

NASA mission with 7,000 pounds of key science on way to ISS

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Washington: Carrying 7,000 pounds of research materials that will directly support over dozens of key investigations on the orbiting laboratory, a cargo-laden Orbital ATK Cygnus spacecraft soared towards the ISS.

A burst of smoke and column of flame on Sunday trailed a United Launch Alliance Atlas V rocket as it powered the cargo mission from the Cape Canaveral Air Force Station in Florida onto an orbital path to rendezvous with the International Space Station in three days.

The mission will deliver experiments, equipments and supplies to the orbiting laboratory and its six-member crew of astronauts and cosmonauts, the US space agency, NASA, said in a statement.

"We are looking forward to getting more science facilities and numerous research investigations. There are 324 investigations during this increment pair. It's important to have a regular cadence of resupply flights, and we are looking forward to regular resupply to use the station as intended," said Kirk Shireman, NASA's programme manager of the ISS.

This is the first flight in a series that will include a crew change in addition to a Russian progress cargo craft leaving and another one coming to the station.

In the near future, Boeing and United Launch Alliance plan to use the Atlas V to launch astronauts to the station in the CST-100 Starliner for NASA's Commercial Crew Programme.

SpaceX is preparing its own spacecraft combination -- Falcon 9 and Crew Dragon -- to carry astronauts to the station in the near future.

"The crew members need these critical supplies from the Earth to do their important work and we intend to do everything possible to enable their mission to continue," added Frank Culbertson, president of Orbital ATK's Space Systems Group and a former astronaut.

Cygnus will be grappled on December 9 by NASA astronaut Kjell Lindgren, using the space station's robotic arm to take hold of the spacecraft.

The spacecraft will spend more than a month attached to the space station before its destructive re-entry into the Earth's atmosphere, disposing of about 3,000 pounds of trash.

Much of the scientific cargo will be used in research by the station astronauts.

With the new supplies aboard the station, the crew will install the laboratory equipment including a new life science facility that will allow studies on cell cultures, bacteria and other microorganisms.

The astronauts will conduct experiments to survey the behaviour of gases and liquids and clarify the properties of molten steel in weightlessness.

The station's current crew, known as Expeditions 45 and 46, will conduct more than 250 science and research efforts during its mission.

Cargo carried to space on this mission includes payloads that were lost on two previous failed cargo missions.

Several teams of students ranging from elementary school age to university level also have a particular interest in this launch because their CubeSats are tucked inside a NanoRacks carrier for deployment from the station.

CubeSats are small, inexpensive spacecraft built in standardised 4.5-inch-cubed units.

Students typically use the sophisticated craft to gain hands-on experience in electronics and design.

Private companies were exploring the opportunities of launching versatile but simple spacecraft that could be used in groups for everything from establishing rapid communication links to weather forecasting.

The spacecraft will remain connected to the station through most of January as astronauts first unpack the new gear and then load some 3,000 pounds of used and unneeded equipment into the Cygnus along with trash.

It will all burn up in the Earth's atmosphere after the Cygnus is released from the station.

"NASA is delighted at the continued progress made possible by our investment in commercial space," noted NASA deputy administrator Dava Newman.

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