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## Atlas V rocket launches the S.S. John Glenn



**The rocket and payload await the command to ignite and launch.**

### **Story and Photos**

**By Jeff M. Hardison © April 21, 2017 at 3:07 p.m.**

**CAPE CANAVERAL** – The launch of an Atlas V rocket on Tuesday (April 18) morning from Cape Canaveral Air Force Station heralds continued success by the National Aeronautics Space Administration (NASA).

**This is a closer look at the rocket and the Orbital ATK CRS-7 on its top before launch. This photo was taken from a relatively far distance, where NASA provided a viewing area on one of the causeways in the area. This is a view across the Indian River lagoon in Brevard County.**



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**Please See Videos Link on Top of April Page**

**This is an excellent video of the Orbital ATK CRS-7 lift-off provided via NASA's team of videographers. This set of video clips includes perspectives from the ground, from some airborne unit taking videos and from the rocket.**

**Video Courtesy of NASA - Published April 21, 2017 at 3:07 p.m. on the Home Page of *HardisonInk.com*.**

This launch used the United Launch Alliance's (ULA) Atlas V rocket.

The rocket took the Orbital ATK's Cygnus cargo spacecraft, which was named the S.S. John Glenn, to the space station for docking and delivery that is scheduled to occur on Saturday (April 22).

This mission includes the delivery of cargo to the International Space Station (ISS) so the astronauts can continue to conduct experiments – include in excess of another 250 experiments being made possible by this one delivery flight.



**Some seconds into its flight, the rocket is seen leaving Florida for space as it pushes the Orbital ATK CRS-7 higher and higher. Below this picture are some more still shots showing the rocket as it continues away from the planet to deliver its cargo to the people on the International Space Station.**

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This was the largest payload ever carried to the International Space Station by an Atlas V.

Thousands of government and private enterprise workers combined their talents and resources to bring this supply mission to fruition.

Since first taking flight in 2002, Atlas V rockets have sent NASA spacecraft on 70 previous missions to support communications, weather forecasting, missile warning systems, surveillance and scientific research.

The United Launch Alliance rocket's successful 11:11 a.m. (Eastern) liftoff on Tuesday (April 18) from Cape Canaveral Air Force Station further establishes this rocket brand as the most reliable and accomplished engine to send things into space.

Rockets launching from Cape Canaveral Air Force Station in Florida lift off from three launch pads assigned to commercial rocket companies. United Launch Alliance's (ULA) Atlas V rocket launches from Space Launch Complex 41, ULA's Delta IV rocket launches from SLC-37, and SpaceX's Falcon 9 rocket launches from SLC-40.

Only SpaceX rockets are currently launching from Kennedy Space Center at Launch Complex 39A.

When the hatch is opened by the astronauts on Saturday (given the scheduled arrival time occurs then), they will see the name of the delivery vehicle – the S.S. John Glenn.

This launch is named the S.S. John Glenn OA-7 Cargo Delivery Mission to the International Space Station in honor of the late John Herschel Glenn Jr.

Glenn had a storied career and is an American icon of "The Right Stuff." Among his accomplishments was serving as a United States senator.

In March 1942, Glenn entered the Naval Aviation Cadet Program and was commissioned in the Marine Corps in 1943.

Glenn attended Test Pilot School at the Naval Air Test Center in Patuxent River, Maryland, and was a project officer on a number of aircraft.

In July 1957, he set a transcontinental speed record by traveling from Los Angeles to New York in 3 hours and 23 minutes, the first transcontinental flight to average supersonic speed. During his military career, Glenn logged nearly 9,000 hours of flying time, including 59 combat missions in World War II.

Glenn was selected as a Mercury astronaut in April 1959 and made his historic flight

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orbiting the planet on Friendship 7 on Feb. 20, 1962. His flight helped to define America's position in the space race with the Soviet Union. Glenn resigned as an astronaut in 1964 and won his Senate seat for Ohio in 1974, serving for 24 years.

Glenn passed away on Dec. 8, 2016 and is survived by his wife of 73 years, Annie, and their children, John and Carolyn.

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## **THE CARGO**

The Orbital ATK's Cygnus cargo spacecraft is packed with 7,600 pounds of supplies (such as food) and research equipment for the International Space Station crew aboard that orbiting laboratory.

This is 7,600 pounds of science research, crew supplies and hardware arriving at the orbiting laboratory in support of the Expedition 50 crew members and Expedition 51 crew members who are onboard.

