



# Johnson Space Center



NASA's Johnson Space Center has been a leader in human space exploration for more than half a century. As the nucleus of the nation's astronaut corps and home to International Space Station mission operations, the Orion crew and a host of future space developments, the center plays a pivotal role in human space exploration and enhancing technological and scientific knowledge to benefit all of humankind.

Established in 1961 on nearly 1,700 acres southeast of downtown Houston as the Manned Spacecraft Center, the center was renamed in 1973 to honor the late president and Texas native, Lyndon B. Johnson. From the Mercury, Gemini, Apollo and Space Shuttle programs to the International Space Station and Orion, the center has been at the forefront of America's human spaceflight programs. Johnson's nearly 10,000-person workforce helps bolster NASA's standing as an institution where creative and talented problem solvers push the boundaries of explorations innovation.

## Leading Human Exploration

Every one of the NASA astronauts and space explorers from international partner countries who has crossed the threshold of the International Space Station or flown on the space shuttle has trained at Johnson. In the Space Vehicle Mockup Facility, astronauts, engineers and other mission support professionals learn skills and procedures to operate the space station using high-fidelity, full-scale mockups of the complex's different habitable elements. Astronauts preparing for spacewalks or robotic arm operations hone their skills in the Virtual Reality Laboratory, which immerses them in a computer-generated microgravity environment.

In the Neutral Buoyancy Laboratory at the Sonny Carter Training Facility near the center, astronauts train for spacewalks in the world's largest indoor pool. At nearby Ellington Field, astronauts train in T-38 jets to maintain their flight skills.

Johnson's Christopher C. Kraft Jr. Mission Control Center has been the focal point of America's human spaceflight programs. The flight directors and controllers in Mission Control have

been vital to every U.S. human spaceflight since the Gemini IV mission in 1965, including the Apollo missions that took humans to the moon for the first time and all of the 135 space shuttle flights. With a permanent human presence aboard the International Space Station, flight control teams of experienced engineers, medical officers and technicians are on duty 7 days a week, 24 hours a day, 365 days a year. Working with counterparts overseas, flight controllers keep a constant watch on the crew's activities and monitor space systems, crew health and safety.

## Commercializing Space

NASA's Commercial Crew Program is working with the American aerospace industry as companies develop and operate a new generation of spacecraft and launch systems capable of carrying crews to low-Earth orbit and the space station. Commercial transportation to and from the station will provide expanded utility, additional research time and broader opportunities of discovery on the orbiting laboratory. The



NASAfacts

Commercial Crew Program Deputy Office at Johnson assists in the budgeting, contracting, safety and technical areas.

### Developing Deep Space Technologies

Inside the center's facilities and elsewhere, engineers are building upon decades of spaceflight research and knowledge to develop the most advanced deep space crew vehicle ever conceived.

NASA's Orion program is managed at Johnson, where a team of engineers oversees the design, development and testing of the spacecraft, as well as spacecraft manufacturing taking place across the country and in Europe. Orion is NASA's spacecraft that will send astronauts to deep space destinations, including on the journey to Mars.

Orion features technology advancements and innovations that have been incorporated into the spacecraft's design. It includes crew and service modules, a spacecraft adapter and a revolutionary launch abort system that will significantly increase crew safety. It will launch on the agency's powerful Space Launch System rocket from NASA's modernized spaceport in Florida.

The Exploration Integration and Science Directorate provides research, strategy, mission planning, systems development, integration and investment focus for the future of human space exploration. In addition to providing enterprise-level integration across exploration systems, the directorate supplies architecture design and mission concept formulation bringing together all of the disparate elements required for planning and integrating complementary human and robotic exploration missions stepping out into the solar system. To support and enable exploration, the directorate provides strategies and priorities for partnership and investment focus of technology advanced system development to meet mission concept and architecture needs.

### Advancing Scientific Knowledge

Teams of scientists, physicians and other researchers are at work advancing insight into human adaptability to microgravity and developing countermeasures to mitigate the challenges to human health and performance associated with long stays in space.

The Human Research Program (HRP) is dedicated to discovering the best biomedical methods and technologies to ensure safe, productive human space travel. The program, managed at Johnson under the Human Exploration Mission Directorate, works to improve astronauts' abilities to carry out their duties, solve problems, respond to emergencies, and remain healthy during and after long-duration space missions.

Through national and international collaborations, HRP engages the best minds in the country to conduct research aboard the space station, at Johnson and other NASA centers, and in universities and institutions around the world to address challenges faced by humans in space.

The Astromaterials Research and Exploration Science team curates NASA's collection of extraterrestrial samples, which includes materials from the moon, Mars, sun, asteroids, comets, other stars and flown space hardware containing micrometeorite impacts. A suite of specialized laboratories is co-located with these collections, making Johnson the international hub of planetary scientists who explore the solar system through sample analysis. This scientific cadre partners with human and robotic exploration teams, providing planetary expertise in defining mission objectives, spacecraft requirements, suit needs, tool designs and operating protocols. This team also houses applied science disciplines who protect operating spacecraft through remote sensing, imagery science and analysis, orbital debris environment characterization, spacecraft debris risk assessment and spacecraft shielding designs.

### Mission Support, Strategic Opportunities and Partnerships

Many mission support organizations help NASA maintain its position as a model agency, from human resources, information technology and external relations support, to procurement, finance and center operations. Through the center's Strategic Opportunities and Partnership Development Office, Johnson also leverages critical skills to evolve the agency's mission, provides strategic planning for future business opportunities and partnerships, manages partnerships with external entities and establishes new partnerships across aerospace industries and government.



National Aeronautics and Space Administration

**Lyndon B. Johnson Space Center**

Houston, Texas 77058

[www.nasa.gov](http://www.nasa.gov)

FS-2016-10-002-JSC