

## Osprey LRIP On Cost, On Schedule

### First production fuselage spliced in Philadelphia

PHILADELPHIA, Feb. 25, 1998 -- In remarks made to trade press assembled to view the first production Osprey fuselage splice today, U. S. Marine Corps and Bell Boeing officials described the V-22 Low Rate Initial Production (LRIP) program "on cost and schedule." The three major fuselage sections of the first production V-22 Osprey were joined at the Boeing facility in suburban Philadelphia.

The aircraft, Osprey number 11, is the first of five production aircraft in Low Rate Initial Production (LRIP) Lot I. Following operational testing by a joint service test team, it will go into the Marine Corps tiltrotor training squadron (VMMT-204) at Marine Corps Air Station New River in Jacksonville, NC.

John Buyers, Bell Boeing program director, said, "The completion of this aircraft's basic airframe is a milestone in the program's transition from development into production." According to Buyers, "This fuselage incorporates the lessons we learned in the Osprey's Full Scale Development and Engineering and Manufacturing Development phases as well as some pioneering advances in manufacturing technology. As a result, it was accomplished on schedule and cost."

Buyers added, "The use of manufacturing automation, Integrated Product Teams and our Advanced Technology Assembly (ATA) process have produced a high-quality, high-precision product. We have a robust, repeatable process that yields excellent fit and finish and greatly

see Splice, page 2



Boeing workers watch as the aft fuselage of V-22 number 11 slides into place. The forward section, containing the cockpit and avionics racks, had been attached just moments before. The total time required to join the three sections was twenty minutes.

## Defense budget calls for 7 V-22s

The Administration's 1999 Defense Budget request called for \$1.046 billion in total V-22 program funding covering research and development and procurement accounts.

The procurement funds requested are for the third Low Rate Initial Production (LRIP) Lot of seven MV-22 aircraft for the Marine Corps. and for long lead procurement for Lot IV. They totalled \$664.8 million.

Other procurement for the U. S. Special Operations Command (SOCOM) CV-22 program was included in the request at \$22.3 million for the Air Force and \$4.0 million for SOCOM.

The RDT&E,N budget was \$355.1 million for MV-22 engineering and manufacturing development. The current request is \$82.4 million greater than the projection for FY'99 provided in last year's budget. Extension of flight test requires an additional \$67 million and compensation for omnibus taxes to R&D programs to restore funding to the Fatigue Test Article accounts for the other \$15.4 million.

The commandant of the Marine Corps, Gen. Charles Krulak, stated his desire for increased acceleration of procurement in his FY'99 Posture Statement. Krulak wants to ramp up MV-22 production as rapidly as possible in order to provide earlier capability for expeditionary forces. □

---

## **ITT director honored**

Philip Dunford, director of the V-22 Integrated Test Team at Patuxent River, Maryland, was honored recently for his team's outstanding results on the V-22 Osprey test program. Dunford accepted the 1997 Contractor Tester of the Year Award from the National Defense Industrial Association (NDIA), Mar. 13, thanking them on behalf of his team.

"No one person can do all of this. This was a team effort and this honor recognizes the accomplishments of all of those who have made personal sacrifices to provide the customer with a quality product," said Dunford in accepting the award.

Dunford, working out of the Patuxent River, Md. test center, directs the activities of the joint government/contractor integrated test team (ITT) consisting of the two prime contractors, Bell and Boeing and the U.S. Navy, Marine, and Air Force joint service testers. The customer has been liberal with its praise for Dunford's work.

"Mr. Dunford's outstanding efforts and exemplary performance have made a major contribution to the defense of our nation," said John W. Douglass, assistant secretary of the Navy for Research, Development and Acquisition. "The Department of the Navy needs the kind of talent and leadership (his) contributions exemplify as we face the significant challenges of the future."

The ITT has melded differing test philosophies and data systems and established clear and open lines of communication across the team of testers. When V-22 test aircraft experienced later than expected deliveries, they re-planned the test program with new priorities. As a result, the team has increased the number of test events per aircraft flight-hour as well as including op-

see Dunford, page 4

## **Boeing sells commercial helicopters, transfers BB609 interest to Bell**

The Boeing Company announced it was transferring its joint venture interest in the Bell Boeing 609 commercial tiltrotor to Bell, effective Feb. 28. Boeing will remain on the 609 team and participate in the continued development of that aircraft as a subcontractor.

In a separate agreement, Bell and Boeing revealed the sale to Bell of Boeing's Mesa-based commercial helicopter business which includes the MD-500 and MD-600N series of helicopters.

The sale will require government approval and is expected to be complete by mid year.

Boeing described the moves as a strategic business decision to exit the commercial helicopter business so that resources can be focused on their military rotorcraft product lines.

Boeing continues its 50/50 partnership with Bell on V-22 and tiltrotor research and development under NASA contracts. □

---

### **Splice, from page 1**

reduced manufacturing and assembly errors."

An example of the efficiency of the Osprey's manufacturing process; the splicing took place with no out of sequence work and the fuselage was assembled to a tolerance of .010", equivalent to the thickness of a matchbook cover.

