
Tiltrotor Times

Bell Boeing Team Production

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ITT, MOTT put Ospreys through paces

What are the Integrated Test Team (ITT) and Multi-service Operational Test Team (MOTT)? Put simply, the ITT qualifies each new aircraft and the MOTT evaluates the aircraft for operational suitability. The V-22 operation located at Patuxent River Naval Air Station, Md., is made up of three categories of people: ITT, Bell-Boeing maintenance and active duty support.

"The ITT is about 350 people. It includes Bell-Boeing and government engineers, pilots and maintenance people who are preparing the V-22, an entirely new weapons system, to enter the Marine Corps and Air Force inventories," said Phil Dunford, ITT director at Patuxent River NAS, where the operation has been underway since 1994. "I congratulate all the ITT team members, as they have a lot to be proud of."

There are 11 ITT test pilots from the Bell-Boeing team, the USMC and Air Force who perform heavily-instrumented flight tests and flight training of MOTT members. The MOTT is the V-22 customer, preparing to transition the V-22 into the Marine fleet and Air Force inventory. This includes about 180 Marine Corps and Air Force maintenance personnel.

"The ITT has dozens of engineers, including configuration and project management engineering, stress, avionics, and flight test engineering, government engineers and Bell and Boeing liaison engineering," said Joe Deluca, a Boeing liaison engineer who's been there about four years. "Vince Angelucci and I interface with operations maintenance for Boeing to troubleshoot and resolve problems or design issues right on the spot as they develop. Bell also has two liaison engineers here."

Bell has a couple dozen mechanics at the site working on blade-fold and wing-stow for aircraft 10. The Bell-Boeing and MOTT mechanics also work with the other three Ospreys. (See operations story, p. 2)

As for the test flying, all the planes are in the air flying. "Aircraft number 7 met its maximum take-off gross weight criteria recently - 60,500 pounds. Aircraft 8 flew a lot, it flew 25.8 flying hours in April," said Boeing test pilot, Steve Grohsmeyer.

Recent test progress also includes completing the first series of critical azimuth evaluations (adequate control during different wind conditions) required prior to sea trials.

"We've done tests that include high angle of attack, power-on and power-off stalls in airplane mode, envelope expansion and critical azimuth," said Grohsmeyer, who has been with Boeing just over two years. Pilots expect to continue envelope expansion, high altitude testing this summer and pilot training of the MOTT pilots, who will begin mission-oriented training. Missions will include austere landing zone or soft-field work, more night-vision goggle flights, and confined area flights, as the program nears operational testing slated for fall.

"We've really been able to push the aircraft to extremes already," said USMC Lt. Col. John Rudzis, government flight test director. "The ITT has succeeded in doing much more than just log flight hours, and will do much more in coming months," he said.

What's it like being a test pilot on a new airplane? (See pilot clipping, p. 3)

"It's a hoot! I like this job and I like flying this aircraft as much as anything I've flown," said senior Bell test pilot Bill Leonard. Before his nearly

five years at Bell, he was chief test pilot and FAA certification pilot for E-Systems flying Falconjets, 747s, 57s, 67s and Air Force One. Prior to E-Systems he was a test pilot for the U.S. Army.

"As far as the pilots are concerned, in spite of our varied backgrounds, the ITT experience is quite seamless. It's hard to tell, if not for the tell-tale flightsuit design each wears, whether a pilot here is military, a Bell or Boeing employee," said Leonard. Other test pilots include Captains Chris Seymour and Bill Witzig, Majors Kevin Gross, and Bill Wainwright, USMC; Maj. Tom Currie, USAF; Marty Shubert, Bell; Bill Norton, Boeing, and Tom Macdonald, the chief test pilot who is with Boeing. Navy Lt. Cdr. Don Mueller is chase pilot. (By Doug Kinneard)



The Boeing Co. photo

V-22 Operations in full swing at Patuxent River

Although its members are from different cultures, V-22 Operations Maintenance is a dedicated, cohesive team of professionals who work very well together.

The team comprises two units of mechanics: Bell-Boeing, and the Multi-service Operational Test Team (MOTT), made up of Marine Corps and Air Force mechanics. They do what no other aircraft mechanics do – V-22 operations.

About 90 maintainers support flight testing of the first Engineering, Manufacturing and Development (EMD) aircraft, #7, 8, 9 and 10 in the Integrated Test Team hangar at Patuxent River Naval Air Station, Md. Some noteworthy operations achievements over recent weeks include complete nacelle removal to support some maintenance activities, installing cameras on aircraft to record flare and chaff deployment and installing a refueling boom.

