



NASA/Blair JSC2004E39213

Up, up and away

The Re/Max Ballunar Liftoff Festival took place at JSC in August. The event was a tribute to human flight – from the beauty of hot air balloons to the high-tech world of modern spaceflight. The Ballunar Festival included air balloon competitions, glows, JSC exhibits, entertainment and more. As a part of the festival, the public had the opportunity to visit several NASA buildings on a NASA mini-tour.

NASA FAMILY

family

Community

TO SHOW ITS APPRECIATION of the support of the surrounding Houston-area community, the JSC Family kept busy this past year. Events such as the Space Shuttle Service Life Extension Program Summit, Super Bowl, Rodeo Houston, Houston International Festival, All-Star FanFest, Home Run Derby, Ballunar Liftoff Festival, Wings Over Houston, and the National Society for Black Engineers Region Five Fall Regional Conference were all supported by the JSC Family.

Rodeo Houston spectators were treated to a moving video tribute to NASA, complete with historical film and inspirational music. Special recognition was also given to those astronauts who died in pursuit of space exploration.

All-Star FanFest JSC furnished a large exhibit at the George R. Brown Convention Center for the All-Star FanFest. At the All-Star Diamond Clinic, JSC and Major League Baseball provided an interactive exhibit called the NASA Skills Obstacle Course. This particular clinic compared the rigors of astronaut training to the complexity of baseball training. Fans had the opportunity to navigate the specially designed obstacle course to get a sense of what it takes to, in essence, “play baseball on the Moon.”

Home Run Derby Approximately 60 JSC scientists, engineers and support personnel were also able make a special contribution to the Home Run Derby festivities. While the national anthem played in the background, JSC employees helped to carry a giant United States flag onto the baseball field.



