

Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)

Executive Summary

- The Assistant Secretary of the Air Force, Acquisition, Technology and Logistics (SAF/AQ) increased the Low-Rate Initial Production purchase to include all 84 planned terminals in February 2019.
- The U.S. Strategic Command (USSTRATCOM) obtained early operational use of FAB-T in June 2019, allowing use of the FAB-T on operational networks for operations, during test events, and USSTRATCOM exercises. USSTRATCOM operators and testers are using Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) to test and identify deficiencies that the Program Management Office (PMO) must fix before the terminals are usable at operational sites planned for installation in FY20.
- Testers discovered additional deficiencies during Integrated Developmental Testing and Evaluation (IDT&E) in June through December 2019. Raytheon and the PMO are developing software fixes for the deficiencies USSTRATCOM requires to be fixed to support operations.
- The Air Force Test and Evaluation Test Center (AFOTEC) began IOT&E in October 2019, evaluating the system in benign and threat-representative environments.

System

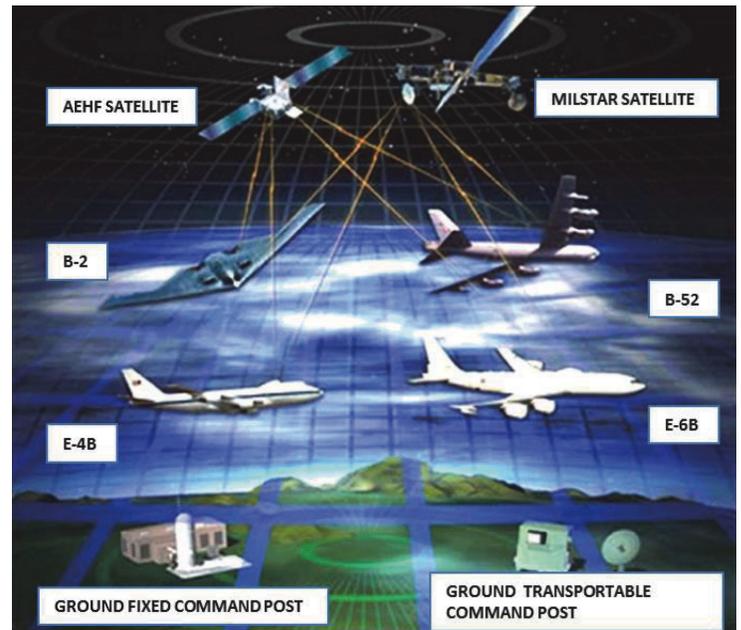
- FAB-T consists of ground and aircraft communication terminals with two terminal types: Command Post Terminals (CPTs) and Force Element Terminals (FETs). FAB-T is part of the terminal and control segments of the Advanced Extremely High Frequency (AEHF) satellite system and is designed to operate with AEHF Low Data Rate and Extended Data Rate waveforms.
- The CPT will replace existing airborne (E-4B and E-6B), ground-fixed, and ground-transportable Milstar CPTs. The CPT will include satellite and network control functions, end-user telecommunication device interfaces, and the ability to operate the terminal from a distant location using a remote node.
- The FET is intended to be installed in airborne force elements (B-52 and RC-135).

Mission

- The President, the Secretary of Defense, Combatant Commanders, and supporting Air Force component forces

Activity

- SAF/AQ (Milestone Decision Authority) approved an increase to the total Low-Rate Initial Production quantity from 53 to 84 FAB-T CPT terminals on February 7, 2019.
- On May 21, 2019, USSTRATCOM requested early operational use of FAB-T prior to the Air Force Space Command (AFSPC)



AEHF - Advanced Extremely High Frequency

will use FAB-T to provide strategic nuclear and non-nuclear command and control with extremely high frequency, wideband, protected, and survivable communications terminals for beyond line-of-sight communications.

- Air Force Space Command (AFSPC) will use the FAB-T to perform satellite telemetry, tracking, and commanding (TT&C) functions for the AEHF constellation, including management of the satellites, communication networks, and cryptologic keys.
- USSTRATCOM and U.S. Northern Command will use the FAB-T to provide Integrated Tactical Warning and Attack Assessment satellite communications of incoming missile threats to military forces from fixed and mobile sites.

Major Contractor

Raytheon Space and Airborne Systems – Marlborough, Massachusetts

FY19 AIR FORCE PROGRAMS

Operational Trial Period and IOT&E to support FAB-T events. AFSPC approved the USSTRATCOM request on June 3, 2019.

- The Program Executive Officer certified FAB-T ready for dedicated IOT&E on August 23, 2019, and deferred evaluation of ground transportable CPT suitability until FOT&E.
- DOT&E approved the FAB-T CPT IOT&E test plan on August 28, 2019. AFOTEC intends to conduct the IOT&E in two phases.
 - Phase one tests FAB-T in benign operational environments, started in October 2019, and includes the IDT&E data. Phase one uses FAB-T developmental software versions fielded for early operational use.
 - Phase two is expected to use updated FAB-T software, which will include deficiency corrections required by USSTRATCOM. Phase two is planned to start in December 2019 and includes testing in benign, threat, contested, and cyber environments.
- USSTRATCOM and AFSPC commenced FAB-T early operational use at five sites during 4QFY19 and 1QFY20.
- The Air Force Plans to start development of the FAB-T FET in FY20. SAF/AQ designated FAB-T FET as a middle tier of acquisition program using a Rapid Prototyping Strategy.

Assessment

- The FAB-T PMO has made progress resolving FAB-T deficiencies; however, new deficiencies continue to be discovered with new software builds. Most deficiencies occur when the terminals are logged onto operational networks because the test networks and simulations do not emulate the variety or number of legacy terminals with which FAB-T must work.
- USSTRATCOM is supporting the use of FAB-T on operational networks for testing during day-to-day operations and during exercises. This allows for stressing the FAB-T at

exercise-level operational conditions that cannot be created in the laboratory and allows early operator involvement and feedback. This approach enables the identification of deficiencies that USSTRATCOM or AFSPC require be corrected before transition from legacy terminals to the FAB-T for NC3 or TT&C operations.

- The Air Force's threat emulators representing nuclear scintillation effects and threat-representative downlink jamming effects planned for IOT&E are behind schedule.
- The uplink jammer will not be available until FOT&E in FY21.
- The PMO is behind schedule delivering the FAB-T capability due to delays in resolving software deficiencies and the continued identification of new software deficiencies.
- Extended Data Rate capability, Presidential and National Voice Conferencing capability, the new FAB-T Airborne antenna, representative airborne platforms (E-4B and E-6B) employing the FAB-T, and the operationally representative CPT with a ground transportable antenna will not be ready before the end of FAB-T IOT&E. Operational evaluation of these capabilities will be accomplished during FOT&E.

Recommendations

The PMO should:

1. Update the FAB-T Test and Evaluation Master Plan (TEMP) to address the testing that will be delayed to an FOT&E and for the correction of deficiencies.
2. Begin the planning for the FAB-T FET and complete the FET TEMP.
3. Include resources and funding in the FAB-T and FET TEMP for the development and use of threat emulation for testing.