Bell Boeing Tiltrotor Team's
OSPREY FACTS
Vol. 13; Issue 7
Aug./Sept. 2002

# CV-22 meets requirements, resumes flight tests

By Leigh Anne Bierstine
Air Force Flight Test Center Public Affairs

The Air Force's CV-22 tiltrotor aircraft resumed flight tests Sept. 11 in the skies over Edwards Air Force Base, Calif. The aircraft's successful return to flight comes after meeting the recommendations of several independent investigations and military review panels.

All CV-22 flight tests were halted after a December 2000 crash of a Marine MV-22 Osprey grounded the entire V-22 fleet. This resulted in a series of reviews including the Defense Department's blue ribbon panel of defense and industry experts.

Since then, a diverse team of engineers, pilots, maintainers and program officials from Naval Air Systems Command, Air Force Special Operations Command and the V-22 integrated test teams, along with contractors Bell, Boeing and Rolls Royce, have been working together to restructure the V-22 program, bringing it in line with the defense and industry recommendations.


Photo by Thomas Powell

Aircraft No. 7's return to flight also marked the aircraft's 500th flight hour.


Photo by Bobbi Garcia

CV-22 Aircraft No. 7, which logged three sorties and 4.2 flight hours, conducted a full conversion from helicopter to airplane mode and accomplished all required test points.

Members of the CV-22 Integrated Test Force have gone above and beyond their typical flight test role in returning the CV-22 to flight, said Maj. Greg Weber, the government's CV-22 flight test director here.

"We have been hands-on in the rigorous design and implementation of the developmental changes to improve those areas identified by the review panels—mainly electrical and hydraulic line clearances and improved maintenance access to the nacelles," said Weber. "Today, the CV-22 complies with every one of the blue ribbon panel recommendations, applying more stringent line clearance requirements across the entire platform."

Weber said that not only has test force worked out all mechanical, electrical and software discrepancies but also has a phased delivery plan to return an even safer and more capable aircraft to the fleet.

"The Air Force Flight Test Center wants to restore confidence in the CV-22 and deliver a safe, reliable and operationally suitable aircraft," said Weber.

During the initial flights, the two-pilot test crew conducted several runway landing patterns and put the aircraft into a hover to test its rotor track and balance. Later in the day, the test team returned to the air and successfully converted the aircraft to airplane mode.

These initial test flights are designed to shakedown the aircraft after its long modification period and will continue over the next few weeks, said CV-22 chief test pilot Marty Shubert of Bell Helicopter, who piloted the CV-22 on its return to flight.

CV-22 continued, Page 4


Photo by Jason McDuffee

MV-22 Aircraft No. 21 takes off from the flight ramp at Bell Helicopter's Tiltrotor Assembly Center in Amarillo, Texas. The aircraft will join the flight test program at Naval Air Station Patuxent River in October.

# First MV-22 production aircraft takes flight, receives inspection

By Bob Leder
Bell Boeing Communications

The first of four Low Rate Initial Production, or LRIP, MV-22 Osprey aircraft resumed flight test operations Sept. 7 at Bell Helicopter's Tiltrotor Assembly Center in Amarillo, Texas.

The aircraft—the second V-22 to fly since December 2000—logged 4.6 flight hours during two flights and completed several conversions from helicopter to airplane mode and back. The MV-22, Aircraft No. 21, was piloted by Bill Leonard and Jim Lindsey.

After the flights, Lindsey expressed his pleasure for flying the V-22 again and credited the Amarillo ground crews for preparing the aircraft for flight.

The aircraft achieved a level maximum airspeed of 250 knots and attained an airspeed of 275 knots in a dive.

"This is a great effort by everyone involved, and we look forward to Aircraft 22, 23 and 24 making their first flights at Amarillo and joining the V-22 flight test program," said Bell Boeing Joint Program Deputy Director John Buyers.

MV-22 No. 10, an engineering and manufacturing development aircraft, returned to flight status at the Naval Air Station Patuxent River, MD, on May 29.

Following the flight, Aircraft No. 21 underwent a two-day post-flight inspection to verify modifications made to hydraulic line clearances in the nacelles.

Aircraft No. 21 is scheduled to join the flight test program at Pax River in October. The flight test program, eventually will utilize eight MV-22 aircraft.


Photo by Jason McDuffee

MV-22 No. 21, the first of four Low Rate Initial Production aircraft to resume flight test operations, hovers above the flight ramp at Bell Helicopter's Tiltrotor Assembly Center in Amarillo, Texas.

