

SPACE CENTER

Roundup

LYNDON B. JOHNSON SPACE CENTER



March 2004
Houston, Texas
Volume 43
Number 3



Illustration ©Pat Rawlings/SAC

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NASA tackles the future

Lunar exploration can happen at many levels, ranging from a transfer vehicle leaving Earth orbit to the hard work of drilling lunar core samples to explore the geological heritage of the Moon.

To learn more about NASA's new exploration vision, see pages 4 and 5.

From the desk of Lt. Gen. Jefferson D. Howell Jr.

Director's Message



The Best of Times...

To paraphrase Charles Dickens, it is the worst of times, it is the best of times. We've gone through a tough year. The loss of *Columbia* and its valiant crew still weighs heavy on our hearts and minds. Return To Flight requirements and fulfilling the CAIB Report's recommendations have proven to be an enormous challenge. The resetting of the next launch date is evidence of that fact.

However it is also evident that "we get it" and will not let schedule pressure drive us to a premature launch. Our NASA leadership has demonstrated great courage in its RTF decisions to ensure that we will return to flight only when we are absolutely ready. Nevertheless, there is a lot of hard work going on with many hurdles and little outward progress to show for it. By itself, this situation can tend to dampen individual as well as team spirit.

However, our President has given us an incredible gift! With his new vision for space exploration he has provided us with the motivation to carry us through this

very difficult time. He has challenged us, as well as promised us the necessary resources to go to the Moon, to Mars and beyond.

Of course, imperative to making this new journey is safe return to flight of Shuttle and completion of ISS. That means you and I hold the key to our nation's and our world's exploration of outer space. If this doesn't motivate us to get the job done, I don't know what will. We will prevail at our immediate tasks and then join in the quest to explore our solar system!

This won't be easy, but if it was, anyone could do it. How fortunate we are to be on this team at this place during this juncture of human space exploration! Let us take pleasure in our work throughout this best of times.

IT'S GREAT TO BE ALIVE AND IN HOUSTON!

Beak sends...

Guest Space

Charlene Gilbert

Director of Technology Transfer and Commercialization



NASA's high scoring technology featured at the Super Bowl

The familiar Monday night rhetorical question "Are you ready for some football?" resonated louder as we approached the biggest football event of the year. Most football enthusiasts, marked by the time-honored face paint and oversized number-one foam fingers,

responded with a resounding, guttural, "Yes!" And why wouldn't they? Today we are more ready than ever, thanks to the hard work of NASA people – you.

Thousands of products that improve our lives here on Earth were kicked off from space. Last month, fans geared up to touch down at Reliant Stadium, featuring the NFL's first retractable roof that scored its high technology from spacesuit fabric. Players on the field benefited from space-age materials in their protective shock-absorbent gear and helmets.

Sharing technology developed to tackle space exploration with private industry not only provides these valuable products to the public but also stimulates the economy, creating jobs and motivating U.S. competition by offering a technological edge. Partnering with businesses outside NASA helps leverage resources to unearth hidden discoveries that support NASA Enterprises.

As in the game of football, success relies on teamwork. Without a team-based environment, the Technology Transfer and Commercialization Office at Johnson Space Center could not be successful. The team, however, is not limited to its on-field players – all JSC contractor and civil servant employees, including scientists, engineers, researchers and innovators are critical to achieving a game win.

Sharing successful and valuable discoveries will help gain support and funding for current and future projects, allowing us to continue our search for life beyond. Kicking around ideas? Let us know about them. Disclosing new knowledge and advances is a part of our responsibility as NASA employees and helps us to maintain a robust technology inventory.

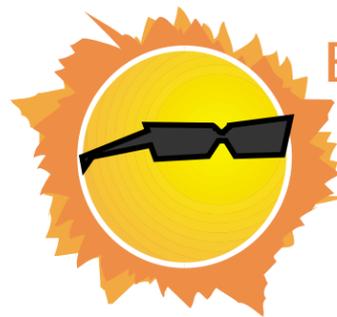
For football buffs, it all boils down to passion – passion for the challenge, the spirit and the win. As devotees to future space exploration, we can all draw on this passion. As we forge ahead on a new year of exciting advancements, I encourage positive change and progress in the world of technology that will continue to impact lives everywhere.



