

Space-Based Space Surveillance (SBSS) Block 10

Executive Summary

- The Space-Based Space Surveillance (SBSS) Block 10 system is now a contributing sensor to the U.S. Strategic Command Space Catalog.
- The Air Force launched the SBSS satellite at the end of FY10. During FY11, they completed both on-orbit developmental testing and IOT&E, leading up to formal Air Force Space Command operational acceptance in 1QFY12.
- DOT&E recommends follow-on evaluation associated with sensor processing, software baseline changes, and the SBSS operations crew configuration.
- DOT&E also recommended an analysis of ongoing space surveillance network acquisition programs to ensure their interdependencies deliver a coherent space situational awareness picture.

System

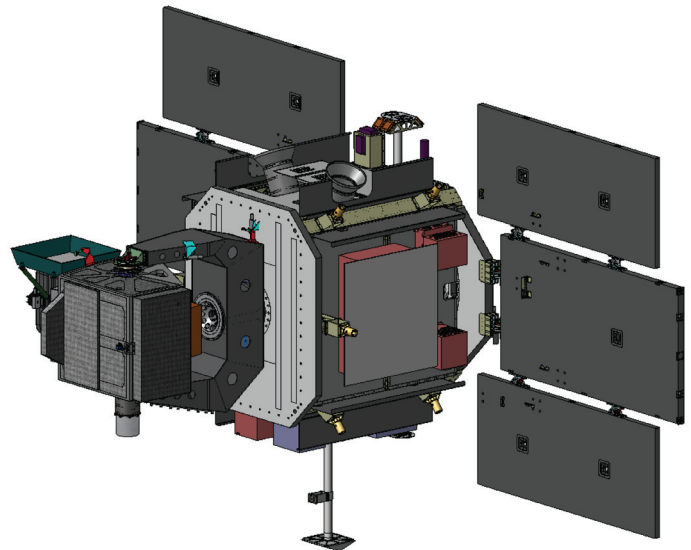
- The Air Force developed SBSS Block 10 to replace and enhance the capability previously provided by the Midcourse Space Experiment Space-Based Visible Sensor, which reached end-of-life in 2008.
- SBSS consists of a single satellite in low-earth orbit carrying a payload with a visible-spectrum sensor.
- The 1st Space Operations Squadron operates the system from the SBSS satellite operations center located at Schriever Air Force Base, Colorado.

Mission

- Commanders of the Joint Space Operations Center at Vandenberg Air Force Base, California, will use SBSS to provide timely analysis of high interest satellite maneuvers, predictions of potential collisions for tracked objects, location of lost objects, and identification of unknown objects.

Activity

- The Air Force successfully launched the SBSS Block 10 satellite from Vandenberg Air Force Base using a Minotaur IV on September 25, 2010.
- After initial on-orbit operations, the program office and the 1st Space Operations Squadron conducted a system characterization period to refine data processing algorithms and to confirm that the system was meeting expected specifications.
- SBSS began supplying data to the Space Catalog midway through system characterization (February 2011).
- The Air Force Operational Test and Evaluation Center conducted a dedicated IOT&E for SBSS from March 23 to April 22, 2011.



- U.S. Strategic Command personnel will use SBSS to provide space surveillance, reconnaissance, intelligence, environmental monitoring, and data fusion and exploitation to satisfy space situational awareness needs of Service members.
- National Air and Space Intelligence Center will use SBSS to detect changes in the status of high interest objects, which could indicate a potential maneuver or instability resulting from a failure to maintain proper control of a satellite.

Major Contractor

Boeing Space and Intelligence Systems – El Segundo, California

- DOT&E provided a classified assessment to Congress, Secretary of Defense, Secretary of the Air Force, and the Commander of Air Force Space Command.

Assessment

- SBSS provides significantly greater accuracy and capacity in reporting relative to current ground-based surveillance systems.
- The Air Force Operational Test and Evaluation Center's IOT&E was adequate and conducted in accordance with the DOT&E-approved Test and Evaluation Master Plan and operational test plan.

AIR FORCE PROGRAMS

- The Air Force tested SBSS with the current operational configuration, which is a blended Air Force and contractor crew. When the operational unit makes a transition to an all-Air Force crew, the Air Force should conduct a follow-on evaluation.
- During the later stages of integrated testing, a data formatting problem was discovered which prevented full utilization of SBSS mission data by one user. This problem should have been identified earlier in developmental testing by sharing sample data products with the end users.

Recommendations

- Status of Previous Recommendations. This is the first annual report for this program.
- FY11 Recommendations. The Air Force should:
 1. Operationally evaluate the expected transition from a blended Air Force and contractor crew to an all-Air Force crew.
 2. Re-evaluate current space surveillance network management with respect to uncorrelated sensor data to ensure all collection platforms, including SBSS, contribute to optimize space situational awareness
 3. Analyze other ongoing acquisition programs, including SBSS Follow-on, Space Fence and Joint Space Operations Center Mission System to ensure the overall space surveillance system can use the data new sensors will collect.