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## **THE CREWS**

There were six members of Expedition 50. Shane Kimbrough, Sergey Ryzhikov, and Andrey Borisenko launched to the space station Oct. 19, 2016, in a Russian Soyuz spacecraft. They joined the Expedition 49 crew already there and stayed aboard to become the first half of Expedition 50. NASA astronaut Shane Kimbrough was the commander for Expedition 50. The commander is in charge of the mission and makes sure it is a success. On Nov. 17, 2016, Thomas Pesquet, Peggy Whitson and Oleg Novitskiy launched to the space station in a Russian Soyuz spacecraft. They joined the other three members of the Expedition 50 crew already on the station.

As for Expedition 51, it is the 51st expedition to the International Space Station, which began upon the departure of Soyuz MS-02 on April 10, 2017 and is scheduled to conclude upon the departure of Soyuz MS-03 in June 2017. Peggy Whitson, Oleg Novitskiy and Thomas Pesquet were transferred from Expedition 50, with Peggy Whitson taking the commander role. She is the first woman to command two expeditions to the ISS, having previously commanded Expedition 16. Due to a decision to cut down the number of participating Russian cosmonauts in 2017, only two cosmonauts were launched on Soyuz MS-04 yesterday (April 20, 2017) - bringing the total crew number to five.

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## **SUPPLY MISSION**

This supply mission marks the third time ULA's Atlas V has launched Orbital ATK's Cygnus spacecraft on its way to the International Space Station. OA-7 was the 71st launch of the Atlas V rocket since its first launch in 2002.

The Atlas V 401 configuration rocket has flown 35 times, supporting a diverse set of missions, including national security, science and exploration, commercial as well as International Space Station resupply.

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## **AN ATLAS V ROCKET**

The Atlas V family of Evolved Expendable Launch Vehicles (EELV) represents ULA's commitment to enhanced competitive launch services for the United States government. Since their debut in August of 2002, Atlas V vehicles have achieved 100 percent mission success in launches from Space Launch Complex-41 at Cape Canaveral Air Force Station, and Space Launch Complex-3E at Vandenberg Air Force Base, Calif.

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Built modularly with flight-proven elements, Atlas V has followed a carefully executed program of incremental improvements resulting in 100 percent mission success.

The Atlas program has logged more than 600 launches to date.

The Atlas V family, which includes the flight-proven Atlas V 400 and 500 series, are the latest evolutionary versions of the Atlas launch system.

Atlas V uses a standard common core booster (CCB), and up to five strap-on solid rocket boosters (SRB), an upper-stage Centaur in either the Single-Engine Centaur (SEC) or the Dual-Engine Centaur (DEC) configuration, and one of several payload fairings (PLF).

There were no strap on boosters in the launch on Tuesday morning.

Atlas V rockets uses an engine that burns kerosene and liquid oxygen to power its first stage and an American-built RL10 engine burning liquid hydrogen and liquid oxygen to power its Centaur upper stage.

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## **ULA**

On May 2, 2005, The Boeing Co. and the Lockheed Martin Corp. announced their intention to form a joint venture called the United Launch Alliance (ULA), combining the production, engineering, test and launch operations associated with United States' government launches of Boeing Delta and Lockheed Martin Atlas rockets - providing world-class space launch services for the federal government at lower cost.

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## **EXPERIMENTS**

The new experiments will include magnetized tools to make it easier to reproduce experiments on Earth, an antibody investigation that could increase the effectiveness of chemotherapy drugs for cancer treatment, and an advanced plant habitat for studying plant physiology and growing fresh food in space.

Cygnus also is carrying 38 CubeSats, including many built by university students from around the world as part of the QB50 program, which are scheduled to deploy from either the spacecraft or space station in the coming months.

When Cygnus arrives to the space station, Expedition 50 Commander Shane Kimbrough of NASA and Flight Engineer Thomas Pesquet of ESA (European Space Agency) will use the space station's robotic arm, Canadarm2, to take hold of the spacecraft. After Canadarm2 captures Cygnus, ground commands will be sent for the station's arm to rotate and install it on the bottom of the station's Unity module.

Cygnus will remain on the station until June, when it will depart with several tons of trash for a fiery re-entry into Earth's atmosphere. Prior to re-entry, a third experiment will be conducted to study how fire burns in space.

Learn more about the Orbital ATK CRS-7 mission by going to the mission home page at <http://www.nasa.gov/orbitalatk>.