"I'm very proud of the hard work and devotion I'm seeing among MOTT and Bell-Boeing maintainers, many of them former military mechanics representing all branches of the service," said John Brown, who has been V-22 Operations Maintenance manager for four years now. "They are doing whatever it takes to try to meet schedule. We were initially set up to do organization-level main-

tenance and now our operations team does intermediate and depot-level maintenance. They are working very hard at it!"

Bell has 23 folks on site, including senior flight and electronic mechanics and three senior flight inspectors. They've been working on aircraft 10 to incorporate the blade-fold and wing-stow system. The MOTT includes about 30 government maintainers, who work with the Boeing contingent of about 64 folks, on all four EMD aircraft.

MOTT maintainers are preparing to transition the V-22 into the USMC fleet. They were V-22



maintenance trained, in some cases, right along side the Boeing trainees, according to Brown.

"MOTT mechanics went through the same three weeks of familiarization and certification training in Philadelphia as the Boeing mechanics," said Brown, a 35-year Boeing veteran. "We also travel together as a team to off sites, like the one to Hot Springs, W.Va., for tethered hovers and other rotor performance work. The ITT trip this summer for high altitude testing will include the MOTT folks. They support us very well, and later Bell-Boeing will support the MOTT during OT-IID (operational testing)," Brown explained.

Although from different backgrounds, the Bell-Boeing and MOTT operations folks work so well together, they achieved a safety milestone, according to General Foreman Kelley Neidigh.

"The people in operations maintenance went all last year without missing a day for on-the-job injuries," Neidigh said. "We submitted all their names to receive quality pride recognition for their safety achievement."

Brown often reminds his younger maintainers that the success of this program, to a great extent, depends on them. The V-22 is their future as the H-47 Chinook and H-46 Sea Knight helicopters were his. (By Doug Kinneard)

Program wins Chief of Naval Operations award

The V-22 program has won the 1997 CNO Environmental Award, for its aggressive efforts that have dramatically eliminated and reduced hazardous materials and pollutants at their source, during design, manufacture and use. Rear Admiral Granuzzo, Environmental Protection, Safety and Occupational Health Division director, Office of the Chief of Naval Operations presented the award April 27. Col. Nolan Schmidt, V-22 program manager accepted the award on behalf of the V-22 team.

The V-22 program chartered an Environmental Process Action Team (EPAT) to ensure the successful integration of environmental considerations into, and throughout, the acquisition process and aircraft life cycle.

"This award is a great recognition for a lot of efforts put forth by both government and Bell-Boeing Team members," said Howard Miller, PMA 275 deputy program manager for Product Development. "All team members have made tremendous contributions toward these environmental issues and they can be proud of this award – it is well deserved."

The EPAT is staffed with environmental, materials, engineering, and logistics experts from both the government and prime contractor organizations. Military maintenance, NAVAIR counsel, and other scientists and technical personnel augment the EPAT.

"To assure a balanced approach and integration of environmental issues into the acquisition process, the people involved with the program are continually attentive to environmental considerations,"

Miller explained. The EPAT team's major responsibility is to support the V-22 Program Manager in implementing a programmatic environmental strategy designed to reduce and eliminate the environmental impact associated with the life cycle of the aircraft. During the past two years, the team has been actively involved with the aircraft's contractors in identifying environmentally preferable alternative materials and processes for V-22 manufacturing, operations and support, and ensuring that all National Environmental Policy Act (NEPA) requirements associated with test and evaluation are analyzed and documented.

The V-22 team has incorporated environmental concerns and pollution prevention in its decision making process by determining NEPA requirements; developing and monitoring program contract requirements; generating, tracking, and resolving environmental issues; identifying and resolving external issues that have the potential to affect the V-22, and monitoring contractor efforts and accomplishments (e.g., hazardous material minimization, pollution prevention, trade studies, etc.).

The V-22 program was also actively involved in standardizing the Navy's General Series Maintenance manuals (e.g., NAVAIR 01-1A-509) to specify changes and procedures associated with Halon replacement in aircraft fire suppression systems.

The team's ongoing efforts to identify alternatives to environmentally regulated substances include collaborative efforts with the contractors, and evaluations of numerous Joint Group on Acquisi-

tion Pollution Prevention and Strategic Environmental Research Development Programs.

The V-22 was recently awarded an environmental trade study contract for the purpose of evaluating alternatives to chemical paint stripping and high waste-producing blast methods. The V-22 program is evaluating several existing process modifications that will be transferable to other services, installations, and throughout DoD. The primary process modification involves an alternative to current aircraft paint stripping methods.

