Boeing Orbital Express Program Passes Major Test Milestones

The Boeing [NYSE: BA] Orbital Express system, a Defense Advanced Research Projects Agency (DARPA) program aimed at demonstrating fully autonomous on-orbit satellite servicing, last month completed two major test milestones. The program completed its Baseline Integrated System Test (BIST) of the Autonomous Space Transport Robotic Operations (ASTRO) spacecraft and a series of electromagnetic interference and compatibility tests to verify component operation in the spacecraft's actual electromagnetic environment.

"The BIST is one of our most challenging and exciting milestones," said Paul Geery, Orbital Express program manager for Boeing. "It demonstrates that we are making the necessary progress toward the launch of the Orbital Express system later this year."

The Orbital Express System consists of two satellites: Boeing's ASTRO servicing spacecraft and NextSat, a prototypical, modular next-generation serviceable client satellite developed by Ball Aerospace.

The Orbital Express launch is scheduled for October, when the system will demonstrate for the first time: fully autonomous rendezvous out to 7 km with a capability that could support rendezvous at separation distances up to 1,000 km; soft capture and sub-meter range autonomous station-keeping; on-orbit refueling and component replacement as well as other robotic operations. Upon a successful demonstration, Orbital Express will provide the foundation for developing an operational system that can provide routine on-orbit servicing of existing and future space assets.

"An operational version of Orbital Express could be deployed as early as 2009 to extend the useful life or enhance the capabilities of dozens of satellites at a fraction of the cost of replacing them," said Geery. "We could offer the capability to reposition satellites to optimize their coverage, safely de-orbit them and avoid potential threats."

During the recent integrated system test, the Orbital Express team operated all major spacecraft subsystems and software individually and then collectively for the first time to assess and validate their flight readiness. Included are systems for electrical power, command and data handling, flight control, and attitude and propulsion control. Other components include the rendezvous sensors, autonomous fluid transfer unit and the robotic arm that will be used to grapple the NextSat spacecraft and transfer replacement batteries and electronics to it.

DARPA selected Boeing as the prime integrator for Phase II of the Orbital Express Advanced Technology Demonstration program in March 2002. Team partners include NASA; Ball Aerospace; Northrop Grumman Space Technology; MacDonald, Dettwiler and Associates Ltd.; the Charles Stark Draper Laboratory, Inc.; and Starsys Research.

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