



V-22 Osprey return to flight plans underway

By Gidge Dady
NAVAIR V-22 Public Affairs

After a year-long struggle to get the V-22 Osprey program back on track, the aircraft—hailed by military officials as a cornerstone technology that will have significant and long-term implications for future combat operations—is preparing to embark on a new beginning.

An important decision that has shaped the future direction of the V-22 Osprey program occurred Dec. 21, 2001, when the Undersecretary of Defense for Acquisition, Technology and Logistics signed a Program Memorandum authorizing the return to flight, continued testing and production of the V-22 Osprey. This Memorandum enabled the V-22 Joint Program Office to implement a carefully developed plan to improve aircraft system and component reliability.

The V-22 is scheduled to resume developmental flight testing in late April 2002 at the V-22 test facility, Naval Air Warfare Center, Aircraft Division, Patuxent River, Md.

Over an 18-month developmental flight test period, two MV-22 Engineering, Manufacturing Development (EMD) air-



Photo by LtCol Ron Culp

An MV-22 Osprey performs a confined area landing during its Operational Evaluation period in July 2000. Restricted from flight since the Dec. 11, 2000 fatal mishap, developmental flight testing of the aircraft is scheduled to resume in late April 2002 at the V-22 test facility, Naval Air Station, Patuxent River, Md.

craft and three MV-22 low rate initial production aircraft will return to flight with improvements in routing of hydraulic/electric lines in the nacelle as well as an upgraded software system. Developmental flight testing will validate these engineering and software changes and further test such areas as vortex ring state boundaries, dynamic shipboard compatibility, formation flying, combat maneuverability, and low speed hovering and landing conditions when the proprotors blow up dust and debris.

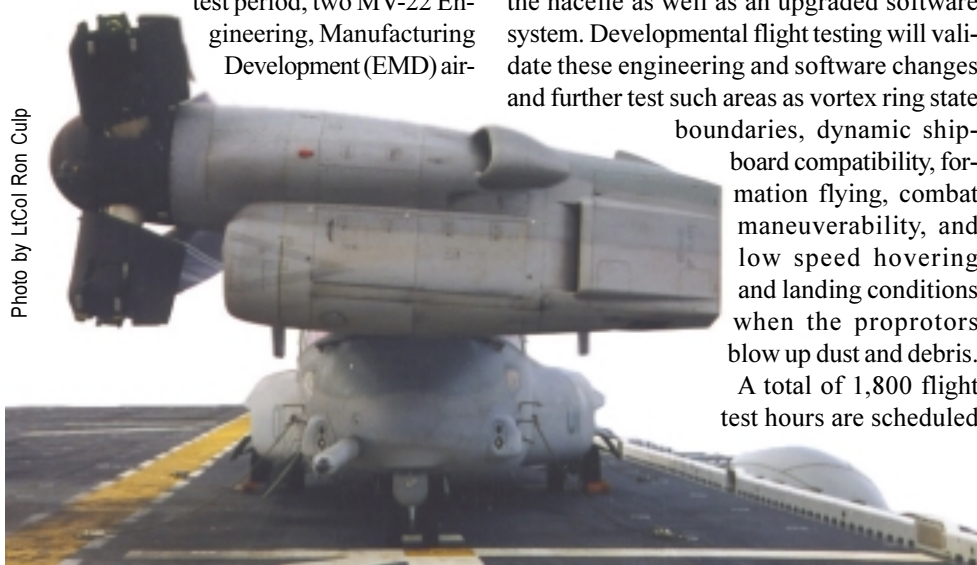
A total of 1,800 flight test hours are scheduled

for the flight test program, which also includes testing of the aircraft's icing, cargo handling and radar warning systems. Senior Defense and Navy officials will assess the testing program at various points, and have said that tests will not move to new test events until engineers fully understand the results of earlier testing.

In July, the Air Force is expected to resume flight testing of the CV-22 at Edwards Air Force Base, using two EMD aircraft that have been configured with Special Operations equipment.

