

Bell Boeing Tiltrotor Team's OSPREY FACTS

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Osprey Completes Phase Four Testing at Sea

By Ward Carroll
NAVAIR (V-22) Public Affairs Officer

On June 29 the V-22 Integrated Test Team completed Phase IVB of the Osprey's shipboard suitability testing, the fifth of six at-sea periods the tiltrotor will go through during the aircraft's developmental testing. This was the latest in a series of tests leading to the aircraft's operational evaluation and subsequent full-rate production decision next year. During the eight days aboard the USS Iwo Jima (LHD 7) operating in the waters off the coast of Maryland, the ITT did much toward proving the Osprey's capability on and around an amphibious assault ship.

In the course of shipboard testing in 1999, the V-22 demonstrated a tendency to tilt along its lateral axis when sitting on the flight deck behind a hovering aircraft - a phenomenon known as "uncommanded roll on deck." Because the Osprey has a digital flight control system, engineers are able to reprogram the flight controls to eliminate undesirable characteristics such as roll on deck. Previous shipboard suitability phases have tested the performance of the Osprey behind a hovering H-1, H-46, and H-53. Phase IVB was designed to test the effect on a V-22 behind a hovering V-22.

"All of our test results with regard to roll on deck were as good as or better than anticipated," said Lt. Col. Kevin Gross, USMC, Government Flight Test Director and Chief V-22 Test Pilot. "The handling of the Osprey in the

shipboard environment is proving to be one of its strong characteristics."

A series of firsts were accomplished during this test period, Gross said. Along with the first shipboard interaction tests of a V-22 in the vicinity of another V-22, it was the first time a V-22 landed on Spots 5 and 6 - the landing points adjacent to the ship's island. Additionally, the wind envelope for LHD-class V-22 operations was expanded - an important element toward a successful OPEVAL next year.

The ITT was offered another challenge when Osprey No. 22 had a nacelle component failure while hovering over the flight deck during the

final V-22/V-22 interaction tests. Subsequent landing and shutdown were uneventful, and an investigation into the malfunction continues.

"Even with a component failure, this was an overwhelmingly successful detachment," said Col. Craig Olson, USAF, V-22 Program Manager, who had his first taste of shipboard life during this test period. "Now I know firsthand that the days at sea are long ones, and I thank the Integrated Test Team for their work toward fielding this remarkable capability."

(Note: Lt. Col. Gross recently moved from the ITT to the Joint Program Office as MV Development IPT Lead.)



Two Ospreys operate in close proximity during recent developmental testing aboard USS Iwo Jima. (Photo by JO1 Mike Jones, USN)



PM Perspective: A New Year

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

In the past few months, the V-22 Program has reached several milestones including the accumulation of more than 3,000 flight hours (since return to flight in May 2002), completion of the latest round of shipboard suitability tests on board the U.S.S. Iwo Jima, completion of OT-IIF by VMX-22 and a successful Defense Acquisition Board (DAB) review. All of these milestones are focused on a successful Operational Evaluation to be performed by VMX-22, based at MCAS New River. Slated to commence in early 2005, OPEVAL is a four-month, eight-aircraft test period to validate the operational effectiveness of the aircraft.

One crucial element in preparation for OPEVAL was the successful completion of a DAB in mid-July which reviewed the status of the flight test program and current production schedule. Michael Wynne, acting Undersecretary of Defense for Acquisition, Technology and Logistics, expressed confidence in the tests completed to date and the program's efforts to improve aircraft reliability, maintainability and survivability. This confirmed that we are on the right path and I anticipate a positive, full-rate production decision in the Fall of 2005.

We currently have nine aircraft in the flight test program - two at Edwards AFB and seven at NAS Patuxent River - and have delivered 11 aircraft at VMX-22. In addition to defensive maneuvering and lightning strike testing, the Integrated Test Team is preparing for another six-month detachment to Nova Scotia focused on longer flights in icing conditions and overall performance and reliability of the anti-ice system.

