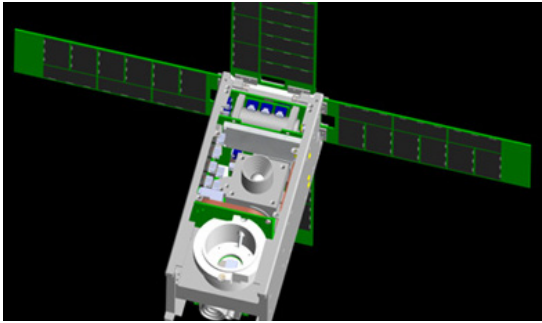




CUBESAT ELaNa VI LAUNCH ON L-36 Mission



The Cosmic X-Ray Background Nanosatellite (CXBN) was developed and built by Morehead State University in Kentucky. Its primary purpose is to increase the precision of measurements of the cosmic x-ray background in the 30–50 kiloelectron volt (keV) range. CXBN also will provide a short-duration supplement to NASA's Radiation Belt Storm Probes (RBSP) mission and is outfitted with state-of-the-art Cadmium Zinc Telluride-based x-ray and gamma-ray detectors.

Mission Overview

NASA is partnering with the National Reconnaissance Office (NRO) to launch small research satellites, or CubeSats, for four universities on the third installment of the Educational Launch of Nanosatellite (ELaNa) mission. The Launch Services Program at NASA's Kennedy Space Center in Florida manages the ELaNa missions. The CubeSats will be flown as part of the Operationally Unique Technologies Satellite, or OUTSat, an auxiliary payload aboard the Atlas V 401 rocket scheduled to lift off on August 2. Three Poly Picosatellite Orbital Deployers, or P-PODs, will carry and deploy the ELaNa VI CubeSats.

The ELaNa CubeSat Launch Initiative enables university students to obtain hands-on experience and gives private industry access to a low-cost vehicle. Since its inception in 2010, the program has selected more than 60 CubeSats from private and public institutions around the U.S., including six that were launched successfully on the ELaNa III mission. The ELaNa VI CubeSats were chosen from a prioritized list of universities that responded to two public announcements of NASA's CubeSat Launch Initiative in 2011. NASA announced another call for proposals in mid-August 2012. It will close in November.

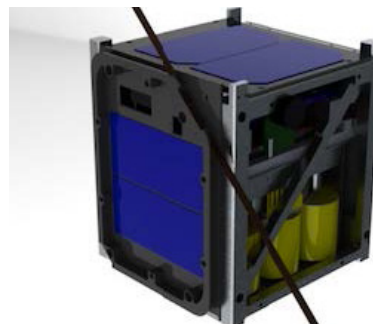
Basic CubeSat Facts:

- Built to standard dimensions of 1 unit, or 1U, which is equal to 10×10×11 centimeters (cm)
- Can be 1U, 2U, 3U, or 6U in size
- Can weigh less than 1 1/3 kilograms (kg) (3 pounds [lb]) per unit; 6U CubeSats may be up to 12–14 kg
- Can be deployed from a standard P-POD

CubeSat Deployment

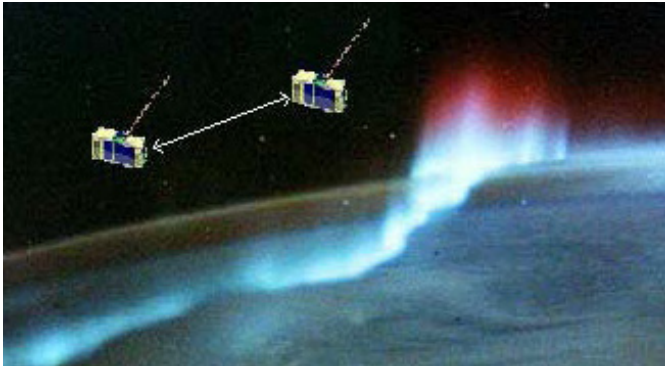
Four CubeSat projects were selected for the ELaNa VI mission. The NRO funded the Naval Postgraduate School (NPS) to develop the NPS CubeSat Launcher (NPSCuL), which can attach up to eight P-PODs to a single adaptor. This allows up to 24 single-unit (1U) CubeSats to be launched at one time. The CubeSats on OUTSat are sponsored by either the NRO Mission Support Directorate or NASA's Launch Services Program. The P-POD was designed and manufactured by the California Polytechnic State University (Cal Poly) in San Luis Obispo to integrate CubeSats onto the launch vehicle. This P-POD design has flown previously on Department of Defense, NASA, and commercial launches. For NASA, Cal Poly integrates the CubeSats with the P-POD and provides the entire assembly to the launch vehicle integrator.

