

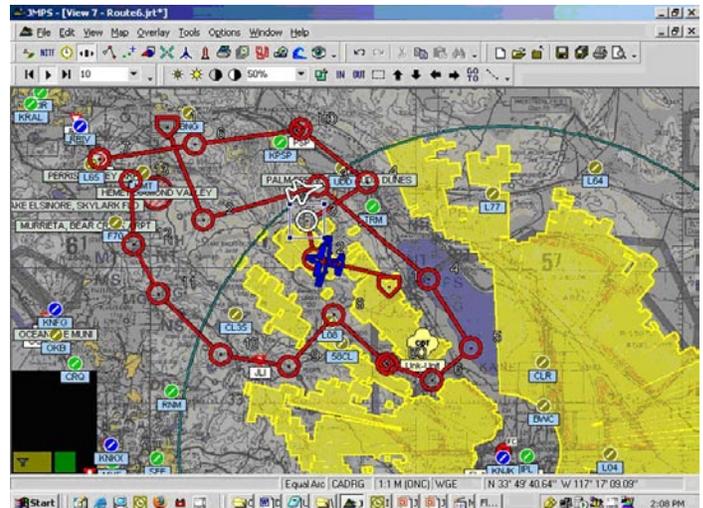
## Joint Mission Planning System – Maritime (JMPS-M)

### Executive Summary

- PMA-281 Mission Planning Systems, the Navy Joint Mission Planning System – Maritime (JMPS-M) Program Manager, is modifying Framework 1.2 to integrate new mission planning features and federated applications, and is planning to re-host Mission Planning Environments (MPEs) to the new Joint Framework 1.4.
- The Navy and Marine Corps JMPS-M for host platforms has demonstrated improved results during developmental and operational tests.
- PMA-281 is developing JMPS-Expeditionary (JMPS-E) as a Force-Level planning tool to support amphibious operations.

### System

- JMPS-M is a Windows XP, PC-based common solution for aircraft mission planning. It is a system of common and host platform unique mission planning applications for Navy and Marine Corps host platforms. The operating system is modified with the Defense Information Infrastructure – Common Operating Environment core.
- An MPE is a total set of developed applications built from modules. The basis of an MPE is the Framework, to which a Unique Planning Component (UPC) is added for the specific aircraft type (e.g., F-18 or EA-6B). Other common components that can support multiple users are added as well (e.g., GPS-guided weapons, navigation planner, etc.) to complete the MPE. Additional UPCs (Joint Direct Attack Munition) required for planning are included in aircraft-specific MPEs to support specific mission requirements.
- Each JMPS-M MPE consists of a mixture of stand-alone, locally networked, and domain controlled Windows XP computers.
- Although the JMPS-M software is being co-developed among DoD components, JMPS-M is not a joint program.



### Mission

- Aircrews use JMPS-M MPEs to plan all phases of their missions and then save required aircraft, navigation, threat, and weapons data on a data transfer device so they can load it into their aircraft before flight. They also use JMPS-M to support post-flight mission analysis.
- Amphibious planners will use the JMPS-E to plan the movement of personnel, equipment, and logistics support between the amphibious fleet and the shore.
- As Framework 1.4 is implemented, JMPS-M users should be able to collaborate on mission planning, even when operating from different bases.

### Prime Contractor

- Framework: BAE Systems, San Diego, California

### Activity

#### Framework 1.4

- The Navy JMPS-M Program Manager, PMA-281, is continuing development with the Air Force on a new JMPS Framework 1.4, which will replace Framework 1.2 and integrate new mission planning features and federated applications.
- The Navy successfully completed preliminary design review of Framework 1.4 software.

#### Platforms

- PMA-281 conducted the following DOT&E-monitored developmental tests on JMPS-M platform MPEs in order to assess risks to successful operational test results:

- Marine Helicopter MPE version 2.0 at Naval Air Station (NAS) Point Mugu, California
- Marine Helicopter MPE version 2.1 at NAS Point Mugu, California
- C-2A MPE version 1.0 at NAS Point Mugu, California
- CVIC (Carrier Intelligence Center) MPE version 1.0 at NAS Point Mugu, California
- P-3C MPE version 2.0 at NAS Point Mugu, California
- Commander, Operational Test and Evaluation Force (COTF) conducted the following operational tests on JMPS-M platform MPEs:

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- EA-18G JMPS version 2.2.1 at Nellis AFB, Nevada, and China Lake, California, during December 2008 through February 2009
- F-18 JMPS version 2.2 at China Lake, California, in February and March 2009
- Navy Legacy Helicopter (NLH) JMPS version 1.0 at Norfolk NAS, Virginia, and Jacksonville NAS, Florida, in January and February 2009
- MV-22 MPE version 1.1 FOT&E in conjunction with a platform software upgrade operational test at Kirtland AFB, Albuquerque, New Mexico, in May and June 2009
- The 18th Flight Test Squadron conducted an operational test of the V-22 JMPS version 1.1 using CV-22 operators from the 8th Special Operations Squadron at Hurlburt Field in March 2009
- AV-8B JMPS version 2.1 in conjunction with a platform software upgrade operational test at Marine Corps Air Station Yuma, Arizona, and China Lake NAS, California in June and July 2009
- All operational testing was conducted in accordance with DOT&E-approved Test and Evaluation Master Plans (TEMPS) and test plans.

