



CubeSat ELaNa Launch on Glory Mission

OVERVIEW

NASA will launch a class of small research satellites called "CubeSats" for three universities as the first of a series of the Agency's Educational Launch of Nanosatellite, or ELaNa, missions. This first set of satellites is manifested as an auxiliary payload on the Taurus XL launch vehicle for NASA's Glory mission, planned for liftoff on Feb. 23. NASA's Launch Services Program at the Kennedy Space Center in Florida manages the ELaNa project.

This set of CubeSats was selected through a competitive process, working with consortia under the existing National Space Grant College and Fellowship Program. Future

CubeSat launches will be selected and prioritized via NASA's Space Operations Mission Directorate's CubeSat Launch Initiative. Two additional competitive selections were conducted during 2010.

Basic CubeSat Facts:

- Built to standard dimensions (Units or U) of 10x10x11 centimeters - about 4 inches
- Can be from 1U to 3U in size
- Weigh about 1 kilogram (2.2 pounds) per U

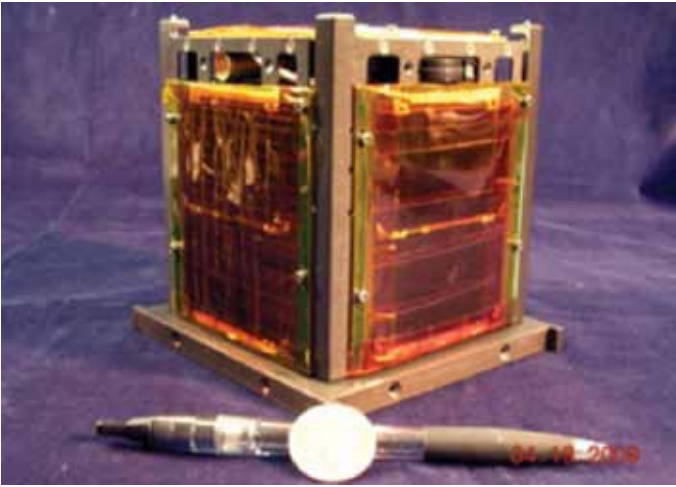
CUBESAT DEPLOYMENT

For the Glory mission, there will be a single Poly Picosatellite Orbital Deployer (P-POD) attached to the Taurus XL rocket's stage 3



Hermes

A CubeSat created by University of Colorado, designated as Hermes, is pictured above. Its mission is to improve CubeSat communications through the in-orbit testing of a high data-rate communication system that will allow large quantities of data to be downlinked.



Explorer-1 Prime (Unit 1)

Pictured above is a CubeSat created by Montana State University—designated as Explorer-1 Prime, or E1P—to honor the launch and discoveries of the Explorer-1 mission, which detected the Van Allen radiation belts more than 50 years ago. E1P carries a miniature Geiger tube to measure intensity and variability of electrons in the Van Allen belts.

aft skirt, which is capable of deploying the three CubeSats. The Kennedy Space Center adapted the P-POD, which was designed and manufactured by the California Polytechnic State University in partnership with Stanford University, and has flown previously on U.S. Department of Defense, commercial, and Russian launch vehicles. As the Taurus XL rocket reaches an altitude of 640 kilometers (about 400 miles) the Glory spacecraft will be deployed. The CubeSats will separate from the P-POD about 10 seconds after Glory has completed separation. The Taurus launch vehicle will provide an indication that the P-POD door has opened and the CubeSats have been released. At this point, the CubeSats will be in orbit. After 45 minutes, the CubeSat transmitters will turn on and the universities' ground stations will listen for their respective beacons. The universities will determine and announce the operational status of their CubeSats.

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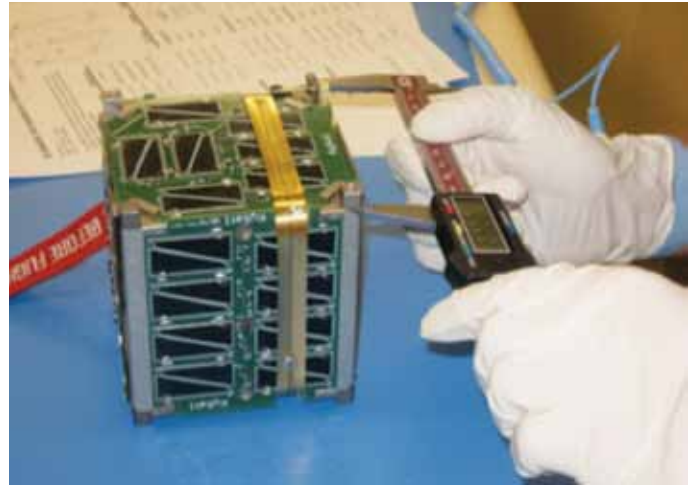
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KySat-1

Pictured above is a CubeSat created by Kentucky Space, a consortium of state universities, and designated as KySat-1. It includes a camera to support a scientific outreach program intended for, but not limited to, Kentucky students in K-12. The satellite also has a 2.4-gigahertz industrial, scientific and medical band radio, which will be used to test high-bandwidth communications in the license-free portion of the S-band.

SAFETY AND MISSION ASSURANCE

The CubeSat developers verified that their satellites complied with the P-POD requirements and provided for mission assurance. NASA jointly conducted a mission readiness review and conducted mission integration and safety verification for each CubeSat developer.

FOR MORE INFORMATION:

For additional information about NASA's CubeSat Launch Initiative program, visit:

http://www.nasa.gov/directorates/somd/home/CubeSats_initiative.html

For additional information about the ELaNa CubeSats, visit:

Hermes: http://spacegrant.colorado.edu/COSGC_Projects/co3sat/

KySat-1: http://kysat.typepad.com/my_weblog/kysat-1/

Explorer-1 (Prime): http://www.ssel.montana.edu/explorer-1_prime/

NASA Facts