THE FUTURE IS NOW

AT JOHNSON SPACE CENTER

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Spacesuit engineer Dustin Gohmert simulates work in a crater in Johnson Space Center's Lunar Yard, while his ride, NASA's new lunar truck prototype, stands ready in the background. The rover has the ability to lower its platform all the way to the ground, making climbing on and off easy—even in a bulky spacesuit.

NASA has continued to explore and discover space for fifty years, and since its establishment in 1961, the Lyndon B. Johnson Space Center (JSC) has been a major contributor to the agency's success.

Originally called the Manned Spacecraft Center, this federal institution was born out of the early space program's need for a location to house the Space Task Group at the beginning of the Apollo Program. After President John F. Kennedy announced that the U.S. would put a man on the moon by the end of the decade, the site in Houston was selected to provide test facilities and research laboratories suitable to mount an expedition to the moon.

Since then, the Center has continued to make history in space exploration, highlighted by scientific and technological advancements as well as engineering triumphs. This rich tradition continues each and every day, and here is a summary of how it is reflected.

From JSC's inception, it was to be the primary center for U.S. space missions involving astronauts; however, through the years JSC has expanded its role in a number of aspects in space exploration. These include serving as the lead NASA center for the International Space Station (ISS)—a sixteen-nation, U.S.-led collaborative effort that is constructing and supporting the largest, most powerful, complex human facility to ever operate in space.

Home to NASA's astronaut corps, JSC trains space explorers from the U.S. and our space station partner nations, preparing these individuals as crew members for space shuttle missions and long-duration Expedition missions on the ISS. At the Center's famed Mission Control Center, all activity onboard the space station and during all space shuttle missions is directed. This control center has been the operational hub of every American human space mission since Gemini IV.

Nearby, Ellington Field hosts the Center's flight operations. The training aircraft housed there include a C-9 jet used to produce space-like weightlessness, twin-engine Gulf Stream jets modified to simulate a shuttle orbiter landing, and T-38 jets trainers flown by astronauts to maintain their pilot proficiency.

As part of the Center's longstanding tradition of achievement, flight-related scientific and medical research efforts developed here make revolutionary discoveries and advances to benefit all humankind. Technologies developed originally for spaceflight have found a wide range of applications in medicine, energy,

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A new era of spacecraft are being developed as part of the 2004 Vision for Space Exploration that directs NASA to return to the moon and prepare to go beyond.

transportation, agriculture, communications, and electronics. Additionally, the Center manages the development, testing, production, and delivery of hardware supporting spacecraft functions including life-support systems and all human spacecraft-related functions. The latter include life-support systems, power systems, crew equipment, electrical power generation and distribution, navigation and control, cooling systems, structures, flight software, robotics, and spacesuits and spacewalking equipment.

The Center also takes a direct approach to maintain its earthbound assets and incorporate significant environmental stewardship on many levels. The child care center is a model of renewable energy through the use of solar panels and wind turbines which completely power the facility. Construction is underway for a new 83,000-square-foot building that will use Leadership in Energy and Environmental Design standards. Those same standards will be applied to a research and human adaptation facility to be constructed that will provide rehabilitation for crew members following long-duration spaceflight duty.

In addition to new buildings, many are under refurbishment, such as a vintage centrifuge building that we are transforming into a new avionics laboratory for the Orion spacecraft. Also, the Center's central campus is undergoing a revitalization and beautification program with many roofs being repaired and replaced, streets and parking lots being repaved, and a new perimeter fence constructed. More than nine thousand members utilize the recently upgraded employee fitness center.

Supporting all of these efforts at the Center is a budget of nearly $5 billion annually and the more than sixteen thousand people employed by the aerospace industry in the Houston area.

Looking to the next years, JSC's future is bright. During 2009-2010, the remaining eight shuttle missions will continue to service the construction of the ISS and provide an expansion to a crew of six aboard the station, thereby allowing scientific research to significantly increase.

As we prepare to retire the orbiters and close out the Space Shuttle Program after thirty years, we begin to pave the way back to the moon to establish lunar habitats with our newest program, Constellation. Contracts have been awarded for the next generation of spacecraft—Orion and Ares—and, within the next year, the Ares 1-X unmanned test rocket will be tested, marking a major milestone and providing important data for future flights. The experiences we are building will eventually take us on to Mars and beyond.

Our future success is dependent on today's students, and NASA is recognized for its ability to engage and excite students through the wonders of space exploration. JSC logs more than 625,000 contact hours with students annually, encouraging their interest in science, technology, engineering, and mathematics subjects. Through the Texas Aerospace Scholars Program, high school students from across the state spend a week during the summer at JSC learning about career opportunities and projects. This unique exposure reminds them they are the future scientists, engineers, astronauts, and technicians needed to fulfill the goals of NASA.

JSC partners with the University of Texas Medical Branch, Baylor College of Medicine, the University of Houston, University of Houston – Clear Lake, and Rice University. Recently, we announced that we will be working with engineering teams from the University of Texas and Texas A&M to design and launch very small satellites called picosats to be launched onboard STS-127. These picosats will demonstrate autonomous rendezvous and docking in low-Earth orbit—something that has never been demonstrated before.

Locally, our community partnerships include our Longhorn Project with the Clear Creek Independent School District and the Houston Livestock Show and Rodeo. In 1996, JSC initiated this agreement that allows the students to raise longhorn cattle on a sixty-acre tract of land located on the Center, where thirty-five longhorn show animals and four trophy-winning steers are housed. We also partner with the State of Texas and the Texas Emerging Technology Fund to leverage the availability of NASA to spinout and commercialize new technologies.

Our history at JSC has been interesting and intriguing, but the next fifty years promise to be even more exciting. As the premier human spaceflight center in the world, we will continue to take a leadership role in space exploration that will propel us beyond low-Earth orbit to the discovery and understanding of planets beyond our own. ★