



XSS-10 Micro Satellite

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Space Vehicles Directorate

Air Force Research Laboratory

FACT SHEET

The Air Force Research Laboratory (AFRL) launched the first experimental microsatellite on January 29, 2003, from Cape Canaveral, FL. The XSS-10 (Experimental Spacecraft System) was developed at AFRL's Space Vehicles. The tiny, low-cost satellite weighing approximately 65 pounds is the first in a series of future microsatellites the Air Force plans to use for inspection, rendezvous, and docking and close-up maneuvering around other space objects.

These new satellites are being flown under the Experimental Spacecraft System (XSS) Micro-satellite Demonstration Project. In conjunction with the Air Force Space Command, Air Force Space and Missiles Systems Center, the Naval Research Laboratory, and industry, missions are underway to actively evaluate future applications of micro-satellite technologies.

Key Technologies

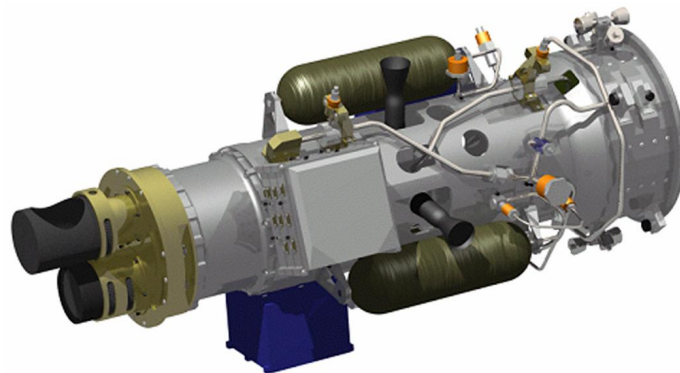
- Lightweight propulsion system
- Guidance, navigation & control (GNC)
- Miniaturized communications system
- Primary lithium polymer batteries
- Integrated camera and star sensor
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XSS-10, was launched as a secondary payload aboard a Delta II launch vehicle carrying a Global positioning Satellite (GPS) satellite. The mission demonstrated complex interactions of line-of-sight guidance with basic inertial maneuvering.

The micro-satellite was attached to the Delta II second stage. Once the second stage separated from the GPS satellite, the micro-satellite waited for a sunlit Air Force Space Control Network pass before it ejected from the second stage to commence an autonomous inspection sequence around the second stage. Live video transmitted to ground stations. The entire mission lasted approximately 24 hours.

Milestones

- Successful mission duty cycle test- Sep 1998
- GNC & Digital Signal Processor software delivery- Dec 1998.
- Mission operations development- July 1999.
- Avionics delivery- Oct 2000.
- Micro-satellite delivered to Kirtland Air Force Base- Nov 2000.
- Environmental testing and space qualification- July 2001.
- Integration with Delta II launch vehicle- Sep 2001.
- Launched at Cape Canaveral Air Force Station- Jan 2003



Current as of February 2005