

B-2 Extremely High Frequency (EHF) Satellite Communications (SATCOM) and Computer Upgrade Program

Executive Summary

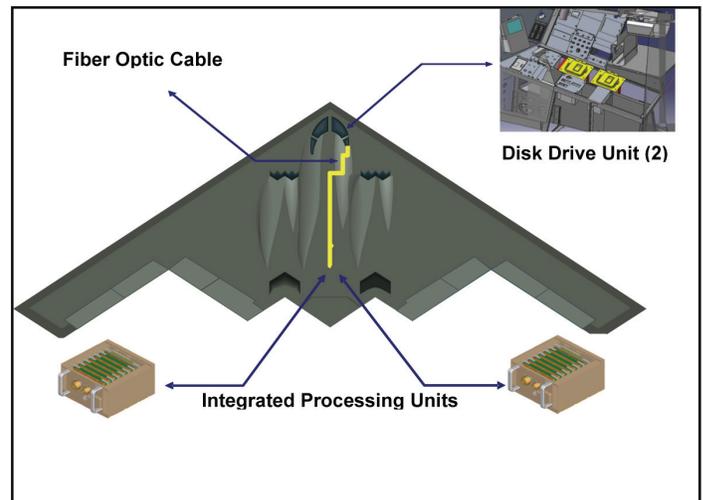
- Developmental flight testing that began in September 2010 completed in April 2012.
- The Air Force Operational Test and Evaluation Center (AFOTEC) conducted IOT&E from June through August 2012 to assess the program's operational effectiveness, suitability, and mission capability. The IOT&E included 6 sorties and 56 hours of dedicated flight testing including navigation, long duration missions, and both conventional and nuclear weapons delivery events. IOT&E further assessed effectiveness and suitability data across 283 hours of developmental/integrated flight test missions conducted during formal developmental testing.
- IOT&E results indicate the system is operationally effective. However, the limited flight test hours accumulated preclude DOT&E from making a definitive assessment of the system's ability to meet the legacy system demonstrated Mean Time Between Critical Failure (MTBCF) of 671 hours. Therefore, continued monitoring of installed system performance in operational aircraft is necessary to confirm reliability.
- The Air Force plans to conduct the Full-Rate Production Decision in December 2012.

System

- The B-2 is a multi-role, low-observable bomber, capable of delivering conventional and nuclear munitions. It has four turbofan engines and twin side-by-side weapons bays.
- B-2 system avionics include a multi-mode radar, GPS-aided navigation, and a Defensive Management System for radar warning functions.
- The B-2 Extremely High Frequency (EHF) Satellite Communications (SATCOM) and Computer Upgrade program is designed to deliver capability across distinct increments. Increment 1 upgrades the core flight management processing capability of the B-2 and lays the foundation for subsequent avionics upgrades. Increment 1 replaces the existing aircraft flight management computers with two new Integrated Processing Units and two new Data Drive Units to increase data storage. Increment 1 also re-hosts the aircraft Flight Management Operational Flight Program from its legacy flight management software programming language, JOVIAL, to C.

Activity

- The Air Force conducted B-2 EHF SATCOM Increment 1 testing in accordance with the DOT&E-approved Test and Evaluation Master Plan and IOT&E plan.



- Follow-on B-2 EHF SATCOM Increments will remove the legacy B-2 MILSTAR AN/ASC-36 Ultra High Frequency (UHF)/Air Force SATCOM System, and add the Family of Advanced Beyond Line-of-Sight Terminals and a low observable antenna to support EHF and Advanced EHF communications connectivity. The final Increment is planned to be software-centric and provide full software integration of the B-2 EHF SATCOM upgrade, including Global Information Grid connectivity.

Mission

- Combatant Commanders use the B-2 aircraft to attack global targets during the day or at night, in all weather, in highly defended threat areas at the strategic, operational, and tactical levels of warfare.
- Commanders use the B-2 to engage high-value, heavily defended target sets including: command and control facilities, airfields, industrial complexes, logistical and air defense systems, lines of communication, and battlefield forces and equipment.

Major Contractor

Northrop Grumman – Falls Church, Virginia

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Assessment

- Results from the IOT&E indicate B-2 met legacy SATCOM, nuclear and conventional weapons accuracy, and navigational system accuracy.
- Accumulated system flight test hours were sufficient to evaluate overall system maintainability consistent with the B-2 Global Strike Concept of Operations. However, the

limited flight test hours accumulated preclude DOT&E from making a definitive assessment of the system's ability to meet the legacy system demonstrated operational MTBCF of 671 hours. Therefore, continued monitoring of installed system performance in operational aircraft is necessary to confirm reliability.

- Operational availability of 96.6 percent did not meet the legacy system performance, but the difference is not operationally significant.

Recommendations

- Status of Previous Recommendations. The Air Force has addressed all previous recommendations.
- FY12 Recommendation.
 1. The Air Force should monitor fielded performance to ensure that system MTBCF and operational availability meet user requirements within a narrower set of confidence bounds as fleet flying hours accumulate.