

Navy Multiband Terminal (NMT)

Executive Summary

- The Navy's Commander, Operational Test and Evaluation Force (COTF) conducted the Navy Multiband Terminal (NMT) IOT&E from July 20 through August 19, 2011, on two surface ships, one submarine, a shore site, and various supporting sites.
- The NMT met requirements to provide legacy Extremely High Frequency (EHF) communications over Milstar and Ultra High Frequency Follow-On EHF Enhanced payloads; X-band over the legacy Defense Satellite Communication System and Wideband Global System (WGS); and Ka-Band over WGS.
- When the IOT&E showed that NMT is not operationally suitable, the NMT program manager performed root cause analyses and undertook corrective actions to correct deficiencies found during the IOT&E and improve suitability.
- COTF conducted further operational testing from June 1 through August 1, 2012, to verify that the deficiencies had been corrected. The testing included two surface ships and one shore site, operating under realistic conditions. The NMT is now operationally suitable.

System

- The NMT system is the next-generation maritime military satellite communications terminal for the Navy and its coalition partners; the Navy uses it for enhancing protected and survivable satellite communications.
- The NMT is interoperable with the legacy service satellite communications terminals, including the Follow-on Terminal and Navy EHF Satellite Program.
- The NMT has variants for surface ships, submarines, and shore sites. The NMT system variants have two major component groups: the Communications Group and the Antenna Group.
- The Communications Group includes the following:
 - Operator User Interface
 - Power Distribution Unit
 - Keyboard
 - EHF and Wideband drawers
 - Prime Power Interface
- The Antenna Group varies across different platforms and includes new, reused, and modified antennas to support the required Q- and Ka-Bands, as well as X-band with Global Broadcasting System.



- The key features of the NMT system are:
 - Open system architecture
 - Full compatibility with legacy terminal components
 - High commonality, reliability, and effective fault isolation
 - Mission Planning capability

Mission

The Navy Component Commander uses the NMT to provide secure, protected, and survivable connectivity across the spectrum of mission areas including land, air, and naval warfare; special operations; strategic nuclear operations; strategic defense; theater missile defense; and space operations and intelligence.

Major Contractor

Raytheon Net-Centric Systems – Marlboro, Massachusetts

Activity

- COTF conducted the NMT IOT&E from July 20 through August 19, 2011, on two surface ships, one submarine, a shore site, and various supporting sites. COTF executed the test in accordance with the DOT&E-approved Test and Evaluation Master Plan and test plan.
- The Assistant Secretary of the Navy (Research, Development, and Acquisition) authorized the NMT Program Office to procure FY12 quantities of 26 NMTs in support of the program and an additional 24 NMTs in support of other programs such as foreign military sales.

NAVY PROGRAMS

- The NMT program manager performed root cause analyses and undertook corrective actions to correct deficiencies found during the IOT&E.
- COTF conducted further operational testing from June 1 through August 1, 2012, to verify that the deficiencies had been corrected. The testing included two surface ships and one shore site, operating under realistic conditions.
- The Navy plans to conduct a Full-Rate Production Decision Review for NMT in November 2012.
- COTF plans to conduct an FOT&E in 3QFY14 to test the NMT's ability to operate over Advanced EHF satellites using the extended data rate waveform.

Assessment

- NMT can meet requirements to provide legacy EHF communications over Milstar and Ultra High Frequency Follow-On EHF Enhanced payloads; X-band over the legacy Defense Satellite Communication System and WGS; and Ka-Band over WGS. NMT also demonstrated the capability to receive Global Broadcast System broadcasts over WGS.
- The FY11 IOT&E demonstrated that the NMT is not operationally suitable. Deployed ships' communications could be hampered by poor reliability and long repair times when compared to the Navy's requirements. The time needed to repair the NMT when spare parts were unavailable resulted in long periods of degraded operations or complete outages either for a specific communications band or for the entire NMT system during IOT&E.
- During the recent operational test to verify corrections of deficiencies observed during IOT&E, the NMT demonstrated a Mean Time Between Critical Failure of 1,461 hours for surface ship variants and 701 hours for shore variants against a requirement of 1,400 hours. The low reliability for shore variants is due to software problems with the operator interface

that require system reboots to restore the NMT to operation. These reboots temporarily disrupted communications. The operational consequences were mitigated by the availability of redundant Q-band terminals and the ability to shift communications between terminals. The corrective actions taken by the program manager improved suitability. The NMT is now operationally suitable.

- The recent operational test demonstrated that improvements to NMT logistic support are still required for deployed ships. The NMT was capable of adequately supporting shore sites and ships in port. Off-board logistics delay time for a ship deployed in the Mediterranean was 287 hours against a requirement of 100 or less hours.
- The Navy may not identify additional risks, other than those observed during the IOT&E, until the FOT&E when Advanced EHF modes of operation, including the new extended data rate waveform and the new Mission Planning System, will be tested. These capabilities were not evaluated during the IOT&E because they depend on capabilities being delivered by the Advanced EHF program on a different timeline.

Recommendations

- Status of Previous Recommendations. The Navy has made satisfactory progress on all previous recommendations.
- FY12 Recommendations. The Navy should:
 1. Synchronize the NMT FOT&E with the Air Force's Advanced EHF Multi-Service Operational Test and Evaluation to efficiently use test resources.
 2. Continue to explore methods to improve logistic supportability for deployed ships prior to the FY14 FOT&E.
 3. Correct the operator interface errors that are reducing shore site reliability.