The V-22 team has developed, and is constantly fine tuning its material management methodology to ensure that all materials specified in design, and for operation and support, are thoroughly screened to eliminate (and reduce where elimination is not feasible) all environmentally hazardous materials. This has been accomplished through the development of a hazardous materials tracking database, and a repair hazardous material analysis process.

The V-22 team is actively involved with an ongoing education and outreach program. The EPAT has provided environmental awareness training to government personnel involved with the acquisition program, and civilian firefighters serving in the communities which will be affected by daily V-22 operations. Recently, the EPAT provided environmental awareness training to government and contractor personnel associated with the program's integrated test team, on the incorporation of environmental considerations in the test and support plan development process. (By Doug Kinneard)

Flight tests show Osprey has impressive tanker characteristics

“Simple and stable and able to maintain position two feet behind the refueling drogue!” That’s how the Bell-Boeing Integrated Test Team pilots at Patuxent River, Md., described recent V-22 simulated aerial refueling flights in close formation with the KC-130 tanker.

“The V-22 shows excellent potential as an aerial refueling platform,” said Marine Corps Maj. Kevin Gross. “When the V-22 is in airplane mode, I found it as good if not better than any aircraft I’ve tanked,” said Gross, who has aerial refueled in the AV-8B Harrier, F/A-18 Hornet and F-2 Tornado.

The U.S. Marine Corps and Bell-Boeing have long recognized the tremendous capability that the V-22 as an aerial refueling aircraft could offer other V-22s or any probe-equipped aircraft like their AV-8.

Boeing and the Marine Corps have been working together to develop a kit that will deliver more than 16,000 pounds of fuel to fixed-wing or rotary wing aircraft, according to V-22 Variant engineer, Jim Butt in Philadelphia.

“The kit will be designed so that any V-22 could be quickly converted to or from a tanker configuration,” Butt said. The wide range of speeds offered by the V-22, which the Marine Corps begins flying in 1999, means that a single aircraft can comfortably refuel both helicopters and fixed wing aircraft on the same mission.

“Ride quality below the aircraft and on centerline would allow a drogue to ride well and allow most if not all probe-equipped aircraft to successfully maintain station keeping,” said USMC Maj. Bill Wainwright, IIT test pilot who also flew during the tanker tests.

Because of its unique ability to land in small zones, the V-22 is equally capable of delivering similar quantities of fuel to ground vehicles and non-probe-equipped helicopters and MV-22s operating from austere landing zones. In this role, the V-22 could serve as a forward arming and refueling point (FARP) during critical military operations.

The US Marine Corps isn’t the only possible beneficiary of this capability, although they are receiving 360 MV-22s. The U.S. Air Force Special Operations Command is also interested so they can extend the range of their long range special operations assault mission. The US Navy currently uses the S-3 in a similar role. When these aircraft are phased out, the V-22 will be prepared to fill the role of providing overhead tanking support to the Boeing F/A-18 and other Navy aircraft without taking up a deck spot or landing slot on the carrier deck. The UK Royal Navy, which doesn’t operate the same large deck carriers as the US Navy, may also see the potential to augment the capabilities of their AV-8 Harrier STOVL fighters. (By Doug Kinneard)

A/C #	Total EMD Hours	Total EMD Flights
7	151.4	87
8	138.5	74
9	41.0	26
10	45.1	23
Totals	376	210

Total V-22 Flight Time	1,560.2 hrs
Maximum Airspeed Attained	342 kt
Maximum Altitude Attained	21,500 ft
Maximum Take-Off Gross Weight	60,500 lb
Maximum Load Factor	3.1 Gs



During simulated aerial refueling flights, the V-22 holds its position near the refueling drogue behind a KC-130 tanker (not shown). The King Air chase plane is in the background.

Propulsion and Power Team garners Fliedner Trophy

The V-22 Propulsion and Power Team was named to receive the 1997 Charles W. and May S. Fliedner Trophy, for their *Superlative Contributions to the Advancement and Welfare of Naval Aviation*.

The award was established in 1957 by the NAVAIR Propulsion Committee to acknowl-

edge annually the team or employee most deserving of special recognition for its contributions to Naval aviation propulsion and power. Each award recipient will receive a plaque and citation recognizing his or her specific accomplishments. The trophy is permanently displayed in the offices of the Di-

rector, Propulsion and Power Division, with an inscribed listing of all recipients.

Some recent winners include F-18E/F Propulsion and Power Team in 1996; and Steven E. Stone, Naval Aviation Depot, Cherry Point, N.C. in 1995. (By Doug Kinneard)

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