 1ST CLASS RUSSELL SCALF

Goal in sight

The Bell Boeing MV-22 Osprey program is racing to meet a cost-reduction commitment of \$58 million per aircraft by 2010, thanks in part to innovative projects at the Boeing Rotorcraft Systems Composites Center of Excellence (CCoE) in Philadelphia.

Boeing Rotorcraft fabricates and assembles the tilt-rotor aircraft's fuselage with both large-scale composite sections and smaller components within the CCoE. Although the CCoE utilizes digital automated layup tools for large sections, detail parts still require labor-intensive hand layup.

Tom Kain, the CCoE Cost Reduction Initiative focal, worked with Tom Albertson, Manufacturing Research & Development; Tom Buddenhagen, Industrial Engineering; Rick Ross, shop manager; and the Small Parts Employee Involvement (EI) Team to implement a new moving line for small parts. The team's innovation, which began operation in April, promises to reduce at least \$8 million in V-22 small-part fabrication cycle time and cost and pay for itself after 21 aircraft. Thanks to these improvements, work that totaled 1,250 man hours per aircraft has been shaved to 950, Buddenhagen said.

"Our Fabrication teammates were doubtful at first," said Marty Connor, the Small Part EI Team leader. "But the team is enthusiastic about the new process because it does make everything more efficient."

The project also included a new vertical tool storage carousel that simplifies setup time. "Now it's easier to find layup tools and move them, some of which are pretty heavy, onto the work stations," Connor said. "Our layup mechanics not only save time looking for tools, but it reduces physical strain."

Another composite part process improvement, with broad potential application throughout the CCoE, involves using reusable elastomeric vacuum bags instead of the typical disposable bagging materials that keep composite parts compacted while they are cured in autoclaves. Torr Technologies of Auburn, Wash., designs the bags, which are uniquely shaped to fit each tool and ultimately save layup and cure preparation time. Because Boeing Rotorcraft needs quick turnaround for vacuum bag production, Torr agreed to set up a satellite production facility at L.J. Stephens & Son Inc. in nearby Essington, Pa. Reusable bags will help Boeing save about \$40,000 per aircraft, or \$15 million for the current V-22 program. The bags have been so successful that Boeing expects to utilize them throughout the CCoE.

The CCoE also found a way to cut costs by moving large V-22 components more efficiently. Kain, along with deflash mechanic John Mulfino, Jeff Forbes from Manufacturing Research & Development, and Dean Gaines and his Aft Assembly EI Team developed a new cart concept for transporting the Osprey's one-piece tail section from the Composite Center's fiber tow automated layup machine to the V-22 assembly line. The new cart rotates, providing better access to the part during the deflash operation, and minimizes loading and unloading the part using overhead cranes. The aft cart, which will save about \$6,000 per aircraft and \$2 million over the program's life, may also be incorporated into a moving component assembly line in the Osprey's focused factory.

"Our entire program team is committed to our cost targets," said Nina Prybolsky, manager, V-22 Affordability, "and we're confident that we'll meet or exceed our goal on schedule."