

Air Force Mission Planning System (MPS) Increment III (F-16)

The F-16 Mission Planning System (MPS) is operationally effective, but not operationally suitable. The Initial Operational Test and Evaluation (IOT&E) of the F-16 MPS was adequate and executed in accordance with the Director, Operational Test and Evaluation (DOT&E)-approved Test and Evaluation Master Plan and test plan.

System Overview

F-16 MPS is the representative mission planning system for Air Force Mission Planning System (MPS) Increment III. The Increment III MPS provides automated tools that assist in pre-flight and in-flight mission planning, programming platform sensors, creating mission media, and providing required data to the aircraft avionics systems depending on weapon system capabilities.

The basis for the F-16 MPS is the JMPS approach, which uses tailored software packages hosted on commercial Windows® personal computers. JMPS is intended to be a common solution for aircraft mission planning for all military Services. It includes basic framework software, plus automated tools that plan missions, program platform sensors, create mission media, and provide required data to the aircraft avionics systems depending on weapon system capabilities. It may operate in a Local Area Network (LAN) Windows® workgroup environment, in a laptop/desktop configuration from a LAN, or in a standalone configuration.

The Air Force is developing MPS incrementally to meet planning requirements. Increment I MPS includes legacy systems for Air Force aircraft hosted on computer workstations. Increments II through IV include newly-developed systems using the JMPS approach. Other platform mission planning systems are included in Increment III, including B-1, RC-135, F-22, and F-15. Pertinent findings from the operational testing of the B-1 MPS, completed prior to the F-16 IOT&E, are included in this report.

Test Adequacy

The IOT&E of the F-16 MPS was adequate to determine the effectiveness and suitability of the system.

The Air Force Operational Test and Evaluation Center (AFOTEC), Detachment 2 at Eglin AFB, Florida, conducted operational testing on the F-16 MPS from October 20 through November 14, 2008. Test participants included Block 40 and Block 50 F-16 pilots from Air Force bases in the United States, the United Kingdom, and the Republic of Korea; an intelligence specialist; and a system support representative.

Operational Effectiveness

The F-16 MPS is operationally effective. The system satisfied the intent of all four Key Performance Parameters: time to plan a mission, route creation and manipulation, data exchanges, and data transfer operations. However, system effectiveness was limited by deficiencies related to the user-system interface, other minor deficiencies, and the poor suitability performance described in Section Four. The deficiencies prevent the system from providing fully effective mission planning support. The pilots considered the F-16 MPS better than their legacy mission planning system.

Operational Suitability

The F-16 MPS is not operationally suitable. Although the F-16 MPS met the stated requirements for mean time between critical failure and operational availability, it did not meet the majority of suitability standards. Numerous suitability shortfalls adversely affected operations during test execution. Additionally, the F-16 MPS experienced data loss during numerous system crashes, requiring missions to be replanned. These shortcomings likely will impact squadron operations by increasing the overall system workload.

As the pilots gained familiarity and experience with the F-16 MPS during the test, they learned how to avoid some of the system shortfalls as they planned missions. The number of workarounds and the need to use safe paths to navigate through the system hampered mission planning efforts and was not consistent with operational employment of MPS. Although the system support representative attempted to mitigate planning deficiencies, there is a high potential for errors in fielded operations due to the need to avoid system pitfalls.

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System suitability was degraded substantially by incomplete installation instructions, which caused system support personnel to resort to trial-and-error troubleshooting. Formal training for system support personnel did not exist at the time of the test. The system support representative on site was very knowledgeable and experienced, and his expertise benefitted the pilots planning missions using F-16 MPS. However, fielded sites may be supported by system support personnel with considerably less knowledge and experience.

Logistics supportability was negatively affected by the lack of response from the hardware warranty support contractor in replacing hardware that failed during the test.

User requirements for operational availability, reliability, transporting the system, and security were satisfied. Training for pilots was satisfactory, as was responsive technical support from the system support facility's Help Desk.

Recommendations

Correction of deficiencies and inadequacies identified during testing that limit system suitability must be corrected and operationally tested before the system can be assessed as satisfactory. The Air Force should review these test results when crafting test strategies and test plans for subsequent testing of later increments, and ensure the system builds on successes and lessons learned. To improve system performance and overall mission planning, the Air Force should address the following:

- Use a larger sample size of aircrew for future testing to gain more confidence in the results, particularly for the survey assessments used to assist in the evaluation of many measures of effectiveness.
- Provide aircrew with more training on the specific type of weapons being planned, especially with advanced air-to-surface weapons like JASSM.
- Host early user reviews and implement good recommendations with the objective of improving the user interfaces.
- Continue development and adequate test of an acceptable in-flight mission planning capability. The Air Force should consider making in-flight replanning capability a Key Performance Parameter for bomber, airlift, and airborne command and control aircraft mission planning environments.
- Require that system support representatives participating in future operational tests be from operational squadrons rather than the MPSSF to more accurately assess the ability of typical users to operate and maintain the system.
- Include software installation instructions with the system installation discs in order to standardize system support representative actions on initial system set-up.
- Provide formal training for system support representatives prior to fielding F-16 MPS.
- Conduct additional IA vulnerability testing when the Air Force MPS is authorized to operate in a wide area computing environment.
- Review the reliability requirements for future MPS to ensure they are sufficient to support squadron operations with a more robust mission planning system.
- Plan and conduct an Air Force MPS Increment III Maintenance Demonstration to collect data on maintainability (including Built-In Test), maintenance training, and maintenance documentation.