NASA/Blair JSC2004E46027



NASA/Blair JSC2004E03304

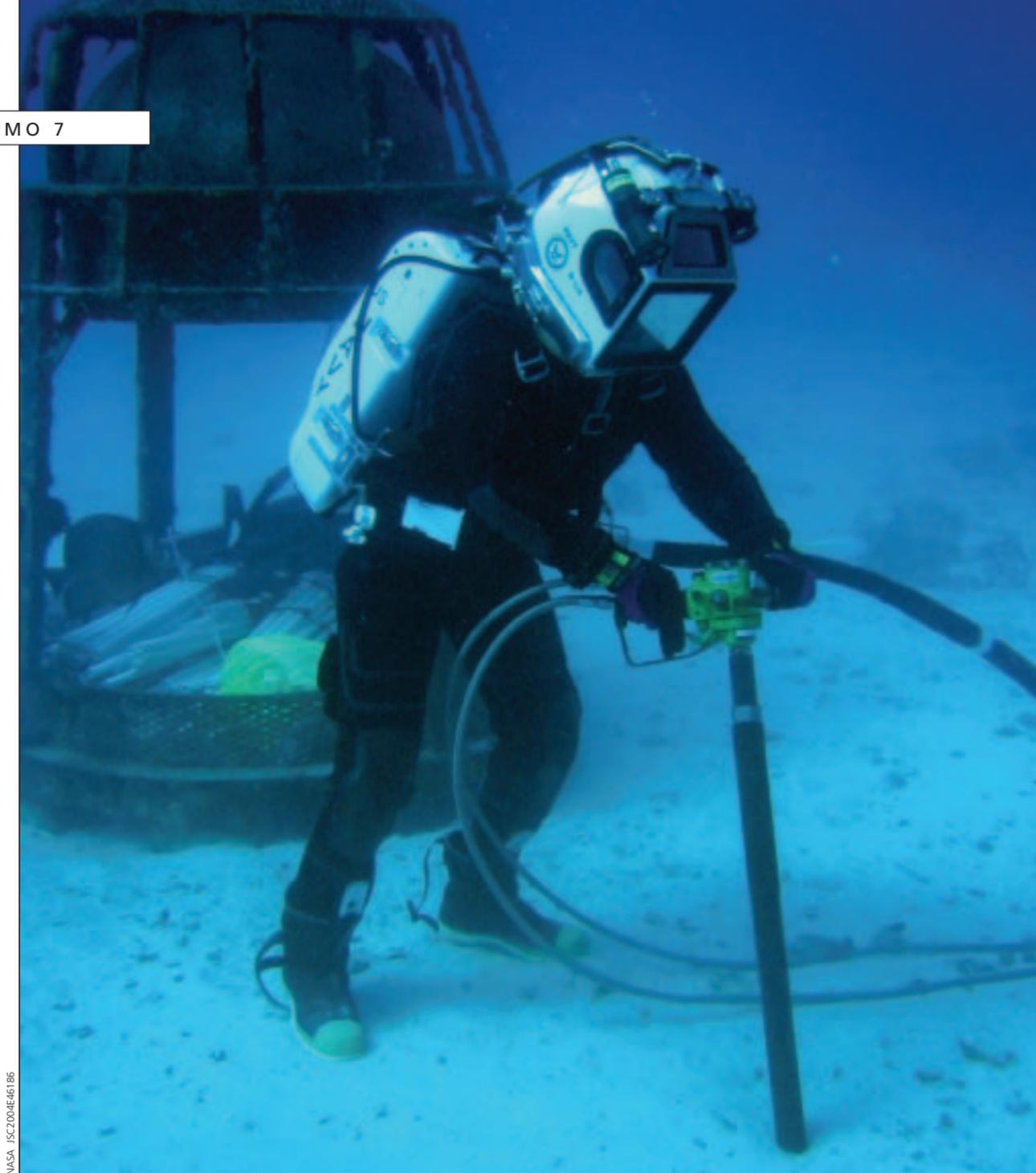


NASA/Blair JSC2004E29299

The Fielding and Humphries families, pictured at top, admire the Super Guppy at Wings Over Houston.

Above left, clowns from the Houston Livestock Show and Rodeo shared some smiles at the JSC Child Care Center.

An aspiring astronaut tries on a spacesuit at the All-Star FanFest.



NASA JSC2004E46186

From the bottom up

Two NASA Extreme Environment Mission Operations (NEEMO) missions took place in 2004. NEEMO 6 was dedicated to biomedical engineering research, including evaluation of a wireless medical monitoring device and a handheld, noninvasive device that evaluates bone quality. NEEMO 7 focused on telemedicine. This long-distance health care could be crucial for medical emergencies on the International Space Station, the Moon or Mars.

Exploration

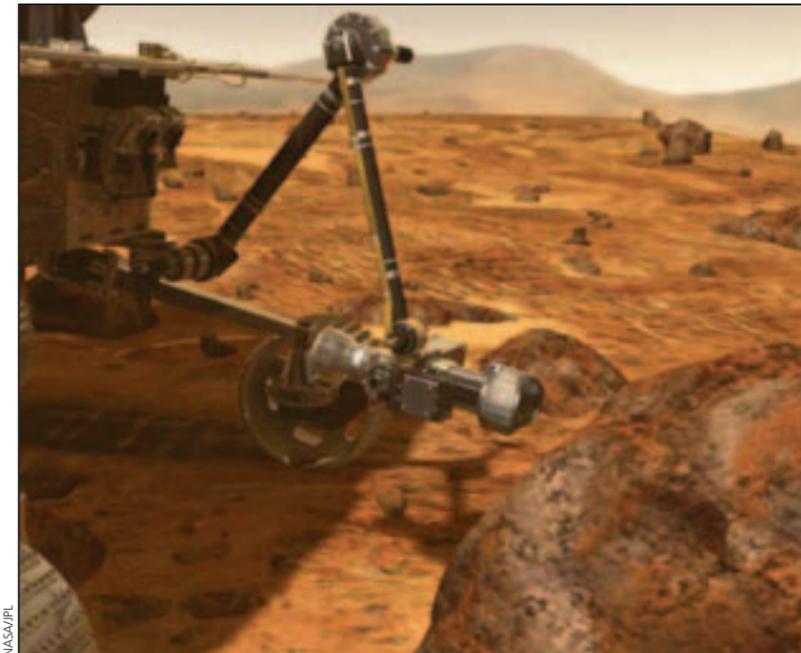
Although sending astronauts to Mars is still years away, JSC employees are taking crucial steps toward the **VISION FOR SPACE EXPLORATION** every day by learning more about our solar system and about living and working in space.

