



**National Reconnaissance Office Release
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NRO's ULTRASat Providing CubeSat Rideshares on U.S. Air Force AFSPC-5 Mission

The U.S. Air Force AFSPC-5 mission, scheduled to launch May 20 on an Atlas V rocket from Cape Canaveral Air Force Station, Fla., will include an NRO auxiliary payload, called Ultra Lightweight Technology and Research Auxiliary Satellite (ULTRASat). ULTRASat is composed of 10 CubeSats from five organizations. Nine of the CubeSats are sponsored by the NRO, and one is sponsored by NASA.

This launch marks the first time the Aft Bulkhead Carrier (ABC) will be used on an Air Force mission. The ABC is used to carry the auxiliary payload on the Atlas V. ABC was developed in 2007 by the NRO and United Launch Alliance and has flown on two NRO missions.

The previous missions carried CubeSats that were built by the U.S. Army and other Department of Defense and Intelligence Community entities responsible for developing and testing the nation's next generation of national security assets. In addition, since 2007, the NRO and other U.S. government partners, including NASA, have worked with universities, service academies, laboratories, and private industry to design, create, launch, and operate the CubeSats. By participating in this process through the full life cycle of a satellite, students and novice engineers experience firsthand how satellite programs and cutting-edge technology are applied, including experiments conducted on orbit.

The NRO's Office of Space Launch is responsible for planning, integrating, and executing the mission to deploy the CubeSats.

ULTRASat's CubeSats are housed in eight Poly-Pico Orbital Deployers (P-PODs) built by California Polytechnic State University (Cal Poly) in San Luis Obispo, Calif. The eight P-PODs are integrated into a structure built by the Naval Postgraduate School in Monterey, Calif. Seven of the eight P-PODs contain nine NRO-sponsored CubeSats, while one of the P-PODs contains one NASA-sponsored satellite.

The ULTRASat payload houses nine NRO-sponsored CubeSats, including:

- Three developed by the U.S. Naval Academy, including the USS Langley, whose primary objective is to demonstrate the ability to host a web server on a CubeSat. A second, built in conjunction with the George Washington University, will characterize the performance of miniature pulse plasma thrusters. The third, Parkinsonat, will demonstrate the operation of a communications payload with two transponders in the Amateur Satellite Service. One transponder enables handheld texting and position/data reporting between handheld radios anywhere on Earth and/or the Internet, and the second transponder can support up to 30 simultaneous text users from laptop-type portable ground stations.
- Three “OptiCubes,” developed by Cal Poly, will provide on-orbit targets for ground assets to calibrate sensors for orbital debris studies and small-object tracking improvements.
- Two developed by Aerospace Corporation, in coordination with MIT, called AeroCube-8, will demonstrate new technologies using, among other things, a scalable ion electrospray propulsion system.
- One developed by the Near Space Launch and Air Force Research Lab for Globalstar Evaluation and Risk Reduction Spacecraft will demonstrate the use of the Globalstar constellation as a path for near-continuous command and control of low earth orbit space vehicles.

The NASA-sponsored CubeSat is:

- The eleventh installment of the Educational Launch of Nanosatellite (ElaNa) mission. Privately developed by The Planetary Society, LightSail-1 is designed to demonstrate the viability of using solar sailing for propulsion on a small, three-unit CubeSat. The Lightsail program is embarking on two missions: this 2015 shakedown cruise to test the spacecraft's systems and a full-fledged solar sailing flight in 2016.

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The NRO is a joint Department of Defense-Intelligence Community organization responsible for developing, launching, and operating America's intelligence satellites to meet the national security needs of our nation.