"Now that we have an approved way ahead plan, we will return to flight with a methodical and event-driven flight test program that will deliver an aircraft to the fleet that is safer and more capable than ever before. Event-driven means the V-22 program

Photo by LtCol Ron Culp





PM Perspective: Osprey return to flight on horizon

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

Now that we are in the final stages of our Return to Flight (RTF) program, we stand on the edge of an entirely new era for the Osprey. While the past 18 months have been a trying period for all of us who work on the V-22, I cannot help but feel enormous pride in the accomplishments of the thousands of individuals working on Team Osprey during this time period.

The MV-22 is now set to successfully return to flight testing this spring at Naval Air Station Patuxent River, Md., with the CV-22 following it into the air soon after at Edwards Air Force Base in the summer of 2002.

Our RTF program is based on an Acquisition Decision Memorandum (ADM) signed by the Undersecretary of Defense for Acquisition, Technology and Logistics authorizing a return to flight, continued testing and production of the V-22 Osprey. The ADM enables us to implement our carefully developed plan to make many enhancements to the aircraft and resume testing.

Our comprehensive Flight Test plan incorporates the recommendations made by several independent panels that reviewed the

V-22 program. The plan is also consistent with the results of the recently completed NASA study, which determined there were no known aeromechanical phenomena that would prevent the safe and orderly employment of the V-22. This plan has been reviewed several times, to include a recent Flight Readiness Review with Admiral Heely, and has been approved by all involved.

We all need to recognize that we will continue to use a phased, event-driven approach and proceed methodically through flight test. Our progress will be governed solely by our success in meeting carefully established objectives. Only when all test objectives have been met will FMF Marines return to flight operations.

The end result of this process will be a highly effective, exceedingly safe replacement for our aging medium-lift helicopters that is a product we can all be proud of producing.



SOCOM holds to CV-22 requirement

By Hunter Keeter
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Special Operations Command (SOCOM) maintains that it must have the CV-22 tiltrotor, despite the program's difficulties, based on lessons learned in Afghanistan, senior officials said last week.

"The terrain and elevation in Afghanistan have validated our need for the capability of an aircraft like the CV-22," Air Force Lt. Gen. Paul Hester, commander of Air Force Special Operations Command (AFSOC), last week told a National Defense Industrial Association Special Operations and Low-intensity Conflict symposium audience in Arlington, Va. "We need the technology that this aircraft offers and I am excited that testing is going to begin soon with our Marine brothers' [MV-22 variant]. We need to get on with making sure this program becomes a reality. The requirement is fairly clear; we revalidated it."

A Bell Helicopter Textron [TXT]-Boeing [BA] team has developed the V-22, which is to offer variants suited to Marine Corps, Navy and Special Operations Command (SOCOM) missions. The program late last year was cautiously revitalized after more than a one-year delay due to a series of crashes and a substantial re-engineering effort (Defense Daily, Dec. 21).

Others have lent their voice to support the tiltrotor's capability. Army Gen. Tommy Franks, commander-in-chief of Central Command, last week said that the V-22's capability would have been useful in Afghanistan (Defense Daily, Feb. 8).

The CV-22 SOCOM variant is to include long-range fuel tanks, terrain-following/terrain-avoidance radar and other enhancements to replace SOCOM and AFSOC's current fleet of Sikorsky [UTX] MH-53 special mission helicopters.

Hester explained that despite the misgivings DoD has expressed over the V-22 program and tiltrotor technology in general, recent experience in Afghanistan has shown that current aircraft do not have a comfortable performance margin under the kind of conditions seen in Afghanistan.

