

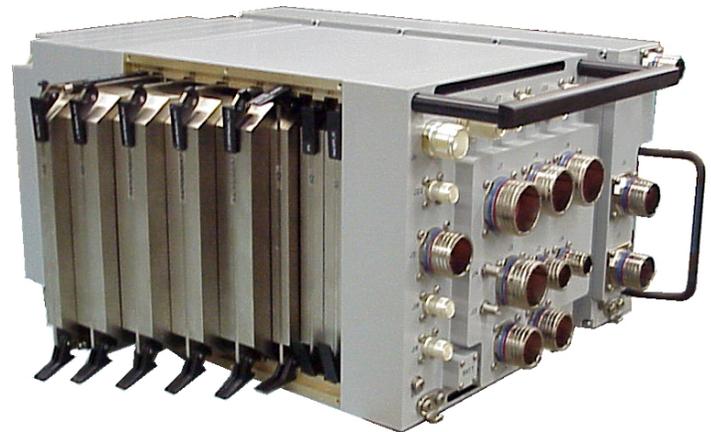
Multi-functional Information Distribution System (MIDS) (includes Low Volume Terminal (LVT) and Joint Tactical Radio System (JTRS))

Executive Summary

- The Multi-functional Information Distribution System-Low Volume Terminal (MIDS-LVT) continues to mature and is being integrated into host platforms such as amphibious ships and the AC-130U Gunship. Tests have indicated uneven performance, particularly in the Tactical Air Navigation (TACAN) function.
- The MIDS-Joint Tactical Radio System (JTRS) is in development; however, early flight tests indicate performance concerns with the TACAN function, and laboratory tests indicate performance issues with terminal start-up and Link 16 digital voice quality.

System

- MIDS-LVT is a communications and navigation terminal in full-rate production, that when integrated into a host platform provides Link 16 digital data link, Link 16 digital voice communications, and TACAN capabilities. Since production started, the MIDS-LVT has evolved with hardware, firmware, and software updates to resolve performance and stability deficiencies and to provide new Link 16 capabilities.
- MIDS-JTRS is a pre-planned product improvement of the MIDS-LVT system. When integrated into a host platform, MIDS-JTRS provides MIDS-LVT capabilities, plus three additional programmable channels capable of hosting JTRS Software Communications Architecture compliant waveforms in the 2 to 2,000 megahertz radio frequency bandwidth.
- The system under test includes the MIDS terminals and the host platform interfaces such as controls, displays, antenna, high power amplifiers, and any radio frequency notch filters.
- TACAN has an air-to-air mode and air-to-ground mode and is a primary means of air navigation by military aircraft. Link 16 data link is a joint and allied secure anti-jam high speed data link that uses standard messages to exchange information among flight or battle-group host platforms or between combat platforms and command and control systems.



Link 16 digital voice provides host platforms a secure anti-jam voice line-of-sight communications capability.

Mission

- U.S. Services and many allied nations will deploy MIDS-LVT and MIDS-JTRS-equipped aircraft, ships, and ground units in order to provide military commanders with the ability to communicate with their forces by voice, video, and data during all aspects of military operations. MIDS-JTRS networking capability and multiple waveforms (including new waveforms such as the Wideband Networking Waveform (WNN)) will allow collaboration despite geographical and organizational boundaries.
- MIDS-JTRS-equipped units will be able to seamlessly exchange information including air and surface tracks, identification, host platform fuel, weapons, mission status, engagement orders, and engagement results.

Prime Contractor

- ViaSat

Activity

- The Commander, Operational Test and Evaluation Force (COTF) completed the operational test of the MIDS-LVT on Ship (MOS) integration for amphibious ships during late 2007. Test data and the operational test report were delivered during 2008.
- The Space and Naval Warfare Systems Command conducted laboratory development test of the MOS integration into the guided missile cruiser and destroyer command and control host system.

- The 18th Flight Test Squadron, Air Force Special Operations Command, conducted the operational test of the MIDS-LVT version 6 into the AC-130U aircraft during August and September 2008. Analysis is ongoing.
- COTF conducted an operational assessment of the MIDS-JTRS during September 2008.
- The Navy conducted F/A-18E/F MIDS-JTRS TACAN developmental flight tests during 2008.
- All testing was conducted in accordance with the DOT&E-approved Test and Evaluation Master Plan (TEMP) and test plans.

Assessment

- The MOS amphibious ship operational test indicated that the data were adequate to demonstrate that the integration for amphibious ships was operationally effective and suitable. The test, however, did not successfully demonstrate the operation of MOS with the legacy Link 16 High Power Amplifier. The test team identified that MOS could not support the Link 16 Time Slot Reallocation Mode, and there was a safety hazard related to voltage markings. The Navy is reviewing the data and electrical interfaces for the amplifier compatibility problem and is evaluating the changes needed to allow the MOS to operate in the Time Slot Reallocation mode. There were also host platform timing interface problems with MOS, which affected Link 16 network entry. The safety hazard was immediately mitigated with a temporary warning placard.
- The mission planning system-guided missile cruiser and destroyer integration developmental tests are ongoing; however, initial results indicate Link 16 data link message exchange is functional. The test did discover that Aegis-guided missile cruiser track processing anomalies require correction before fielding.
- The MIDS-LVT version 6 AC-130U integration operational test has been completed by the Air Force Special Operations Command's 18th Flight Test Squadron, the Operational Test Agency. They are analyzing the test data and have not yet released their end of test report. The program manager and MIDS-LVT integration contractor have released new software to correct many of the critical deficiencies uncovered during developmental and operational test, and another release of software is planned to address the remaining deficiencies.
- The FA-18 MIDS-JTRS Operational Assessment is ongoing. MIDS-JTRS TACAN developmental test results from

F/A-18E/F flight tests conducted during 2008 by the Navy indicate this capability is not effective. Performance issues include erroneous TACAN station identification, range, and bearing information provided to the host platform and aircrew. Laboratory and flight tests also indicate deficiencies with Link 16 digital voice communications and MIDS-JTRS terminal navigation. The MIDS program manager and developmental contractors are developing new software to resolve performance issues. COTF has extended the Operational Assessment to examine planned performance improvements of the next MIDS JTRS software. This software is expected to be ready for flight test in November 2008.

- Developmental test results from MID-JTRS laboratory tests indicate developmental issues with terminal start-up and quality issues with Link 16 digital voice communications. The MIDS program manager and developmental contractors developed new software and firmware that improves terminal start-up. They also developed enhanced digital voice coder software to improve Link 16 digital voice quality.

Recommendations

- Status of Previous Recommendations. There were no previous recommendations.
- FY08 Recommendations.
 1. The Navy should continue to develop an engineering solution for MOS compatibility with the legacy High Power Amplifier or consider developing a replacement amplifier capability.
 2. The Navy should design and test a solution to the MOS Time Slot Reallocation deficiency in order to maximize the use of limited Link 16 timeslots within a network and resolve timing interface issues to support MOS entry into Link 16 networks.
 3. The Navy should correct and test the implementation of the fighter control commands for the MOS integration into the guided missile cruisers and destroyers and should investigate Aegis track processing anomalies.
 4. The MIDS program manager should resolve the MIDS-LVT and MIDS-JTRS TACAN performance issues and support flight testing of TACAN performance before the start of host platform integration developmental and operational test.