

The world's best navigator

GPS is about to get even better, thanks to a next-generation satellite developed by Boeing. **By Marc Selinger**

The Global Positioning System, or GPS, has been a guiding star for the U.S. military and civilians worldwide for decades. And thanks to Boeing, that navigation system will soon get even better.

Boeing Space and Intelligence Systems is putting finishing touches on the first of the GPS Block IIF satellites, the newest series of GPS spacecraft for the U.S. Air Force. Boeing will deliver the first of the satellites to the Air Force in early 2010 to prepare for a mid-2010 launch.

GPS is a space-based, worldwide navigation system providing users with highly accurate, three-dimensional position, velocity and timing information 24 hours a day. Boeing has been the prime contractor for most GPS satellites and is under contract to build 12 of these next-generation models.

"Boeing has a long history of building GPS satellites for the U.S. Air Force," said Craig Cooning, vice president and general manager of Boeing Space and Intelligence Systems. "The GPS IIF system will bring more capability and improved mission performance to the GPS constellation."

Boeing also provides the Operational Control Segment that controls the entire existing GPS constellation (more than 30 satellites) and will control the next-generation models.

Created by the Defense Department to enhance U.S. military warfighting capability, GPS is available for use, free of charge, to anyone with a GPS receiver. Since its development, the system has seen rapid adoption by civilians—with new applications continuously being developed.

Increased civil and commercial use of GPS, coupled with lessons learned from years of military operations, drove a

requirement to modernize the system and augment capabilities. In 1996, Boeing was initially selected to support the Air Force in guiding the introduction of new capabilities and technologies into the Block IIF platform.

This next-generation satellite is the product of Boeing's heritage with 39 successful satellites from GPS Block I and Block II/IIA missions and more than 30 years of teamwork with the Air Force. ■

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GRAPHIC: Boeing's first Global Positioning System IIF, shown in this artist's concept, has completed a series of tests, and the program is meeting key milestones. The first IIF is scheduled to be delivered to the U.S. Air Force in early 2010. LINDA MATSUMOTO/BOEING

Guiding star

Each Boeing GPS IIF satellite will deliver:

- Two times greater predicted signal accuracy than heritage satellites
- New signals for more robust civil and commercial aviation applications
- Better resistance to jamming in hostile environments, meeting the needs of emerging doctrines of "navigation warfare"
- A 12-year design life providing long-term service and reduced operating costs
- An on-orbit, reprogrammable processor that can receive software uploads for improved system operation

Let's talk

Talk candidly with your manager about performance and development

It's the time of year when Boeing employees and managers are encouraged to talk candidly about Performance Management, including progress toward goals and objectives and developing future skills.

"Performance Management is all about helping employees develop so they can reach their goals," said Joan Sato-Hernandez, director, Talent Management. "Regular conversations between managers and employees create an ongoing framework of support that helps all team members reach their full potential."

Two important Performance Management objectives need to be completed in the coming months:

- Close-out discussions between managers and employees, from Nov. 30 to Jan. 8. Employees are encouraged to prepare for these meetings by completing an informal self-assessment.
- Between Jan. 4 and March 1, employees formulate their Business Goals and Objectives, as well as their Development Plans, for 2010. Employees should apply the S.M.A.R.T. (specific, measurable, achievable, relevant and timely) framework to ensure the successful accomplishment of each goal. Completing this phase helps employees clarify roles, responsibilities and performance expectations. It is also an opportunity to discuss development goals for the



PHOTO: Executive office administrator Anita Taylor and her manager, Lawrence Oliver, speak candidly about her performance and opportunities for development within the company. BOB FERGUSON/BOEING

employee targeted to his or her current job and career goals.

To encourage conversations between managers and employees throughout the year, Boeing plans to unveil an upgraded Performance Management tool in January. Employees who need to prepare Business Goals and Objectives prior to January should use the templates posted on the on the Strategy, Compensation and Benefits Web site (<http://hr.web.boeing.com/index.aspx?com=9&id=106>) under Performance Management.

– Ron Taylor and Andrew Favreau

Speed-of-light defense

Earlier this year, Boeing demonstrated the ability of mobile laser weapon systems to perform a unique mission: track and destroy small unmanned aerial vehicles (UAVs).

During U.S. Air Force-sponsored tests at the Naval Air Warfare Center in China Lake, Calif., the Mobile Active Targeting Resource for Integrated eXperiments (MATRIX), which was developed by Boeing under contract to the Air Force Research Laboratory, used a single, high-brightness laser beam to down five UAVs at various ranges. Laser Avenger, a Boeing-funded initiative, also shot down a UAV.

"The Air Force and Boeing achieved a directed-energy breakthrough with these tests," said Gary Fitzmire, vice president and program director of Boeing Missile Defense Systems' Directed Energy Systems unit. "MATRIX's performance is especially noteworthy because it demonstrated unprecedented, ultra-precise and lethal acquisition, pointing and tracking at long ranges using relatively low laser power."

– Marc Selinger



PHOTO: An unmanned aerial vehicle is hit by the high-energy laser beam fired from a Boeing-developed, trailer-mounted test bed known as the Mobile Active Targeting Resource for Integrated eXperiments, or MATRIX. U.S. AIR FORCE RESEARCH LABORATORY