During one mission, AFSOC launched MH-53s from a base 490 miles from the target zone. That flight took nine hours to complete, with three aerial refueling events. The mis-

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(From left) Mr. John McKeown, SES, NAVAIR AIR 4, Roger Fulton (CCOE), Vice Adm. Joseph Dyer (COMNAVAIRSYSCOM), Mr. Tom Laux (PEO-A), Rear Adm. Tim Heely, USN, NAVAIR AIR 4.0, Dan McIlroy (CCOE), Col. Barney Grimes (DCMA), and Mr. Mike Tkach, director, Bell Boeing Program Office, receive a brief on V-22 Composite Center of Excellence processes.

Defense officials visit V-22 sites

Vice Admiral Joseph Dyer, U.S. Navy Commander, Naval Air Systems Command, and a team of senior Defense Department officials recently visited The Boeing Company in Philadelphia and Bell Helicopter's facilities in Ft. Worth and Amarillo, Texas, to review the team's readiness for the V-22's Return to Flight (RTF).

The Osprey, grounded since December 2000, is scheduled to return to the air later this spring. Vice Adm. Dyer, a senior acquisition program official, must certify that the V-22 is safe before it resumes its flight test program.

During his visit to The Boeing Company in Philadelphia, Vice Adm. Dyer heard detailed reports on the aircraft's flight control software, hydraulic system and risk assessment processes.

After a series of briefings, Vice Adm. Dyer and his staff toured the V-22 Triple Lab Tie-In area and received a demonstration of the unique relationship between the System Integration Lab, the Flight Control System Integration Rig and the Flight Simulation Lab.

The Triple Lab allows pilots or engineers to "fly" a flight simulator, using actual aircraft flight controls and avionics systems. The result is a near-real-time evaluation of electronic and hydraulic control of the flight hardware. (See the February 2001 issue of *Osprey Facts* for more information.)

While at Bell Helicopter, Vice Adm. Dyer

received briefings on Bell's primary areas of responsibility for RTF—the changes to wing and nacelle areas on the Engineering, Manufacturing Development aircraft (Nos. 7-10), and the Low Rate Initial Production (LRIP) aircraft being configured for flight test (Nos. 21-24).

He visited the Composite Center of Excellence (CCOE) and toured the layouts and fixtures that build key V-22 composite components. He also discussed quality and manufacturing issues. Afterwards, Vice Adm. Dyer's party flew to Amarillo and toured the Tiltrotor Operations Center.

After receiving an overview of Amarillo operations and history, Vice Adm. Dyer walked the assembly center and talked with several shop floor managers in their respective areas.

He also was able to visually inspect the wing and nacelle area of Aircraft 33 from a raised workstand, getting a first-hand perspective of what the nacelle environment looks like *before* the RTF modifications.

Following this, his party proceeded to the Flight Test hangar, where he was able to see the work in progress on LRIP aircraft 21-24, and view the detailed changes being made to the nacelle area on aircraft 21 and 22. He also was able to sit in a powered-up MV-22 cockpit with Bell Flight Test Pilot Jim Lindsey.

His trip to Bell Helicopter marked the first time he has visited the tiltrotor facilities.

V-22 assembly changes in work

The Boeing V-22 manufacturing facility in Philadelphia soon will have a new place to call home. The assembly line is relocating from Building 3-61 on the campus' south side to Building 3-25 on the campus' north side.

The move, which will be completed by January 2003, will enable V-22 program personnel to co-locate with the aircraft and the employees who build it.

"Co-locating program personnel will improve communication and face-to-face team interaction," said John Hilaman, director, V-22 Operations.

The new line—designed as a "Focused Factory"—will incorporate lean manufacturing initiatives, including straight line flow, feeder lines and point of use for all parts. It also will feature a more comfortable work environment.

The move, says Hilaman, will be a seamless transition and will not interfere with current production commitments.

Prior to his departure back to Patuxent River, Md., Vice Adm. Dyer met briefly with the Commandant of the Marine Corps, Gen. James L. Jones, who was visiting Amarillo for the first time also.



Commandant of the Marine Corps, Gen. James L. Jones, also visited Bell Helicopter's facilities for a series of high-level V-22 program briefs.

