

## **BCBR Article**

### **Keeping an eye on outer space**

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BOULDER — Ball Aerospace will have a hand in detecting and tracking satellites, debris and other objects in space that pose a threat to U.S. satellites when a new tracking system is launched July 8 from Vandenberg Air Force Base in California.

Developed by The Boeing Co. (NYSE: BA) and Ball Aerospace & Technologies Corp. in Boulder, the Space Based Space Surveillance system satellite will monitor debris that could collide with U.S. satellites that provide communications, navigation, weather forecasting and other services.

Some of those other objects in space the system will keep an eye on likely will be other nation's spy satellites, and the data collected will be used by the Department of Defense to support military operations.

The system passed a U.S. Air Force mission-readiness review this past September and was ready for a scheduled launch on Oct. 30. But a hardware issue with the Minotaur IV rocket forced the Air Force to postpone launch until this summer.

The system should improve the way the United States tracks and monitors other satellites and debris in space. It uses a digital sensor mounted on a high-speed gimbal to locate and track objects without having to reposition the entire satellite. A gimbal keeps objects level in unstable environments. It is the first system that allows the Air Force to monitor objects from space rather than by ground-based sensors subject to limitations such as weather and the time of day.

Boeing is the prime contractor for the surveillance system, providing overall systems engineering and integration, the Satellite Operations Center and initial mission operations.

Ball Aerospace developed, designed, manufactured, integrated and tested the satellite and sensor, using an onboard processor and software from Boeing.

Ball Aerospace's sensor is mounted on a gimbal that allows the sensor to pivot to obtain clear lines of sight increasing the accuracy of identifying objects in space.

“Ball Aerospace is proud to have developed an on-orbit dedicated sensor for situational awareness and delivered it to the Air Force and Boeing for its anticipated July 8 launch,” said David L. Taylor, president and chief executive of Ball Aerospace & Technologies Corp. “I

believe once SBSS is on orbit and operational, it will prove to be a giant step forward in knowledge and security for our space assets and architecture.”

“A ground-breaking program like SBSS takes a tremendous amount of teamwork and dedication to succeed,” said Craig Cooning, vice president and general manager of Boeing Space and Intelligence Systems. “The fact that we were ready to deliver this satellite for launch less than three years after the critical design review is a testament to the commitment of every person on the team.”

The vast majority of the estimated tens of millions of pieces of space debris includes slag and dust from solid rocket motors, surface degradation products such as paint flakes, coolant released by nuclear powered satellites and objects released due to the impact of micrometeoroids. Impacts of these particles cause erosive damage, similar to sandblasting.

Unprotected parts of a spacecraft, like solar panels and optical devices such as telescopes, or star trackers are subject to constant wear by debris and micrometeorites. When the orbits of these objects overlap the trajectories of spacecraft, debris becomes a collision risk.