Two members of JSC's

Astromaterials Research and Exploration Science team, Soil Mineralogist Doug Ming and Physical Chemist Dick Morris, played key roles in the Mars Exploration Rover missions. They spent months operating the rovers and sharing in science interpretation at NASA's Jet Propulsion Laboratory.

A futuristic drilling rig

developed at JSC could eventually drill for resources, such as possible subsurface water, on Mars. The drill was tested in the Canadian Arctic in conditions similar to those found on Mars.



NASA/JPL

The Desert Research and Technology Studies team

headed for Arizona for two weeks in September to test innovative equipment. The team included members from NASA centers, universities and private industry. The dusty, rough terrain and extreme temperature swings of the desert simulate some of the conditions that may be encountered on the Moon or Mars. The test equipment included new spacesuit helmet-mounted speakers and microphones for communications, a wireless network that can relay data among spacewalkers and robots as they explore, and "Matilda," an autonomous robotic support vehicle that can retrieve geologic samples.



NASA Haughton-Mars Project/Clancy

At top, the Rock Abrasion Tool on the robotic arm of the Mars Exploration Rover grinds away the rock's surface, allowing scientific instruments to analyze the rock's interior.

Above, the Haughton Impact Structure is a crater in the Canadian Arctic with features similar to those found on Mars.

Discovery

GENESIS BRINGS HOME PRECIOUS SAMPLES



NASA/JPL



NASA/JPL

At top, the Metal Glass Collector 2 measured helium and neon beyond solar wind energies. It was recovered fully intact.

Above, the Concentrator Target's number one priority for science recovery was to measure isotopic ratios of oxygen. Three of four segments were recovered intact (two silicon-carbide, one Carbon 13 Diamond). The fourth segment was about 85% recovered (diamond-on-silicon).

THE GENESIS SOLAR-SAMPLE RETURN MISSION made a hard landing in the Utah desert in September, but NASA managed to preserve a significant portion of the precious samples of the Sun it brought back from space.

The first scientific samples from the Genesis space probe arrived at Johnson Space Center on Oct. 4. Fragments from the capsule arrived by plane at Ellington Field and were transferred to a van for the short trip to the JSC Astromaterials Curation Facility. The quantity of material recovered from Genesis will be determined by further study at JSC.

The samples, which were numbered and packaged in separate carrying cases, were moved to the Genesis clean room where they are preserved and protected. Samples will be distributed to scientists to study over the coming months and years, beginning with members of the Genesis Science Team.

Genesis scientists believe that they will achieve the most important portions of their science objectives, which should tell us about the conditions when the Sun and planets were created more than 5 billion years ago. Genesis was launched in August 2001.

The samples are the first extraterrestrial matter returned by a U.S. spacecraft since 1972, when the last Moon rocks were carried back to Earth by Apollo astronauts.

Technology

While NASA has an ample supply of vision and inspiration, it takes solid technology to bring those ideas to life. **INNOVATIVE TECHNOLOGY FLOURISHES AT JSC**, enabling the Center to play its part in fulfilling the Vision for Space Exploration.

Robonaut is a humanoid robot designed by the JSC Robot Systems Technology Branch in a collaborative effort with the Defense Advanced Research Projects Agency. Robonaut's purpose is to function as an equivalent for a spacewalking astronaut. Working alongside humans, or going where the risks are too great for people, Robonaut will help NASA build space telescopes, exploration vehicles and habitats, and harness the discoveries that are possible with these new systems.

JSC technology transfer strategic partnerships are a key mechanism for enabling technological growth for America's future in space. These strategic partnerships help to align JSC's way of doing business with that of the private sector. Combining the strengths of NASA's technological expertise and research facilities with commercial industry results in advances in technologies that work toward moving humans to a new odyssey of discovery.

JSC took a giant step for a cleaner environment by opening Houston's first ethanol fueling unit. The 1,000-gallon, onsite unit brings JSC into compliance with the Energy Policy Act of 1992, which requires that federal fleets reduce their petroleum use by 20 percent by 2005. Ethanol is distilled from corn, burns cleaner than gasoline and is renewable.



NASA/Starboard JSC2004E16341

Robonaut uses a standard human spacewalk tether to connect itself to an International Space Station exterior handrail on the test panel. The Robonaut Project is a collaborative effort with the Defense Advanced Research Projects Agency, and has been under development at Johnson Space Center for several years.