National Aeronautics and Space Administration

OVERVIEW

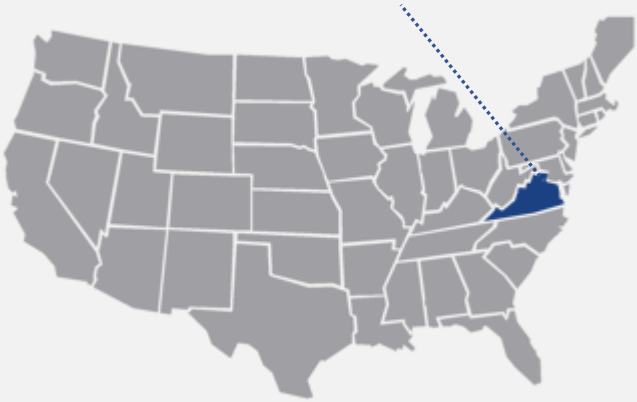
Orbital ATK CRS-8 Mission

Orbital ATK's seventh contracted cargo resupply mission (CRS-8) with NASA to the International Space Station will deliver about 7,400 pounds of science and research, crew supplies and vehicle hardware to the orbital laboratory and its crew. Launch is targeted for Saturday, Nov. 11, 2017.

Launch Vehicle
Antares 230 Rocket

- Features all new RD-181 engines
- Increased performance and flexibility

Launch Site:
Wallops Flight Facility, Virginia



Eugene Andrew Cernan

NASA Astronaut • 1934 - 2017

The Cygnus spacecraft for the OA-8 space station cargo resupply mission is named in honor of Gene Cernan, who is recognized as the last person to walk the Moon. Cernan, who passed away in January of 2017, was the Commander of Apollo 17, the final lunar landing, and was one of only three humans to travel to the Moon on two different occasions.

Cygnus Spacecraft

- Will deliver hardware and supplies to support dozens of science and research investigations
- Will spend 3 weeks attached to the space station on the Unity module
- In December, will dispose of several tons of trash during destructive re-entry into Earth's atmosphere

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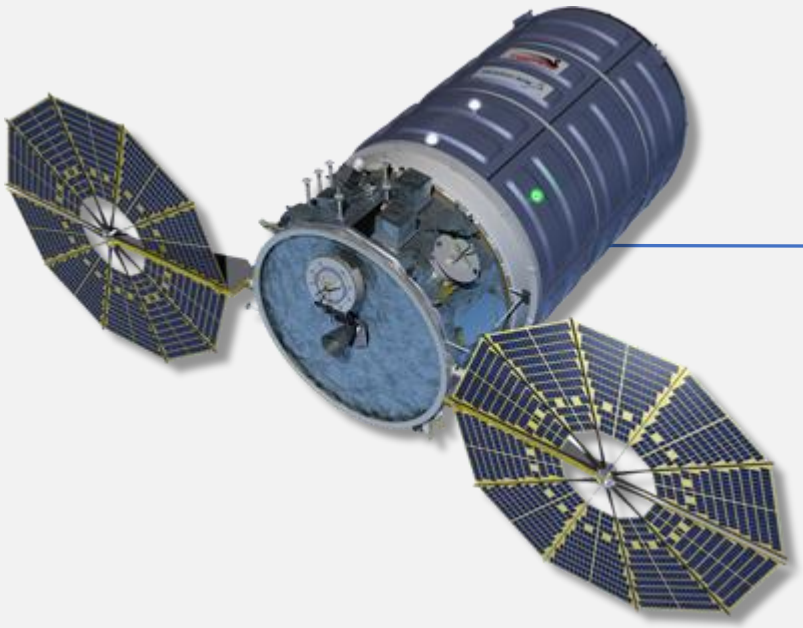
CARGO



Crew Supplies
2,734.1 lbs. / 1,240 kg

Science Investigations
1631.42 lbs. / 740 kg

Spacewalk Equipment
291.0 lbs. / 132 kg

Vehicle Hardware
1,875.2 lbs. / 851 kg

Computer Resources
75.0 lbs. / 34 kg

Total Cargo:	**7,359.0 lbs. / 3,338 kg**
Total Pressurized Cargo with Packaging:	**7,118.7 lbs. / 3,229 kg**
Unpressurized Cargo (NanoRacks Deployer):	**240.3 lbs. / 109 kg**

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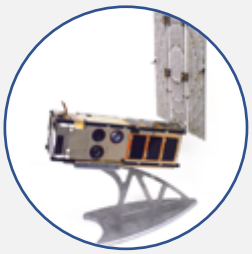
RESEARCH

The new experiments arriving to the orbital laboratory will challenge and inspire future scientists and explorers. Science payloads will study communication and navigation, microbiology, animal biology and plant biology.

The E. coli AntiMicrobial Satellite (EcAMSat) mission will investigate space microgravity effect on the antibiotic resistance of E. coli, a bacterial pathogen responsible for urinary tract infection in humans and animals. Antibiotic resistance could pose a danger to astronauts, especially since microgravity has been shown to weaken human immune response. The experiment will expose two strains of E. coli to three different doses of antibiotics. Results from this investigation could help determine appropriate antibiotic dosages to protect astronaut health during long-duration missions and help us understand how antibiotic effectiveness may change as a function of stress on Earth.

The Optical Communications and Sensor Demonstration (OCSD) project will study high-speed optical transmission of data and small spacecraft proximity operations. It will test functionality of laser-based communications using CubeSats that provide a compact version of the technology. Results from OCSD could lead to significantly enhanced communication speeds between space and Earth and a better understanding of laser communication between small satellites in low-Earth orbit.

The Biological Nitrogen Fixation in Microgravity via Rhizobium-Legume Symbiosis (Biological Nitrogen Fixation) investigation examines how low-gravity conditions affect the nitrogen fixation process of Microclover, a resilient and drought tolerant legume. The nitrogen fixation process, a process by which nitrogen in the atmosphere is converted into a usable form for living organisms, is a crucial element of any ecosystem necessary for most types of plant growth. This investigation could provide information on the space viability of the legume's ability to use and recycle nutrients and give researchers a better understanding of this plant's potential uses on Earth.



As space exploration increases, so will the need for improved power and communication technologies. The Integrated Solar Array and Reflectarray Antenna (ISARA), a hybrid solar power panel and communication solar antenna that can send and receive messages, tests the use of this technology in CubeSat-based environmental monitoring. ISARA may provide a solution for sending and receiving information to and from faraway destinations, both on Earth and in space.