Osprey

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progress is based on a clearly articulated set of accomplishments, not a date," said Col. Dan Schultz, V-22 joint program manager. "We will leave no stone unturned to ensure that the V-22 is a reliable, operationally suitable and safe replacement for our aging medium-lift helicopters."

Schultz further added that the V-22's comprehensive developmental flight test program will put "X's in the outer corners of the flight envelope" and will include the most extensive testing undertaken of the vortex ring state phenomenon.

"In this regard, we will dedicate one aircraft for one year of high rate of descent testing and set the standard for flying every conceivable approach to this kind of situation," said Schultz.

The V-22, which can take off like a helicopter and then rotate its rotors and fly like an airplane, entered low rate initial production in 1999. The program had approached a major milestone decision to enter full rate production when an MV-22 suffered a fatal accident during a routine training mission in December 2000.

Since that time, two independent reviews conducted by a Department of Defense Blue Ribbon Panel and NASA Ames Research Center have assessed the safety of the aircraft and the maturity of the technology to



Col. Dan Schultz, V-22 joint program manager, recently flew the XV-15—the precursor of today's V-22 Osprey. The flight experience, Schultz explains, will help him better understand the flight characteristics of the V-22. The XV-15, built and tested more than 20 years ago, is primarily used today as a technology demonstrator.

carry out the missions of the user services.

Both reviews have recommended that the program move forward with specific engineering changes and improvements that will result in a safer and more operationally capable aircraft. They also concluded that there are no inherent flaws in the tiltrotor design or known aeromechanics phenomenon that

would stop the safe and orderly deployment of the V-22, and that the program should proceed with a phased approach in return to flight and fleet introduction. Part of the phased approach will involve a Flight Readiness Review to the Naval Air Systems Command (NAVAIR), the approval authority for returning the aircraft to flight status.

Once NAVAIR grants this approval, the phased return to flight approach will begin at Patuxent River, Md., in late April 2002 with developmental flight testing. This will be followed by the planned delivery in late 2003 to the Marine Corps of a production aircraft that will have a redesigned nacelle and software system as well as maintainability improvements. The second phase of flight testing will include another operational evaluation period estimated to occur between late 2004 and spring of 2005.

The V-22 is the first production tiltrotor in existence. By combining the hovering characteristics of a helicopter with the speed, range and fuel efficiency of a turboprop airplane, the V-22 can meet multi-service, multi-mission requirements. The V-22's leap ahead technology will provide the Marine Corps and the Air Force with unprecedented capability flexible enough to permit responsive action in a very uncertain world.

CV-22

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sion was flown "at the extreme upper limits of our MH-53's flight regime," Hester said, "within the lethal envelope of every air defense in their country [such as ZSU-23/4 anti-aircraft artillery]."

"CV-22 on the other hand...would have flown the mission in half the time, without aerial refueling and would have been above almost every defense threat in that country," he added.

SOCOM acquisition chief Harry Schulte noted that the command remains committed to buying 50 CV-22s.

Guidance from Pentagon acquisition chief Pete Aldridge to restart the Marine Corps portion of the program has included direction that the Navy budget fund development of the Block 0 CV-22 variant for SOCOM.

SOCOM is to fund systems development and demonstration for the Block 10 iteration of CV-22.

So far, there are two CV-22 test vehicles. Congress in the FY '02 budget funded the production of two additional CV-22 test vehicles for delivery in FY '04. The first two production versions of CV-22 are to be delivered in FY '06.

Schulte noted that the rampup to a sustainable production rate, according to the current long-range budget plan, is inadequate with low quantities being procured through FY '17. Schulte's office wants to speed the program up with additional funds to finish the buyout of 50 aircraft by FY '12, if possible.

"We probably will not try to do anything about that in [the FY '04 budget-building process] because we haven't proven the aircraft yet," Schulte said. "This will be a POM (program objective memorandum) FY '06 effort."