

Air Force Research Laboratory prepares DSX spacecraft for launch

Wright-Patterson Air Force Base, Ohio – Air Force Research Laboratory (AFRL) engineers have completed the final assembly and integration of the Demonstration and Science Experiments (DSX) spacecraft in preparation for its placement on the SpaceX Falcon Heavy rocket projected to launch from the Kennedy Space Center in Florida in late June 2019.

The AFRL DSX flight experiment will conduct research to advance the Department of Defense's understanding of the Van Allen radiation belts and the effect they have on spacecraft components. DSX's elliptical path in medium Earth orbit (MEO) will provide an increased understanding of this orbital regime which will enhance the nation's capability to field resilient space systems.

DSX's mission is different from most other Air Force flight experiments as it is a purely scientific mission. The spacecraft is equipped with a unique suite of technologies such as space weather sensors and graphite antenna booms used to conduct experiments with very-low frequency (VLF) radio waves. Because VLF experiments require very long antennas, DSX has two sets of immense deployable booms. One set extends 80 meters tip-to-tip and the other extends 16 meters tip-to-tip, making the DSX spacecraft one of the largest deployable structures in orbit.

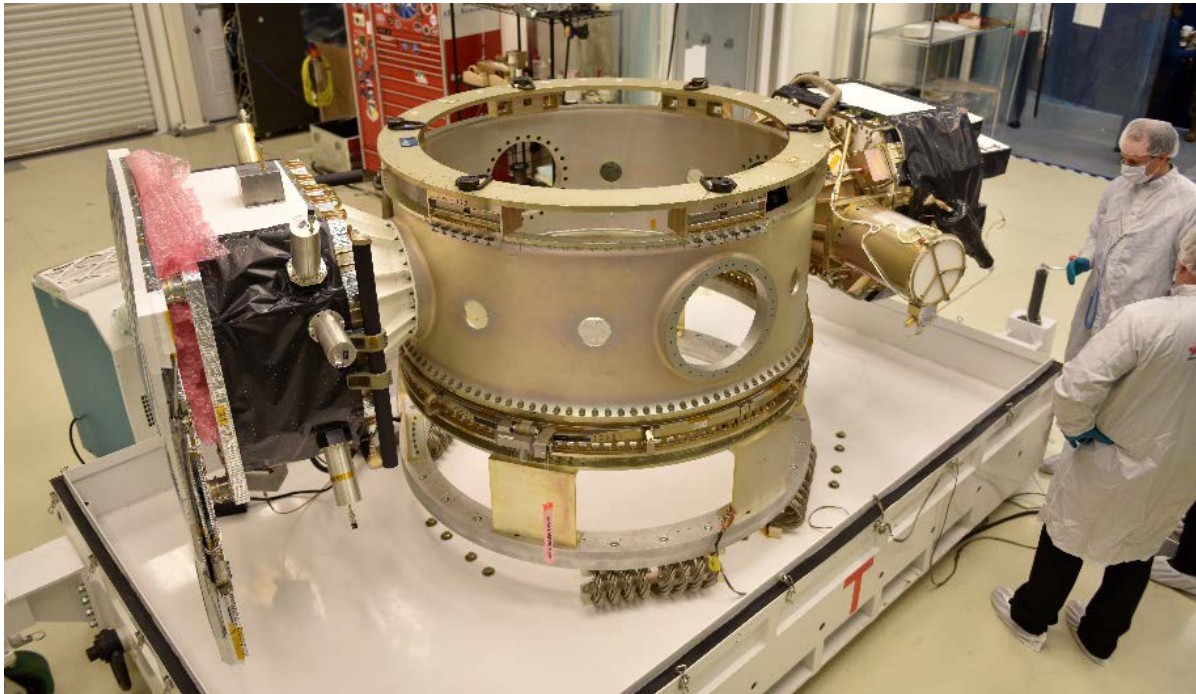
“The Space Domain has never been more important to our nation than it is today” said Maj. Gen. William Cooley, AFRL commander. “The DSX satellite experiment will greatly increase our understanding of the environment spacecraft operate in and will give us the knowledge to build even better satellites to protect and defend our space assets. I am immensely proud of the AFRL scientists, engineers, and technicians that conceived and built the DSX satellite.”

DSX will conduct at least a one year of on-orbit experiments. Through several experiments, DSX will research how weather and radiation in space impact spacecraft electronics and materials. In addition to the environmental experiments, another experiment will analyze the structural behavior of DSX’s large deployable antenna booms, yielding results which can be applied to the design and maneuvering of large spacecraft structures in the future.

The DSX program is led by the AFRL Space Vehicles Directorate located at Kirtland AFB, N.M. with key team members from the Air Force Space and Missile Systems Center headquartered at Los Angeles AFB, Calif. The DSX bus was manufactured by Sierra Nevada Corporation headquartered in Sparks, Nev. In addition to in-house development of several energetic particle instruments, various payloads have been developed and supported by mission partners including: University of Massachusetts Lowell in Lowell, Mass. Stanford University in Stanford, Calif., NASA Jet Propulsion Laboratory in Pasadena, Calif., the AFRL Aerospace Systems Directorate at Wright-Patterson AFB, Ohio, and NASA Goddard Spaceflight Center in Greenbelt, Md.

About AFRL

The Air Force Research Laboratory (AFRL) is the primary scientific research and development center for the United States Air Force. AFRL plays an integral role in leading the discovery, development and integration of affordable warfighting technologies for our air, space, and cyberspace force. With a workforce of more than 11,000 across nine technology areas and 40 other operations across the globe, AFRL provides a diverse portfolio of science and technology ranging from fundamental to advanced research and technology development. For more information, visit: www.afresearchlab.com.



Air Force Research Laboratory DSX spacecraft in the final preparation stages before shipment to the Kennedy Space Center in Florida for launch on a Space X Falcon Heavy Rocket. Photo Credit: U. S. Air Force