

CMV-22B Joint Services Advanced Vertical Lift Aircraft – Osprey – Carrier Onboard Delivery



The CMV-22B achieved initial operational capability (IOC) in December 2021. In FY22, DOT&E reported that full operational capability was expected in FY23, but now the Navy is expecting it in FY24. The Navy started a second period of FOT&E in December 2022 to evaluate the operational effectiveness, suitability, and cyber survivability of the CMV-22B aircraft equipped with the Communications Upgrade suite. Testing is scheduled to complete in 1QFY24. FOT&E data analyses are ongoing, precluding an assessment in this article. DOT&E will publish a combined FOT&E and LFT&E report in 2QFY24.

SYSTEM DESCRIPTION

The CMV-22B Osprey is a tiltrotor vertical/short takeoff and landing aircraft that can take off and land as a helicopter, and transit as a turboprop aircraft. The Navy intends the CMV-22B to replace the in-service C-2A Greyhound carrier onboard delivery (COD) aircraft. The CMV-22B is based on the MV-22B design with several changes to support the COD mission: increased fuel capacity to extend the range, fuel jettison system, integrated public address system for making announcements in the cabin area, high-frequency radio for over-the-horizon communications, and cabin and cargo lighting to assist with cargo loading.

The Communications Upgrade suite includes a Link-16 tactical datalink and an Iridium satellite phone to enhance capabilities when conducting logistics, search and rescue, and mobility missions as part of a Carrier Strike Group. Link-16 provides secure communications and a common operational picture for the network's participants by exchanging their location information. The Iridium Sat phone enables over-the-horizon communications and acts as a backup for the high-frequency radio.

MISSION

The Navy will employ units equipped with CMV-22Bs to perform the COD mission of

transport of personnel, mail, and cargo from forward logistics sites to aircraft carriers at sea. A detachment of three aircraft will support a Carrier Strike Group. The CMV-22B also has a mobility mission by which the aircraft can self-deploy into theater, whereas the COD mission and other missions can be conducted in support of the Carrier Strike Group. The CMV-22B must be capable of conducting operations in a permissive threat environment, day/night, and in all weather conditions. Secondary missions include vertical onboard delivery, vertical replenishment, medical evacuation, Naval Special Warfare support, missions of state, and search and rescue support.

PROGRAM

The CMV-22B, as part of the overall V-22 program of record, is an Acquisition Category IC program. The Navy procured a total of 48 CMV-22B variants. The CMV-22B has been incorporated with the current V-22 production line and deployed to the fleet. It achieved IOC in December 2021 and plans to declare full operational capability in FY24 rather than FY23 as DOT&E reported last year. DOT&E approved the CMV-22B Test and Evaluation Master Plan and the Alternative LFT&E plan in March 2020. DOT&E published a combined FOT&E and LFT&E report in June 2022, and approved an FOT&E OT-D2 test plan in November 2022. DOT&E also approved a cyber survivability test plan in March 2023.

» MAJOR CONTRACTOR

- Bell-Boeing Joint Project Office – Amarillo, Texas

TEST ADEQUACY

Air Test and Evaluation Squadron 1 (VX-1), under the auspices of the Navy's Operational Test and Evaluation Force (OPTEVFOR), is conducting a second period of FOT&E, called OT-D2, that started in December 2022. This FOT&E is designed to assess the operational effectiveness, suitability, and cyber survivability of the Communications Upgrade suite, assess training, and verify the corrections of deficiencies discovered during the first period of FOT&E in 2021. DOT&E will report the results in the combined FOT&E and LFT&E report in FY24.

OPTEVFOR conducted a cyber cooperative vulnerability and penetration assessment and an adversarial assessment of the Communications Upgrade suite installed on a production-representative engineering development model CMV-22B aircraft at Naval Air Station Patuxent River, Maryland in March 2023. DOT&E approved the cyber survivability test plan in March 2023. OPTEVFOR executed the objectives outlined in that plan but discovered an unplanned test limitation. DOT&E observed those events and determined it was executed in accordance with the test plan. DOT&E will report the results of this test in the combined FOT&E and LFT&E report in FY24.

NAVAIR provided the final fuel system aircraft survivability test data and analysis in August 2023; DOT&E will report the adequacy and results of CMV-22B survivability in the combined FOT&E and LFT&E report in FY24.

PERFORMANCE

» EFFECTIVENESS

Assessment of the CMV-22B Communications Upgrade is pending the completion of data analysis from FOT&E tests and will be included in the 2QFY24 DOT&E combined FOT&E and LFT&E report.

» SUITABILITY

As reported in the combined FOT&E and LFT&E report of June 2022, DOT&E found that CMV-22B was not operationally suitable due to failures of many subsystems, with the ice protection system accounting for 44 percent of the total operational mission failures. Additionally, the maintenance hours per flight hour (MH/FH) did not meet the requirement, with 45 percent of the total MH/FH attributed to special inspections and scheduled maintenance requirements. Analysis is ongoing on the data collected in the second FOT&E for reassessing these metrics. An assessment of operational suitability, to include suitability of the Communications Upgrade suite and training using the Containerized Flight Training Device and the Virtual Maintenance Trainer, will be included in the

2QFY24 DOT&E combined FOT&E and LFT&E report.

» SURVIVABILITY

Data analysis is ongoing to evaluate the CMV-22B survivability in a cyber-contested environment. LFT&E and the cyber survivability assessment will be included in the 2QFY24 DOT&E combined FOT&E and LFT&E report.

RECOMMENDATION

The Navy should:

1. Continue to implement the recommendations in DOT&E's June 2022 combined FOT&E and LFT&E report.