

Tactical Satellite-2

The Space Vehicles Directorate developed the TacSat-2 microsatellite as the first in a series to demonstrate the objectives of the joint warfighting space, or JWS, initiative.

The TacSat-2 mission is an ongoing funded Advanced Concept Technology Demonstration, which is to exhibit the tenets of responsive space concepts. It has three main objectives:

1. *Rapid Design, Build, Test* with a launch-ready spacecraft within 15 months from authority to proceed.
2. *Responsive Launch, Checkout, Operations* to include launch within one week of a call-up from a stored state, perform an on-orbit checkout within one day, conduct lean operations and downlink data directly to the theater.
3. *Militarily Significant Capability* to include obtaining images with tactically significant resolution provided directly to the theater.

TacSat-2 is a joint project of the Air Force Research Laboratory, the DOD Space Test Program (Space and Missile Systems Center's Space Development and Test Directorate), the Naval Research Laboratory, the Army Space Program Office, Air Force Space Command and the Space Warfare Center. Project participants also include NASA and its Jet Propulsion Laboratory.

The spacecraft launched in December 2006 from NASA's Wallops Flight Facility, Wallops Island, Va., onboard a Minotaur I rocket. It was placed into a circular (410 kilometers altitude) orbit at a 40-degree inclination. The spacecraft was in its mission orbit until it decayed in February 2011.

The microsatellite featured the following 11 onboard instrument packages:

- Enhanced Commercial Imager
- RoadRunner On-board Processing Experiment
- Common Data Link
- Target Indicator Experiment
- Autonomous Operations
- Hall Effect Thruster
- Inertial Stellar Compass
- Low Power Transceiver
- Integrated GPS Occultation Receiver
- Atmospheric Density Spectrometer
- Experimental Solar Array



AFRL provided the spacecraft and first year of on-orbit operations. Space and Missile System Center's Space Development and Test Wing provided launch services. The spacecraft was built by MicroSat Systems, Inc., with the command and data handling system, electrical power system, and the flight software supplied by Broad Reach Engineering. Finally, Jackson and Tull was responsible for innovative integration and testing of the spacecraft.