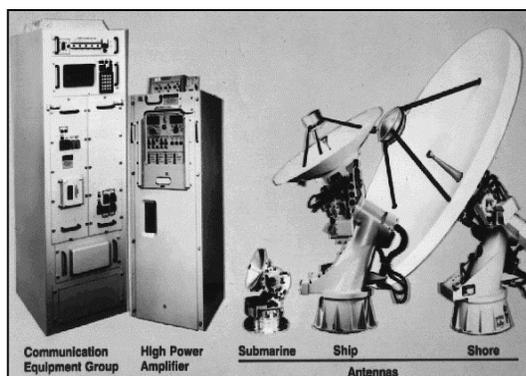


NAVY EXTREMELY HIGH FREQUENCY SATELLITE COMMUNICATIONS PROGRAM (NESP)



The Navy Extremely High Frequency (EHF) Satellite Communications Program (NESP) terminal connects ship, shore, and submarine platforms to the MILSTAR satellite constellation. The NESP terminal supports survivable, enduring, and flexible worldwide command and control communications to strategic and tactical Naval forces through all levels of conflict. The NESP terminal provides minimum essential secure communications in stressed environments that require anti-jam and low-probability-of-intercept capabilities.

There are three different configurations of the NESP terminal corresponding to ship, shore, and submarine platforms. Although each terminal has the same basic capabilities, their antennas and other peripheral equipment vary by platform. The NESP terminal is being upgraded to add a tactical medium data rate (MDR) capability to the existing strategic low data rate (LDR) capability. A limited number (64) of the existing NESP ship and shore terminals are being upgraded with an MDR appliqué to achieve the combined low/medium data rate MILSTAR capability. The submarine LDR terminals are undergoing MDR upgrades, including modification for a new mast and 16" antenna, as well as addition of the super high frequency and Global Broadcast Service capabilities.

The Navy is developing two new communications controllers, the Navy EHF Communications Controller (NECC) and the Time Division Multiple Access (TDMA) Interface Processor (TIP). The NECC and TIP are baseband interface units that allow more efficient use of MILSTAR satellite resources. The NECC supports LDR networks, while the TIP supports MDR networks.

BACKGROUND INFORMATION

The NESP low data rate terminal reached full production status in 1993. IOT&E for the low data rate terminal included three operational tests that supported MILSTAR Milestone IIIA and IIIB decisions. Since the NESP IOT&E occurred before the first MILSTAR satellite was on orbit, Navy UHF Follow-On satellites with EHF payloads supported the three IOT&E events.

Two follow-on operational tests were conducted after the first MILSTAR satellite was in orbit. The first verified the NESP terminal operated with an in-orbit MILSTAR satellite. It also addressed unresolved issues and deficiencies observed in prior tests, while the second addressed LDR anti-jam and low probability of intercept performance.

TEST & EVALUATION ACTIVITY

Testing of the NESP MDR terminal began with the successful launch of MILSTAR Flight 4 on February 27, 2001, with DT/OT events occurring from March-July 2001. NESP terminals participated in a MILSTAR system test, which demonstrated compatibility and interoperability with the low and medium data rate payloads in orbit. Tests included satellite acquisition, simultaneous network operations, interoperable network and point-to-point calls with Army, Navy, and Air Force terminals, and antenna and network control functions.

Anti-jam and low probability of intercept are two important characteristics of the NESP MDR terminal and MDR OT&E will employ modeling and simulation, rather than testing, to evaluate the terminal's ability to meet requirements. Model validation testing of both the anti-jam and low probability of intercept models was conducted in 2001 and analysis of the test results is pending.

The NESP terminal with the NECC participated in a Navy developmental test in FY01. OT&E of the NESP terminal with the NECC was planned for September 2001, but was subsequently delayed. This test will use on-shore and at-sea terminals to determine operational effectiveness and suitability.

The MDR OT&E for the NESP terminal with the MDR appliqué is planned for FY02. The test will be conducted using on-shore and at-sea terminals, and will include Army terminals to demonstrate Service terminal interoperability. Follow-on tests will be conducted to address the TIP (still under development) and any other issues not fully resolved during this test.

The submarine MDR terminal operational test schedule will be integrated into the overall MILSTAR and NESP terminal test schedules to the greatest extent possible, consistent with submarine terminal progress. Current plans are to conduct submarine terminal testing jointly during operational testing of the NESP ship and shore terminals. Operational test of the NESP Follow-On Terminals is scheduled to begin 3-4QFY02.

TEST & EVALUATION ASSESSMENT

At the completion of the LDR IOT&E, DOT&E concluded that the ship and shore NESP terminals were operationally effective and suitable. These findings supported full fleet introduction. COMOPTEVFOR and DOT&E recommended a follow-on operational test to evaluate the suitability of the submarine terminal and the survivability of the ship and submarine terminals.

Although the MILSTAR LDR submarine terminal does meet the technical and operational requirements for low probability of intercept (LPI), operational tests showed that the submarine had a substantially higher probability of signal intercept than developmental tests had indicated. These LPI results reinforce the role of operational testing in providing the warfighter with the most accurate operational performance information possible.

No assessment can be made regarding operational effectiveness and suitability of the MDR-capable NESP terminals since operational testing has not yet been conducted. The NESP TEMP was approved by DOT&E in FY01. Associated test plans are being updated for DOT&E approval in anticipation of MDR testing with MILSTAR Flight 4 in FY02.