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First MUOS Satellite Successfully Completes Key Test Milestone

SAN DIEGO – The Mobile User Objective System (MUOS), directed by the Communications Satellite Program Office (PMW 146), recently completed a significant test milestone for the program's first satellite.

A next-generation narrowband tactical satellite communications system, MUOS will provide the warfighter with the latest mobile technology such as simultaneous voice and data, as well as improved service to legacy users of the current Ultra High Frequency (UHF) Follow-On system.

"Since the MUOS spacecraft's Critical Design Review in March 2007, we have overseen the manufacture and delivery of hundreds of components that make up the MUOS spacecraft," said Navy Capt. Jack Nicholson, PMW 146's acting program manager.

The successful testing demonstrates that components work together as an integrated spacecraft and will meet the warfighter's needs for UHF communications. "It is a major accomplishment to have first pass success at the system level testing for such a complex spacecraft," said Nicholson.

The next steps are spacecraft level vibration and acoustic tests to simulate the launch environment, followed by thermal vacuum tests that simulate the extreme hot and cold temperature on orbit. Upon completion of these tests there will be final post-environmental performance tests to verify that the satellite works properly prior to launch.



Employees at Lockheed Martin's facilities in Sunnyvale, Calif., inspect the first Mobile User Objective System satellite following the successful integration of the Multi Beam Antenna with the spacecraft system module and core structure.

“We are about one year from being ready to launch the first MUOS spacecraft, and we are ready for the next major test event: spacecraft vibration and acoustic testing,” explained Nicholson. The first MUOS satellite is projected to provide on-orbit capability by the end of 2011.

The first MUOS satellite successfully completed Passive Intermodulation (PIM) testing, Electromagnetic Interference (EMI) and Electromagnetic Compatibility (EMC) testing, as well as the Spacecraft Level Baseline Integrated System Test (BIST) at Lockheed Martin facilities in Sunnyvale, Calif.

Completion of PIM testing assured that the high power satellite downlink transmissions do not interfere with the extremely low power signals uplinked from the legacy terminals used by the warfighter. The EMI/ EMC testing ensures self-compatibility of the payloads on the satellite, as well as satellite compatibility with the launch vehicle electromagnetic environment. BIST testing verifies the overall performance of the fully integrated MUOS spacecraft is compliant to the MUOS Performance Specification and establishes a performance baseline prior to entering the environmental test phase.

“Completion of PIM, EMI and EMC on the first pass and in less than two months on a UHF satellite as complex as MUOS is the result of months of planning and hard work by the entire MUOS space segment team,” said Nicholson. “This team was efficient at identifying and completing risk reduction activities that led to this major testing milestone.”

Following BIST, a series of critical environmental test phases that validate the overall satellite design, quality of workmanship and survivability during space vehicle launch and on-orbit operations will take place.

MUOS is the Defense Department's next-generation military satellite communication system that supports a worldwide, multi-service population of users in the narrowband. The system is designed to support users that require greater mobility, higher data rates and improved operational availability. This system will provide greater than 10 times the system capacity of the current narrowband constellation.

MUOS will support unified commands and joint task force components, DoD and non-DoD agencies, and U.S. allies by providing worldwide tactical narrowband netted, point-to-point, and broadcast voice and data services in such challenging environments as double canopy foliage, urban environments, high sea states and all weather conditions.

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