The Farnborough International Air Show, held in July in England, proved to be a great opportunity to make a wider audience aware of the V-22 and showcase its capabilities. Targeted at both the V-22's present and future industry/customer base and the media, both domestic and international, the exhibit was busy throughout the show as customers, suppliers, media and the general public stopped by to express their support and interest in the V-22 Osprey. The V-22 program continues to have the overwhelming support of both our customers, the U.S. Marine Corps and the U.S. Air Force, as well as potential customers from around the world.

It is clear to me that, as we predicted earlier in the year, 2004 is indeed proving to be as demanding as 2003. I have no doubt that, through the focused and dedicated efforts of the V-22 team, this will be another successful year for the program.

News and Notes

Secretary of the Navy flies V-22

Calling the V-22 Osprey a "centerpiece of future naval forces," Navy Secretary Gordon England flew on a V-22 for the first time on August 11. The flight, at VMX-22, the Marine Corps operational test and evaluation squadron at New River, NC, included a variety of maneuvers meant to simulate a Marine Corps landing in a combat zone. "It really is a remarkable airplane now," stated Mr. England. "You take off going down the runway in basically a conventional takeoff, but you're airborne in about 100 feet." During the flight, Mr. England rode in a jump seat with the pilots and also in the rear of the aircraft where troops will sit. England called it "far more remarkable than I thought it was going to be. I was really impressed with it."



The Honorable Gordon R. England, Secretary of the Navy, smiles for the camera while sitting in the cockpit of an Osprey from Marine Tiltrotor Test and Evaluation Squadron-22 during an orientation flight August 11. (USMC photo by: Sgt. Juan Vara)

CV-22's in flight

Osprey No. 7 flies in formation with Osprey No. 9 during recent testing. The CV-22, the V-22 model that will be used by the U.S. Special Operations Command to deliver teams at high speeds, is currently operated by the Integrated Test Team at Edwards Air Force Base in California.



(USAF photo)

News and Notes

Osprey goes on the defensive with latest tests

The V-22 Integrated Test Team is undergoing Defensive Combat Manuevering Developmental Testing, a three-phase test event to verify the aircraft's evasive flight capabilities within the current flight envelope. The first phase, which began in mid-July at Naval Air Station, Patuxent River, Md., focuses on loads and structural testing. The remaining phases will test numerous flying qualities, concluding with a flight demonstration by VMX-22, the Osprey's test and evaluation squadron, in a fully instrumented test aircraft. Tests will conclude by the end of 2004.



The V-22 Integrated Test Team is undergoing Defensive Combat Manuevering Developmental Testing to verify the aircraft's evasive flight capabilities within the current flight envelope. The aircraft's speed and flexibility are expected to generate positive test results.

President Bush visits Boeing Philadelphia

Speaking to nearly 8,000 Boeing Philadelphia employees during a recent campaign event, President George W. Bush praised the efforts of Boeing workers and the helicopters they build and support. During the 40-minute address, President Bush said, "I'm here to thank the employees of this important plant for giving our troops what is necessary to

keep our country safe." Boeing Philadelphia is responsible for the V-22 fuselage and all subsystems, digital avionics, and fly-by-wire flight-control systems.



Farnborough International Air Show, 2004

A reception hosted by Bell, Boeing and Team Osprey helped kickoff the 2004 Farnborough Air Show Sunday, July 18. The event was held to honor the program's key customers, the U.S. Marine Corps and U.S. Special Operations Command. Special guests attending the event included Lt. Gen. Michael Hough, USMC Deputy Commandant of Aviation; Mike Redenbaugh, CEO of Bell Helicopters; and Jim Albaugh, President and CEO of Boeing Integrated Defense Systems. Members of the Bell Boeing team and Team Osprey, a coalition of leading aerospace companies from 13 key V-22 program suppliers, also attended.

The Team Osprey exhibit at Farnborough was targeted at both the V-22's present and future industry base and the media. "Farnborough is a great opportunity to make a wider audience aware of the V-22 and showcase it's capabilities," said Mike Tkach, vice president and V-22 program director. The V-22 is a multi-mission, multi-service tiltrotor aircraft that combines the speed and range of fixed wing aircraft with the vertical flight performance of a helicopter.