## V-22 News and Notes

### CV-22 plays role in DoD exercise

The U.S. Air Force Special Operations Command recently used the CV-22 flight simulator in Millennium Challenge 2002—a U.S. Joint Forces Command exercise involving 13,500 military and civilian personnel. The three-week exercise, which used live forces at nine major U.S. bases on the west coast and computer simulations from 17 locations nationwide, marked the first time the Defense Department has used the CV-22 in a major simulated war scenario. With Air Force pilots at the controls, the special operations version of the tiltrotor completed six "live fly" missions, including one nighttime sortie. The actual CV-22 has resumed its event-driven flight test program at Edwards Air Force Base, Calif.


Capt. Matthew Magness, U.S. Air Force Special Operations Command CV-22 pilot, mans the controls of the CV-22 flight simulator at Bell Helicopter Textron's facilities in Ft. Worth, Texas, during one of the exercises.

### Boeing, UAW reach agreement

On Sept. 29, Members of the Philadelphia-based UAW Local 1069 ratified The Boeing Company's new three-year contract offer. The ratification vote came one week after UAW members returned to work following a seven-day strike that began Sept. 14. "We are very pleased that the membership ratified this offer," said Pat Shanahan, vice president/general manager, U.S. Army Programs, at the Philadelphia site. "Both the Union and Boeing worked very hard to achieve this settlement. Now we can continue working together to do what we do best - building the best rotorcraft in the world." About 1,400 of the site's 4,900 employees are UAW members. The site manufactures the V-22 fuselage as part of its partnership with Bell Helicopter: A Textron Company. The week-long strike did not affect V-22 production, which remains on schedule for the remainder of 2002.

# V-22 flight tests to determine program's future

By Dr. Daniel Goure
Lexington Institute

On May 29, 2002, the V-22 Osprey began a revised test flight program intended to demonstrate conclusively the airworthiness of this revolutionary new transport system.

The decision by Undersecretary of Defense (AT&L) Pete Aldridge to conduct the flight test program before committing to buy the V-22 for the Marine Corps and U.S. Air Force Special Operations was a good one.

Public anxieties about the V-22 driven, in part, by alarmist news media stories, had to be addressed. So far, all signs indicate that the V-22 is on its way to proving itself.

The V-22 is one of the few truly transformational programs in DoD's near-term procurement budget. An independent NASA panel, called to assess the V-22 program in the aftermath of the last accident, not only concluded that the aircraft was fundamentally safe to fly, but stated its belief that when fielded, the V-22 will revolutionize military air transport.

Its speed (275 MPH) and range (515 miles) capabilities are substantially greater than the helicopters the V-22 is intended to replace. It will also carry a greater payload than all but the largest heavy lift helicopters. As a result, it will be able to carry out its missions more rapidly, with fewer sorties, less expenditure of fuel and reduced risk to crew and passengers.

The V-22 is central to the Marine Corps' emerging concept of operation based on ship-to-objective maneuver (STOM). The STOM concept seeks to eliminate the dangerous and time-consuming requirement to create staging bases or beachheads when projecting power against the littorals.


Photo by Randy Teufel

The Honorable E.C.(Pete) Aldridge, Undersecretary of Defense for Acquisition, Technology and Logistics (above, center), recently visited Pax River, Md., for an update on the V-22 program. During his visit, Aldridge received a number of technical briefings, visited test facilities, viewed a static display of Aircraft No. 8 and then observed Aircraft No.10 during a test flight.

Under STOM, Marine forces would strike directly against their objectives, even those that are hundreds of miles inland. This requires a transport with superior speed, range and payload to existing helicopters.

According to the Commandant of the Marine Corps, General James Jones, "the V-22 will enable U.S. forces to do many more things, across the entire spectrum of conflict, than any known alternative."

There are always risks associated with the development of a new military system, particularly one as revolutionary as this one. The V-22's developers have gone to great lengths to address the design issues raised by the tragic accidents. They have also used the last eighteen months to make additional significant improvements to the aircraft. Independent reviewers believe that these measures will address the V-22's problems.

*"The V-22 will enable U.S. forces to do many more things, across the entire spectrum of conflict, than any known alternative."* — **Commandant of the Marine Corps, General James Jones**

There have been rumors that Undersecretary Aldridge is leaning towards canceling the V-22 because of his doubts regarding the state of tiltrotor technology.

It is certainly right to worry about the risks to those who will fly in the V-22. It is also important to be concerned about the risks those same people will face going into combat in obsolescing and less-capable helicopters.