The fuselage was first built in three major pieces: the forward section, including the cockpit and avionics/electronics racks; the center section, consisting of the main cabin, landing gear and wing attachment points; and the aft fuselage which holds the rear ramp and empennage or tail attachment points. Many systems were installed in these sections prior to their joining although the final installation of wiring and hydraulic lines will be accomplished after completion of splicing.

The completed fuselage will be shipped to Bell Helicopter in Fort Worth, Texas, in August for the wing-to-fuselage mate. First flight of Osprey number 11 will occur in early 1999 in Fort Worth. Delivery is scheduled for later in 1999. U.S. Navy approval of LRIP Lot II and advanced procurement for LRIP Lot III is expected this spring. □

---

## **Osprey drive system tests successful, drop testing begins**

A major milestone in the V-22 EMD program was passed on Feb. 24 with the successful completion of the drive system qualification test. This test was conducted on the V-22 Ground Test Article (GTA) stationed on a run stand at Bell Helicopter.

The test consisted of 250 hours of endurance running of the entire V-22 drive system. The GTA will now be used for some clutch engagement endurance tests, blade tracker evaluations and rotor brake emergency stop tests. On completion of these tests, the gear boxes and drive shafts will be removed, torn down and inspected and the GTA will be retired.

On Feb. 27, V-22 drop tests began at the Boeing facilities in St. Louis. These tests will qualify the landing gear and airframe for the rigorous landing conditions the V-22 will encounter in the fleet, especially during shipboard operations.

Over 200 drop conditions will be tested over the next year. The drop test article is the same airframe used for the successful static testing last year which stressed the airframe to maximum design loads.

When the drop tests are completed, this airframe will be returned to Philadelphia, put back in the static test rig and load tested to the point of failure. This will quantify the margins designed into the V-22. □

---

**Flight Test Update: 3/4/98**  
**V-22 No. 7 hits 60.5K lbs.**  
**milestone, Pax River team**  
**has record productivity**

The Osprey program reached another major envelope milestone at Patuxent River Naval Air Station, Md. on Monday, March 2. With ITT pilots Bill Leonard and Maj. Tom Currie, USAF, at the controls, Osprey number 7 flew at 60,500 lb. take off gross weight, its maximum specified T.O. weight in the STOL/self-deployment mode. Maximum VTOL (hover) T.O. weight is 52,870 lb.

The Osprey lifted off at 70 knots and used about 3,000 ft. of runway. At 90 knots it was able to climb at 1,000 ft. per minute. According to the pilots, the aircraft handled well and performed as designed. The flight was brief due to weather (.2 hr) and the aircraft stayed in conversion mode.

Meanwhile in February, the ITT flew the four V-22s at Patuxent River a total of 55.7 hours, a new record for V-22 flight test productivity, completing an average of 1.24 earned events per flight hour vs. a planned .98 events.

Aircraft No. 8 is demonstrating High Angle of Attack maneuvers, aircraft No. 9 is being modified to update its configuration in preparation for Operational Test IID (OT-IIID) which will be flown next summer. No. 9 should return to flight status later this month. Aircraft No. 10 began Night Vision Goggle evaluations and OT-IIID pilot training, is currently in modification for its next test series. □



Osprey number 10 conducting flight tests over Texas in December

## OSPREYS FLOCK AT NAVY TEST CENTER

**PATUXENT RIVER, Maryland, January 30, 1998** – The Bell Boeing Tiltrotor Team delivered the fourth and final production-representative V-22 Osprey tiltrotor aircraft built under the Engineering and Manufacturing Development program on Jan. 29 to the V-22 Integrated Test Team (ITT) at the Patuxent River Naval Air Warfare Center, Aircraft Division in Maryland. The aircraft first flew on Jan. 16, 1998 at the Bell Helicopter Textron plant in Arlington, Texas.

Bell Boeing's Bill Leonard and Marine Lt. Col. John Rudzis arrived in Patuxent River at 4:59 p.m. EST after the 1,217 nautical mile trip, which included a refueling stop in Nashville, Tenn.

Coincidentally, this was the first time that four V-22s were in the air simultaneously. As Osprey number 10 was flying from Texas, aircraft numbers 7, 8 and 9 also were conducting flight tests over Patuxent River. Total time logged for the day was 10.8 hours.

In the coming year, V-22 number 10 will be used for avionics system tests, environmental electromagnetic effects assessment, formation flight demonstrations and night flights. It also will be used for training operational evaluation pilots. In July, a team of service pilots, maintainers and logistics personnel will use the aircraft to conduct Operational Test IID. Sea trials are planned to start early next year. □

### V-22 EMD FLIGHT TEST STATUS as of: 3/24/98

AIRCRAFT #7	77 Flights	131.6 Hours	<b>TOTAL V-22 Flight Time To Date:</b>	<b>1,495.7 hrs.</b>
AIRCRAFT #8	52 Flights	93.8 Hours	<b>Maximum Airspeed Attained:</b>	<b>345 KCAS</b>
AIRCRAFT #9	26 Flights	41.0 Hours	<b>Maximum Altitude Attained:</b>	<b>22,600 ft.</b>
AIRCRAFT #10	<u>23 Flights</u>	<u>45.1 Hours</u>	<b>Maximum Take Off Gross Weight:</b>	<b>60,500 lb.</b>
<b>TOTALS</b>	<b>178 Flights</b>	<b>311.5 Hours</b>	<b>Maximum Load Factor:</b>	<b>3.0 g</b>

## First V-22 NVG Flight

Bell Boeing broke new ground on March 3 with the first ever V-22 night flight utilizing night vision goggles (NVG).

