

MV-22 Osprey

Executive Summary

- The MV-22 is the Marine Corps variant of the V-22 tiltrotor aircraft. The aircraft replaces the aging CH-46 and CH-53D medium lift helicopters. The Osprey is intended to operate in the ship-to-shore assault mission to support Marine Air-Ground-Task Force operations to support maneuver, operations ashore, tactical recovery of aircraft and personnel, and amphibious evacuation. The aircraft is capable of both self-deployment and afloat operations.
- VMX-22 executed an adequate and approved follow-on operational test to evaluate upgraded flight control software, enhancements to mission equipment, and to develop high altitude and mountainous terrain tactics and procedures. The testing gathered the necessary data to evaluate both effectiveness and all reliability, maintainability, and availability suitability metrics, as well as human factors, safety, shipboard compatibility, and mission planning system support. The detailed analysis of the test results are in progress.
- The V-22 program should aggressively continue to pursue development of an effective defensive weapon system, battle damage repair procedures, cold weather testing in conjunction with improvements to the ice protection system, air-refueling and defensive maneuvering envelope expansion, and improved engine and drive-train subassembly reliability.

System

- The MV-22 is a tilt-rotor aircraft capable of conventional wing-borne flight and vertical take-off and landing.
- The Marines intend to replace the aging CH-46 and CH-53D helicopters.
- The MV-22 can carry 24 combat-equipped Marines and operate from ship or shore.
- It can carry an external load up to 10,000 pounds over 40 nautical miles ship-to-shore and return.

Activity

- The Navy Commander Operational Test and Evaluation Force/Marine VMX-22 Tiltrotor Test Squadron conducted a multi-phased follow-on integrated developmental and dedicated operational test. The Integrated Test (IT-IIIIE) integrated phase was accomplished from March 15, 2007, to July 10, 2009. The dedicated OT-IIIIE FOT&E phase was executed from May 26 to July 10, 2009. All testing was as approved in the Test and Evaluation Master Plan and test plans, and DOT&E observed the dedicated operational test phase.



- It can self-deploy 2,267 nautical miles with a single aerial refueling.

Mission

- Squadrons equipped with MV-22s will provide medium-lift assault support in the following operations:
 - Ship-to-Objective Maneuver
 - Sustained operations ashore
 - Tactical recovery of aircraft and personnel
 - Self-deployment
 - Amphibious evacuation
- Currently deployed squadrons are providing high-tempo battlefield transportation in Iraq and Afghanistan.

Prime Contractors

- Bell Helicopter, Amarillo, Texas, and The Boeing Company, Ridley Township, Pennsylvania (Joint Venture)

- The integrated testing phase focused on subsystem evaluations and tactics, techniques, and procedures for: fast-rope and parachute operations, airdrop of material and resupply, high altitude and mountainous operations (day and night), defensive weapon system, countermeasures testing, shipboard compatibility, and assault zone tactics. The test venues included: Naval Air Stations Fallon, Nevada; Yuma, Arizona; and China Lake, California, as well as shipboard operations aboard the USS *Ponce*, USS *Fort McHenry*, and USS *Bataan*.

NAVY PROGRAMS

- VMX-22 self-deployed four operationally representative aircraft from Marine Corps Air Station, New River, North Carolina. Dedicated operational testing was staged from the deployed forward operating base at Kirtland AFB, New Mexico, with operationally realistic missions on the Fort Carson, Colorado, Range complex.
- The evaluation addressed flight control software upgrades, the chaff/flare countermeasures upgrade, missile warning sensor, an aft cabin Situational Awareness upgrade for embarked troop commanders, enhanced ground refueling capability using the Osprey as the host donor for vehicle and aircraft refueling at austere locations, and mission planning system improvements.
- The approved mission scenario set included a realistic cross-section of core Marine Corps battlefield tasks for: pre-assault raid insertion of Force Reconnaissance teams, resupply support, assault support/airdrop and battlefield circulation, rotors turning ground refueling at a forward location, tactical recovery of personnel, and simulated casualty evacuation.
- All missions were also designed to allow development of high altitude and mountainous operations tactics and to explore survivability enhancement tactics for assault operations.

Assessment

- The testing was executed as approved by DOT&E and was adequate to determine operational effectiveness and suitability of the MV-22 Block 10/B.

- Detailed analysis of the test data is ongoing.
- The suitability evaluation will include comparison of the IT-IIIIE and OT-IIIIE data with previous testing to identify trends in reliability, maintainability, and availability of the MV-22.
- The effectiveness evaluation will include assessment of the high altitude operational capability and survivability effects of both MV-22 system upgrades and Marine Corps tiltrotor tactics development.

Recommendations

- Status of Previous Recommendations. The program satisfactorily addressed seven of the 10 previous recommendations. The three remaining are valid.
- FY09 Recommendations.
 1. The program should continue integrated Marine Corps/Air Force development and testing of an effective defensive weapon system, battle damage repair procedural development, realistic cold weather testing in conjunction with improved ice protection system reliability, expansion of the defensive maneuvering and air-refueling altitude envelopes, and improved engine and drive-train subassembly reliability.
 2. The Navy should consider increasing the priority of correction of known deficiencies of the MV-22.