## JMPS-E

- DOT&E sponsored several JMPS-E test strategy planning meetings with Navy and Marine Corps program management and developmental/operational testers, which resulted in an approved requirements clarification letter from the Navy (N88). Marine Corps Test and Evaluation Agency discontinued test oversight of JMPS-E pending completion of development of Marine Corps amphibious planning functionality within the JMPS-E MPE.
- PMA-281 conducted and DOT&E monitored developmental testing of the JMPS-E version 1.0 at the Naval Amphibious Base, Coronado Island, California.
- DOT&E approved the COTF JMPS-E Test Concept for IOT&E that will occur in spring 2010 during pre-deployment training aboard amphibious ships in San Diego, California.
- Results from a developmental test event of the CVIC MPE version 1.0 indicate that the basic mission planning data can be transferred to an aircraft, but that more robust training is needed for aircrews to effectively use the MPE.
- Results from a P-3 JMPS MPE version 2.0 developmental test indicated that the MPE provided added mission planning capabilities but there were major deficiencies related to the Flight Performance Module application, which supports fuel and endurance calculations, access to external sources of needed mission planning data such as weather and optimum path routing, and support weapons employment planning for the Stand-off Land-Attack Missile-Expanded Response.
- The EA-18G MPE version 2.2.1 is operationally effective and suitable. There were no major deficiencies found and minor deficiencies were attributed to training issues and the complexity of JMPS. JMPS barely met the 30-hour reliability requirement, demonstrating that MPE stability continues to be a hindrance to planning.
- Test results for the F-18 MPE version 2.2 indicates that this MPE will be found operationally effective and suitable with major deficiencies relating to MPE functionality and system stability. The MPE computer workstations used in the test event displayed a grounding problem that needs to be resolved prior to fielding.
- The NLH MPE version 1.0 is operationally suitable for SH-60B, SH-60F, MH-53E, and HH-60H aircraft. COTF assessed the NLH MPE version 1.0 as operationally effective for SH-60B and SH-60F aircraft and not operationally effective for MH-53E and HH-60H aircraft. The major deficiency cited for MH-53E operations was that JMPS restricts the flexibility of mission planning by removing the ability to conduct GPS-guided nonprecision approaches. The MPE's major deficiency regarding HH-60 mission planning was the limited capability to plan operations in a threat environment. The lack of capability to provide threat masking hinders aircrew attempts to plan a flight path that minimizes aircraft threat susceptibility. Information assurance was also cited as an MPE deficiency.
- DOT&E analysis of FOT&E test data indicates the V-22 JMPS MPE v1.1 is effective and suitable and is recommended for fielding. The V-22 version 1.1 MPE is acceptable to aircrew, but stability and compatibility deficiencies with the Portable Flight Planning System used by other Air Force Special Operations aircraft are still a limiting factor. The flight performance model is also immature in that it requires aircrew to manually calculate fuel burn.
- The AV-8B MPE 2.1 is operationally effective and suitable. Three major deficiencies were documented during operational test. The AV-8B MPE failed to meet the established criterion for Military Training Route planning time; the AV-8B MPE hardware does not support a sufficient number of ruggedized PCMCIA cards to allow for reliable planning of GPS-guided munitions; and the AV-8B MPE is not authorized to operate on the Navy-Marine Corps Internet in an ashore environment, precluding automatic download and install of critical updates.

## Assessment

### Platforms

- Results from a developmental test effort of the Marine Helicopter MPE version 2.0 indicate that there are functionality and stability issues with this MPE. The configuration that was tested would likely not be found effective or suitable during operational test.
- Results from a Marine Helicopter JMPS MPE version 2.1 developmental test indicated that the MPE has potential to mature as a true attack helicopter mission planning tool, but was not ready for operational test or fleet release. Deficiencies identified included inaccurate and difficult fuel planning and difficulty in printing required forms.
- Results from a C-2A JMPS MPE version 1.0 developmental test indicate that the MPE will support C-2A operations with potential difficulties noted in the area of planning instrument flight rules routes and system stability.

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## JMPS-E

- PMA-281 and COTF need to submit a TEMP Annex and IOT&E Test Plan for JMPS-E in order to obtain approval prior to the start of operational test. A coherent JMPS-E Acquisition Strategy, approved by the milestone decision authority, is required in order to properly develop follow-on increments of JMPS-E to include the Marine Corps amphibious planning functions.
  - JMPS-E developmental testing has serious stability issues that need to be resolved prior to operational testing. Other issues include difficulty entering data, improper symbology display, field entries not permitting common planning functions, and overlays not displaying correctly.
2. The Navy should continue to ensure that transfer of mission planning data to powered host platform computers occurs during developmental test.
  3. The Navy should conduct the necessary information assurance vulnerability certifications, obtain the necessary authorizations to directly connect, and then test the JMPS-M MPEs interactions with the external data network interfaces including the Navy-Marine Corps Internet, weather, and the Optimum Path Aircraft Routing System.
  4. The Navy should update the various host platform MPE Flight Performance Module applications to meet aircrew planning and accuracy expectations for fuel and endurance calculations as well as the impact of tactical maneuvering and staggered release of onboard stores such as weapons and deployable sensors.
  5. The Navy should submit a TEMP Annex for JMPS-E prior to commencing operational testing.
  6. The Navy will be required to produce an approved JMPS-E Acquisition Strategy for follow-on increments before development efforts can continue.

## Recommendations

- Status of Previous Recommendations. The Navy satisfactorily addressed all previous recommendations.
- FY09 Recommendations.
  1. The Navy should continue to improve JMPS-M MPE software stability to reduce the incidence of mission planning computer crashes.

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