After the main payload deploys, the CubeSats will separate from their P-PODs. After 45 minutes in orbit, the CubeSat transmitters will turn on and university ground stations will listen for their beacons, determine the small satellites' functionality, and announce their operational status. Each CubeSat mission's duration and orbital life will vary, but each mission is anticipated to last at least 180 days. Upon mission completion, the CubeSats will fall to Earth, burning up in the atmosphere.



CP5 was developed and built by the California Polytechnic State University in San Luis Obispo. Its primary purpose is to test a deployable spacecraft deorbiting a thin-film mechanism consisting of a miniature solar sail. After the sail deploys, observations will be made from the ground to detect any altitude or velocity degradation of the spacecraft.

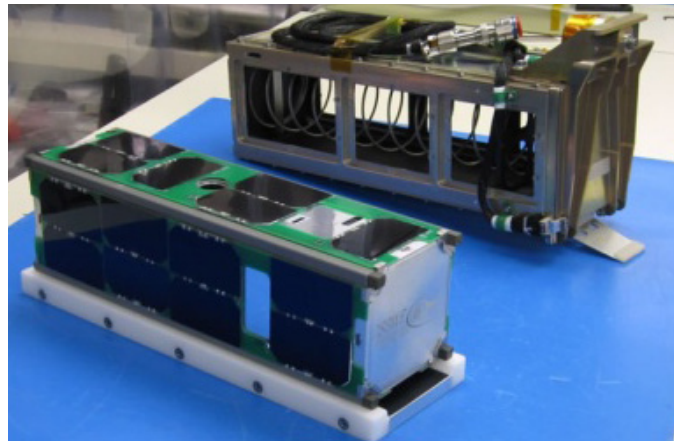
NASAfacts



The CubeSat for Ions, Neutrals, Electrons, and Magnetic fields (CINEMA) was designed and built by the Space Science Laboratory at the University of California, Berkeley, and funded by the National Science Foundation to conduct magnetospheric science and collect critical space weather measurements. CINEMA will image energetic neutral atoms in the magnetosphere and make onboard measurements of electrons, ions, and magnetic fields at high latitudes.

Safety and Mission Assurance

Each CubeSat developer verified that its satellite complied with the P-POD requirements. NASA conducted mission integration and safety verifications for the CubeSats to ensure that their presence and deployment would not add risk to the primary mission. NASA jointly conducted a mission readiness review with each CubeSat developer.



The Colorado Student Space Weather Experiment (CSSWE) was developed and built by the University of Colorado and funded by the National Science Foundation to perform orbital onboard space weather measurements. The CubeSat will measure the directional differential flux of Solar Energetic Protons (SEPs) and Earth's radiation belt electrons to support the Radiation Belt Storm Probe mission and help understand the relationship between SEPs, flares, and coronal mass ejections.

For more information about NASA's CubeSat Launch Initiative program, please visit http://go.nasa.gov/CubeSat_initiative.

For more information about the ELaNa VI CubeSats, please visit any of the following Web sites:

CINEMA: http://mstl.atl.calpoly.edu/~bklofas/Presentations/DevelopersWorkshop2009/2_Science/4_Glaser-CINEMA.pdf

CSSWE: <http://lasp.colorado.edu/home/csswe/>

CP5: <http://polysat.calpoly.edu/CP5.php>

CXBN: <http://ssc.moreheadstate.edu/missions/>

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