Astronauts at the Super Bowl

The Super Bowl, held at Houston's Reliant Stadium, featured a NASA-themed pregame ceremony. The STS-114 crew stood by on the field, symbolizing NASA's resolve to return to flight and keep exploring.

Photos by Bert Berr



**Beak's Beach Bash...
Coming Soon.**

Get your act together!

JSC scores big during 'Super' February

By Joanne Hale and Debbie Nguyen

The Capital One College Football All-Star Challenge brings Super Bowl spirit to JSC

Super Bowl fever reached the Gilruth Center Jan. 30 for the 2004 Capital One College Football All-Star Challenge, which aired on Super Bowl Sunday on Fox Television.

JSC Center Director Lt. Gen. Jefferson D. Howell, Jr., kicked off the affair with his famous welcome, "It's great to be alive and in Houston!"

This annual event, held in the midst of the Super Bowl frenzy, summoned several of college football's biggest and brightest stars to challenge their skills against each other in a variety of tests. The players are paired up in teams – each team contains a quarterback and a running back or a wide receiver. Alumni of the College Football All-Star Challenge include Donovan McNabb, Daunte Culpepper and Patrick Ramsey. This year's lineup featured a roster full of future NFL draft candidates:

Casey Clausen (University of Tennessee, Quarterback)

Roy Williams (University of Texas, Wide Receiver)

Jeff Smoker (Michigan State, Quarterback)

Chris Perry (Michigan, Running Back)

Jared Lorenzen (University of Kentucky, Quarterback)

Reggie Williams (University of Washington, Wide Receiver)

Rod Rutherford (University of Pittsburgh, Quarterback)

Julius Jones (Notre Dame, Running Back)

There were several other special guests who participated in the showdown: Marine Astronauts **Lt. Col. Charlie Hobaugh**, **Lt. Col. George Zamka** and **Maj. Doug Hurley** did a quick run-through of the four events to illustrate how each was to be completed; cheerleaders from Super Bowl teams Carolina Panthers and New England Patriots made an appearance; and Cocky, the University of South Carolina's mascot, offered some comic relief between takes.



Roy Williams (above), University of Texas wide receiver shows off his agility at the All-Star Challenge.

jsc2004e01588

Cocky, the University of South Carolina's mascot, offered some comic relief between takes.

jsc2004e01560 Photos by Bill Stafford and David DeHoyos

Each team went through four challenges that tested accuracy, agility, speed and teamwork. The results were as follows:

Aerial Assault Smoker won this event with 110 points by hitting moving targets whose worth was determined by how far they were.

Marines Obstacle Rush Perry claimed this event by making his way through different blockades in 23.77 seconds.

Mitsubishi Throw Down Because Rutherford was the only one to land both throws in the designated landing zone within the allotted 45 seconds, he was crowned king of the Throw Down.

Direct Connect Challenge Rutherford was able to complete all four passes to Jones in the fastest time, making them this year's champions.



Aerosmith visits JSC

The band Aerosmith – Steven Tyler, Joe Perry, Brad Whitford, Tom Hamilton and Joey Kramer – came to JSC to film a tribute video to NASA and the crew of *Columbia* that was performed during the pre-game show of Super Bowl XXXVIII.

jsc2004e01318 Photo by David DeHoyos

The NFL Experience

NASA excitement ran high during the NFL Experience at the George R. Brown Convention Center, which ran from Jan. 23 - 25 and Jan. 29 - Feb. 1. The NASA exhibit included the new Shuttle Launch Experience, which allowed visitors to experience the thrill of a launch through high-definition television and surround sound. In addition, the exhibit included an interactive International Space Station kiosk and a photo-opportunity spacesuit, as well as vibrant new exhibit panels depicting the Shuttle launch excitement. Numerous astronauts were also on hand throughout the event to sign autographs alongside professional football players. During the eight-day event, 208,000 people attended. Johnson Space Center employees and contractors staffed the exhibit.