Osprey number 10, piloted by Captain William Witzig, USMC, and Major Bill Wainwright, USMC, took off from Patuxent River Naval Air Station at 7 p.m. and flew for 2.1 hours.

The flight covered the entire normal operating envelope of the aircraft, including speeds of up to 250 KCAS and multiple approaches to a hover.

According to Wainwright, "The flight went better than we could have hoped. It was amazing how much it was like a day flight."

Witzig and Wainwright flew with a neutral density filter covering the color, multi-function displays (MFDs). This allowed the pilots to run the MFDs in day mode, increasing contrast and reducing background illumination.

"We were pleasantly surprised at how much situational awareness was provided by the glass cockpit, the FLIR (forward looking infrared system), and the fourth generation NVGs," said Wainwright.

To date, night flight testing included evaluation of the FLIR, avionics testing, austere landings, and general evaluation of the V-22 as a "night flyer." The avionics testing included waypoint and flight plan guidance, while austere landing testing encompassed straight-in approaches to the ground and approaches to a hover.

NVG instructor training also took place on the initial flight and will continue, along with more NVG testing, on Aircraft number 10 following a planned modification period begun in early March. □

**Dunford, from page 2**

erational testers in the developmental test and pilot training programs. The operational pilot training also has been accelerated, according to the award narrative.

"Mr. Dunford has been the critical factor in the success of the test program to date," said Marine Col. Nolan D. Schmidt, V-22 program manager. "His leadership, flexibility and creativity have been key in meeting the de-

mands of a fast-paced, evolving test program in this cutting-edge technology..."

As an example of providing cost savings, the V-22 test team integrated military maintenance personnel into the contractor's maintenance team. This added significant aircraft developmental test time to the program and allowed for early input from military personnel on the field maintainability of the aircraft. □

## Clippings:

### CMC Reports to Congress:

During the Defense Posture Hearings before the Senate Armed Services Committee on February 5, our number one V-22 customer, General Krulak, the Commandant of the Marine Corps, made the following statement in regard to the V-22.

"When I first came before Congress, I was asked, if I could have anything for the Marine Corps, what would it be? I told you, I'd like to retire some of our Korean War vintage personal equipment and outfit your Marines with modern gear that would make them more effective in the field. You helped with that and so much more. Again...thank you.

"But, if you asked me the same question today, I would tell you we have a unique opportunity to exponentially increase the effectiveness of our forward deployed expeditionary forces. I would tell you that the greatest return on investment lies in procuring the V-22 tiltrotor airplane as rapidly as possible.

"The QDR recognized this, and today, because of the foresight of the Congress, the administration, and the Department of Defense (DoD), we will more rapidly assimilate this unique capability, having moved 11 planes from the out-years into the current Fiscal Year Defense Plan (FYDP).

"But opportunity continues to knock. We should capitalize on our ability to see true leap-ahead

technology when we find it. We will look for opportunities to further ramp up the V-22 procurement rate. This would have two very advantageous effects.

"First, it would decrease the unit cost, and save the American people tens of millions of dollars. Second, and more importantly, there is no new capability being procured by the DoD today which yields such a significant, such a revolutionary difference, in our ability to fight the nation's battles, as the V-22 Osprey. And I don't just mean a tactical difference, although the scope of tactical applications is truly staggering. The procurement of an operational V-22 capability has enormous strategic implications.

"Because it flies at speeds only achievable with a fixed wing aircraft and because it can refuel in flight, the Osprey can self deploy. We can pick up combat loaded Marines in CONUS and move them to points of crisis, quite literally anywhere in the world. And, we don't need an airstrip when we get there.

"It flies like an airplane, takes off, hovers, and lands like a helicopter, has a greater payload and greater range than mid-sized helicopters. When we field operational squadrons of V-22s, the warfighting CINCs and the NCA will have a host of options never before available...options and capabilities found in no other military in the world." □

The Tiltrotor Times is published by Boeing Philadelphia and Bell Helicopter, Textron. Editor-in-chief: Norb Josten; Production Editor: Doug Kinneard. Information contained herein is compiled from unclassified and open sources and does not represent official positions of the companies. Comments, suggestions or material for use in Tiltrotor Times or Osprey Fax may be forwarded to Norb Josten, Boeing Philadelphia, M/S P23-00, PO Box 16858, Philadelphia, PA 19142, USA. Tel (610) 591-5749, Fax 591-8022.

For additional information, visit [www.boeing.com](http://www.boeing.com) or [www.bellhelicopter.textron.com](http://www.bellhelicopter.textron.com)