John Lockard (above, on right), senior vice president, Boeing Naval Systems, and Mike Redenbaugh CEO of Bell Helicopter, welcome members of the V-22 Osprey team to the Farnborough Air Show during a reception held Sunday in London. (Photo by Ed Turner)



(Exhibit photos by Kevin Flynn)

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V-22 Icing Detachment Returns From Halifax

By Ward Carroll

NAVAIR (V-22) Public Affairs Officer

Osprey No. 24 returned to NAS Patuxent River on the afternoon of April 29 after spending six months conducting aircraft icing tests from Canadian Forces Base Shearwater near Halifax, Nova Scotia. During the detachment, Osprey No. 24 logged 67 hours, 37 of which were in actual icing conditions.

The accumulation of ice on flight control surfaces has always been a potential hazard to aviators. The rapid buildup of ice on wings can dramatically change an aircraft's flight characteristics, in extreme cases rendering it unable to fly. Generally, pilots don't fly in ice. Because of the nature of the V-22's mission - rapidly getting combat troops and supplies where they are needed - Osprey crews may not always have the luxury of avoiding bad weather. As a result, the Osprey has a requirement for a robust and capable ice detection and anti-ice system.

"The prototype icing system worked better than expected," said Maj. Frank Conway, USMC, who, along with Chief Corporate Test Pilot Tom Macdonald, flew all of the icing test flights. "Other than tweaking the algorithms that control when the wing boots inflate to remove ice and at what temperature heat is sent out to the prop-rotors, there was very little

redesigning of the system done while we were in Halifax."

Maj. Conway noted that the only major configuration change engineers are investigating is where to move the icing detection probe to provide the timeliest feedback to the pilots.

"The detachment was extremely successful," said Don Byrne, who alternated Integrated Test Team Flight Test Director responsibilities with the ITT's Paul Gambacorta. "We cleared all temperature and liquid water content ranges, so now we're able to fly for extended periods of time in all weather conditions."

Maj. Conway was quick to attribute much of the ITT's success to their Canadian hosts: "They treated us like their own for the duration of our time there. The facilities and parts support were fantastic. The weather briefs were dead on. When we were airborne the controllers would give us real-time weather updates and did everything in their power to help us find ice to fly in. They kept us from wasting any time."

The team will return to Shearwater next November for another six months, focusing on longer flights in icing conditions, failure modes, helicopter mode flight, and the overall performance and reliability of the production configuration of the anti-ice system. Maj. Conway was sanguine about the prospect of another lengthy period away from Pax. "I look at my time back in Maryland as a det away from my new home in Canada," he said with a laugh. "Being away is always a challenge, but the hospitality of the Canadians combined with an opportunity for more successful testing make that much easier."

"Our goal out of the next period is to have a system in place that fully meets the V-22 system design specifications," said Col. Craig Olson, USAF, V-22 Joint Program Manager. "When we're done, Osprey crews will have an anti-ice system with capabilities shared by very few rotorcraft."



(Photo by Roger Lejune)

Osprey No. 24 touches down at NAS Patuxent River on April 29 following a successful six-month aircraft icing test period in Canada.

V-22 CEOs confident about program

In a review of the V-22 program on September 8, company leaders from Boeing, Textron and Bell Helicopter expressed their satisfaction with the program's progress, stressing the importance of cost control and meeting commitments. Boeing President and CEO Harry Stonecipher; Textron Chairman, President and CEO Lewis Campbell and Bell Helicopter CEO Mike Redenbaugh participated in the review. "Based on their feedback, if we continue to trim costs and improve reliability and maintainability, the V-22 has the potential to be in production for 40 to 50 years," said Dan Korte, Boeing V-22 program manager. Boeing and Bell Helicopter, a Textron company, jointly build and support the Osprey.



Leaders from Boeing, Textron and Bell Helicopter met in Philadelphia, September 8, for an in-depth review of the V-22 program. Here (from left), Boeing President and CEO Harry Stonecipher; Textron Chairman, President and CEO Lewis Campbell; Textron Chief Financial Officer Ted French, Bell Helicopter CEO Mike Redenbaugh and V-22 Operations Director John Hilaman take a close look at a V-22 assembly line model during a tour of the facility. Boeing Integrated Defense Systems President and CEO Jim Albaugh, Naval Systems Senior Vice President John Lockard and senior V-22 program personnel also attended the review session.