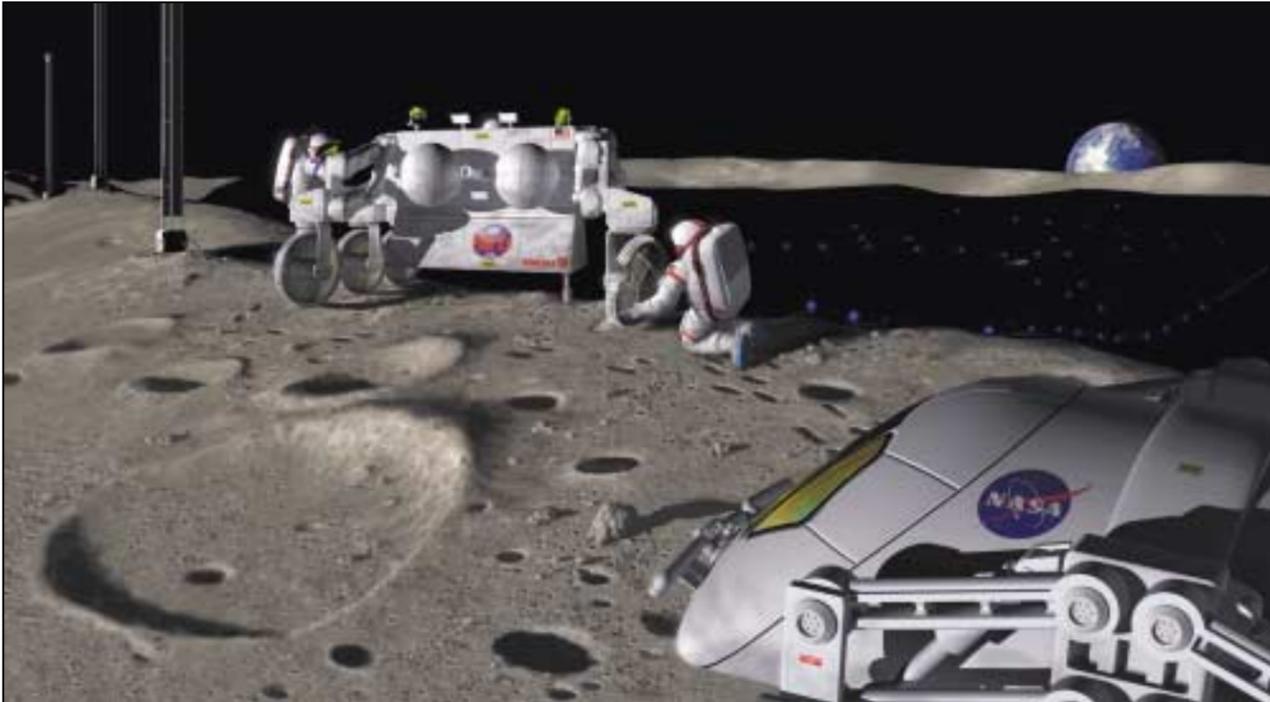


Astronauts Nicole Stott and Takao Doi sign autographs during the pre-Super Bowl event.

jsc2004e01357 Photo by James Blair

'Human beings are headed into the cosmos'

By Kendra Phipps



This illustration by Pat Rawlings depicts a massive reservoir of ice imbedded in permanently shadowed soil at the Moon's south pole. This reservoir can provide the hydrogen and oxygen to fuel a fleet of spacecraft and provide atmosphere and water for future lunar inhabitants. Analysis of data from the joint NASA-BMDO Clementine mission confirmed this frozen resource in 1997.

Excitement ran high in Johnson Space Center's Teague Auditorium as employees gathered to witness history.

President George W. Bush made a significant announcement Wednesday, Jan. 14, 2004, from NASA Headquarters concerning the future of the space agency. The speech was broadcast on NASA Television and shown to a packed auditorium at JSC.

"This Agency, and the dedicated professionals who serve it, have always reflected the finest values of our country: daring, discipline, ingenuity and unity in the pursuit of great goals," Bush said. "Inspired by all who have come before, and guided by clear objectives, today we set a new course for America's space program."