The Marine Corps will not be able to conduct its bold new operational concept without the V-22. Thus, it is important to begin procurement of the V-22, once the test program is successfully completed. If the V-22 flies, DoD must buy.


Photo by Master Sgt. Anne Ward

## CORRECTION!

In the **July/August issue** of Osprey Facts, we incorrectly published a photo of CV-22 Aircraft No. 9. The photo, taken last year in the Benefield Anechoic Facility (BAF) at Edwards Air Force Base, does not show the myriad improvements that have been made by the CV-22 Integrated Test Team. The photo to the left is the correct version. Aircraft No. 9 is scheduled to emerge from the BAF sometime this fall.


# PM Perspective: V-22 program sees performance, progress

By Mike Tkach
Vice President, Program Director
V-22 Program Office, Pax River, Md.

The summer of 2002 will be remembered as a time of tremendous progress for the V-22 program. This time last year, a NASA-led review panel recommended to high-ranking Pentagon officials that we continue the Osprey's developmental test program. In less than one year, we've identified and addressed all primary concerns and have prepared several aircraft for further flight test operations.

Thanks to the dedication of our team members, we now have three aircraft flying, with more on the way.

As you've already read in this issue of *Osprey Facts*, CV-22 aircraft No. 7, stationed at Edwards Air Force Base, and MV-22 aircraft No. 21, the first of four LRIP birds, recently resumed flight test operations. These aircraft soon will be joined by a fourth aircraft, MV-22 aircraft No. 8, which will focus on high rate of descent testing and the aeromechanical phenomena called "Vortex Ring State."

In addition to these flight test accomplishments, we've hosted several important visitors at the Joint Program Office, including Undersecretary of Defense for Acquisition, Technology and Logistics, Pete Aldridge, Deputy Secretary of Defense, Paul Wolfowitz, and Stephen Cambone, head of the Pentagon's Office of Program Analysis and Evaluation.

While I cannot characterize their attitudes, it's fair to say that we answered all of their technical and programmatic questions. The real star of these visits, however, was aircraft No. 10, which performed flawlessly in flight, as expected.

The only way to truly appreciate the V-22's potential is to see it in person. Its transformational qualities become quite clear when it converts from helicopter to airplane mode, and then disappears over the horizon in a matter of minutes. That is why these personal demonstrations are so vital to the success of the program.

Just like every other aircraft program, we have our share of critics *and* proponents. The only way to validate an aircraft is to repeatedly show, through rigorous flight testing, what it can do. I'm confident that our flight test program will do just that. Keep up the good work!

## CV-22 cont. from Page 1

The flights are also providing pilot recurrency training for the CV-22 test crews, Shubert added.

"All of our initial test flights are part of a methodical and event-driven test flight program to validate engineering and software changes and to further test the capabilities of this aircraft to carry out its intended missions," said Shubert.

The tiltrotor aircraft fills a long-standing U.S. Special Operations Command and Air Force requirement to conduct long-range insertion and extraction missions in one period of darkness. The CV-22 has twice the altitude and speed, and three-to-five times the range of current aircraft used in special operations.

After the successful flights, the commander of the Air Force Flight Test Center here, Maj. Gen. Doug Pearson, said he was proud of the dedication and hard work demonstrated by the CV-22 Integrated Test Force in returning the aircraft to flight.

"The team used good discipline to make all of the modifications necessary to get the CV-22 back into the air," Pearson said. "I'm looking forward to completing developmental tests on this aircraft and seeing what the CV-22 system has to offer."

Today, there are two CV-22 aircraft at Edwards AFB participating in the engineering and manufacturing development stage of development.

Air Force procurement plans call for two additional production representative test vehicles to be delivered in fiscal year 2005 with initial operational test and evaluation to follow at Edwards.

The return to flight and subsequent flight testing will assist senior defense leaders in making a final determination about the system's viability and procurement.


MV-22 No. 10, one of three aircraft currently flying, performs a bank during a flight demonstration for a recent VIP visit to NAS, Patuxent River, Md.

Osprey Facts is published monthly by The Boeing Company in Philadelphia and Bell Helicopter A Textron Company in Texas. Editor-in-chief, Ron Berube (E-mail, ron.berube@boeing.com); Production Editor, Doug Holmes (william.d.holmes@boeing.com). Information contained herein is compiled from unclassified sources and does not represent an official position of either of the companies. Comments or suggestions should be forwarded to Ron Berube, V-22 Joint Program Office, PO Box 70, Patuxent River, MD, USA 20670. Tel (301) 866-2330. Back issues may be found, along with other V-22 data, at: http://www.boeing.com/rotorcraft/military/v22/