"We will build new ships to carry man forward in the universe," he said. "We will gain a new foothold on the Moon and prepare for new journeys to worlds beyond our own."

Bush's plan contains three goals, which are posted in full at <http://www.whitehouse.gov/news/releases/2004/01/20040114-1.html>:

"America will complete its work on the International Space Station by 2010, fulfilling our commitment to our 15 partner countries. ... To accomplish this goal, NASA will return the Space Shuttle to flight consistent with safety concerns and the recommendations of the Columbia Accident Investigation Board."

"The United States will begin developing a new manned exploration vehicle to explore beyond our orbit to other worlds – the first of its kind since the Apollo Command Module. The new spacecraft, the Crew Exploration Vehicle, will be developed and tested by 2008 and will conduct its first manned mission no later than 2014."

"America will return to the Moon as early as 2015 and no later than 2020 and use it as a steppingstone for more ambitious missions. A series of robotic missions to the Moon, similar to the Spirit Rover that is sending remarkable images back to Earth from Mars, will explore the lunar surface beginning no later than 2008 to research and prepare for future human exploration."

Bush said that the Space Shuttle's primary purpose over the next few years will be to help finish assembly of the Space Station, and that the fleet will be retired by 2010.

"Our current programs and vehicles for exploring space have brought us far, and they have served us well," Bush said. "Yet for all these successes, much remains for us to learn and explore. It is time for America to take the next step."

That "next step" is the Moon.

"The Moon is a logical step towards further progress and achievement," Bush said. "With the experience and knowledge gained on the Moon, we'll then be ready to take the next steps towards space exploration: human missions to Mars and to worlds beyond." At these words, applause erupted both in the Teague and at NASA Headquarters.

Bush said that while robotic missions will serve as necessary "trailblazers" to the Moon, humans must be a part of the exploration in order to research more effectively and think through unforeseen challenges – as well as to satisfy the human desire to explore the unknown.

"The human thirst for knowledge ultimately cannot be satisfied by even the most vivid images or the most detailed measurements," he said. "We need to see and examine and test for ourselves, and only human beings are capable of adapting to the inevitable uncertainties posed by space travel."

Sending humans to the Moon will not be an inexpensive task. Bush outlined his budget plan during his speech, and the key points are posted in full at <http://www.whitehouse.gov/news/releases/2004/01/20040114-1.html>. They include the points below.

- The funding added for exploration will total \$12 billion over the next five years. Most of this added funding for new exploration will come from reallocation of \$11 billion that is currently within the five-year total NASA budget of \$86 billion.

- In the Fiscal Year (FY) 2005 budget, the President will request an additional \$1 billion to NASA's existing five-year plan, or an average of \$200 million per year.

- From the current 2004 level of \$15.4 billion, the President's proposal will increase NASA's budget by an average of 5 percent per year over the next three years, and at approximately 1 percent or less per year for the two years after those.

Bush said that the country will be "repaid many times over" by the technological breakthroughs that

will arise from new exploration, and made reference to the "tangible benefits that improve our lives in countless ways" that have come from the space program. These include improvements to weather forecasting systems, satellite telecommunications, computing, electronics and medical technologies.

Another return on this investment, Bush said, will be the enthusiasm of students generated by this exploration.

"The fascination generated by further exploration will inspire our young people to study math, science and engineering," he said, "and create a new generation of innovators and pioneers."

Bush concluded with an acknowledgement of the upcoming anniversary of the *Columbia* accident, and of the fact that "space travel brings great risks."

"*Columbia* did not turn away from the challenge, and neither will we," Bush said. "Mankind is drawn to the heavens for the same reasons we were once drawn to unknown lands and across the open seas. We choose to explore space because doing so improves our lives and lifts our national spirits – so let us continue the journey."

"We do not know where the journey will end," he said, "but we know this – human beings are headed into the cosmos."



The President's vision affirms the nation's commitment to human space exploration starting with a return to the Moon that will ultimately enable future exploration of Mars and other destinations.