

National Aeronautics and Space Administration



Roundup

Lyndon B. Johnson Space Center

February 2009



Move **Over** for the New Rover

Guest Column



On the cover:
The new Lunar Electric Rover (LER).



Photo of the month:
After practicing emergency egress from the pad, the STS-119 crew members pose on the 225-foot level for a crew photo. From left are Mission Specialists Richard Arnold and Steve Swanson; Pilot Tony Antonelli; Commander Lee Archambault; and Mission Specialists Koichi Wakata, John Phillips and Joseph Acaba. STS-119 is expected to launch this month.

NASA/SHLETT 180842main_group

Long before Inauguration Day, the passing of the torch to the new presidential administration began. From that point, NASA has been anticipating a pending course of change. The inauguration marked the beginning of the change that is about to take place in the Vision for Space Exploration. Although the magnitude of those changes remains to be seen, it was an extraordinary statement and maybe a clear indicator of what's on the horizon for us when the new administration requested NASA's participation in the inaugural parade. I commend the lunar rover team for their performance, and I am proud of the now public images of a futuristic electric lunar rover crabbing down Pennsylvania Avenue, with crew members in advanced surface suits ready to disembark from their suit ports. I'm also proud of how progressive Johnson Space Center and the agency are in leaning forward with the advancement of human spaceflight into the future.



Steve Altemus
Director, Engineering

To the extent that we can, JSC is taking care to shape the future as we see it. However, change is inevitable. A certain degree of change is good. In fact, the hallmark of a learning organization is change. But, understandably, the ambiguity associated with a changing environment can be unsettling. I'm sure all of the federal agencies across our government are somewhat anxious over the inevitable change that comes with a new presidential administration. We can expect that the way we do business, the leadership we have grown to support and admire and the content of our programs may change in the upcoming months. We can focus on this and allow it to distract us and increase our anxiety, or we can embrace the change, confident in our ability to execute on any shift in vision. After all, we have demonstrated our proficiency at adapting to change. We're good at it.

If we simply reflect on the past four years programmatically, we can see dramatic changes from where we were. The Space Shuttle Program has returned safely to flight operations and continues to show itself as an extremely capable machine with a once-cancelled Hubble servicing mission back on the manifest. The International Space Station, with our International Partners, is nearing its completion of assembly and activation for six-person crews, enabling microgravity research as a national laboratory. The entire Constellation Program began about four years ago as an idea. As of today, with the existing incumbent workforce, we have embarked on development of Orion, Altair, Lunar Surface Systems, Advanced Extravehicular Activity and Mission Operations activities here at JSC in collaboration with other centers.

As an agency, we have changed the way we work together. We have embraced a more collaborative and inclusive environment across the 10 healthy centers and dispensed with the potentially divisive competitive environment. Recently, across the Engineering community, we participated in the first unprecedented NASA Engineering Leadership Workshop. The Workshop brought together the directors and division chiefs of all the engineering organizations from around the agency. This vision, to work as "One Engineering" on behalf of the programs to ensure their success, marks a significant positive shift in our attitudes and capabilities of the agency.

Therefore, based on my experience here at JSC over the past four years, I contend we are well equipped to manage the wave of change that is upon us. While the content of what we work on may shift, the work in human spaceflight will remain profound and historic. The shuttle may or may not fly longer than anticipated, the Constellation Program may or may not undergo some re-architecting, and the gap in U.S. access to the station may or may not be as short as we anticipate. In any case, we are prepared with a flexible and agile workforce, ready to answer the challenges that are put before us. I am excited about being part of such historic times. We have been living with and implementing change as part of our culture for years and are thriving in the process. I'm confident we will continue to thrive as a center as we embark on implementing the inevitable adjustments to the nation's space policy. In the words of Ashleigh Brilliant, "These are the times that someone in the future is longing to go back to."

NASA rover has a roving good time at the inaugural parade

In the months since it was unveiled, NASA's latest moon rover concept has covered a lot of ground ... up simulated Martian hills, down simulated lunar craters, through real dust storms and across lava flows. But on Jan. 20, it roved an entirely different landscape: the streets of Washington, D.C., where hundreds of thousands of people crowded for President Barack Obama's inaugural parade.

The Lunar Electric Rover (LER) was chosen from a record 1,382 parade applications to not only take part in the parade, but to bring up the rear as the parade's finale.

"We thought about parades before, but we never thought to aim as high as the inaugural parade," said Rob Ambrose, the Human Robotics Systems Project lead for NASA's Exploration Technology Development Program. "We're very honored. We are also very excited to show the public the new machines that NASA is developing for exploration."

The Johnson Space Center engineers and scientists behind the concept have said, from the beginning, that they wanted the vehicle to be



NASA/ICLDT | jsc2009a007756

On Jan. 9, JSC team members viewed a demonstration of the inaugural performance in front of Building 1.



NASA/PHOTO | 1266_946-710

President Barack Obama, Michelle Obama and Vice President Joe Biden watch as the NASA Lunar Electric Rover stops in front of the presidential reviewing stand on Pennsylvania Avenue in front of the White House in Washington, D.C., on Jan. 20.

"America's rover." They wanted the LER, as it's called for short, to be a symbol of the work that NASA's doing as the agency prepares to return to the moon.

And everyone seems to agree that the LER is eye-catching. It has twelve wheels on six steering columns, each of which can raise or lower to go over obstacles or give the crew inside a closer look at interesting features on the lunar surface. Each wheel can turn a full 360 degrees, allowing the rover to go forward, backward, sideways, in a circle or anything in between.

But that's just the beginning. The cockpit holds everything two people would need to head off on a 14-day expedition, miles away from a moon base: driver's seats that fold into beds, water for drinking and rehydrating food, a toilet and plenty of curtains to provide privacy. Plus, attached to a suit port on the back—where the crew can get in and out without bringing the lunar dust back in with them—are two spacesuits, ready for a moonwalk at almost a moment's notice.

That innovation alone could cut the preparation time for spacewalks from hours to minutes. And other innovations could help a little closer to home. The development of the rover led to new technologies in batteries, fuel cells, advanced regenerative brakes and tires. These are all the same technologies required for electric vehicles here on Earth—the cars, tractors and heavy equipment that the United States needs to reduce its dependency on fossil fuels.

The rover paraded almost two miles through downtown Washington, D.C. on inauguration day.

"This is an exclamation point on the hard work and vision of our team," said astronaut Mike Gernhardt, who drove the rover during the parade and is the LER project manager. "The LER is the culmination of a lot of great work by a very talented team, and it will demonstrate our vision of the new lunar program to our new president."

For photos, video and more information on the LER, visit:
<http://www.nasa.gov/exploration/home/LER.html>

The LER is a plug-in electric vehicle with a cutting-edge Lithium-ion battery. With the batteries NASA is developing, an Earth-based electric sedan could travel 500 miles before needing to be recharged.

Program introduces youngsters to careers in science

By Neesha Hosein

Rocket science is not such an out-of-this-world concept for some high school students, thanks to the SystemsGo Aerospace Program.

SystemsGo is a product of Ignite, a nonprofit organization whose mission is to enhance education for better workforce development and to ignite tomorrow's innovators.

Brett Williams, an instructor at Fredericksburg High School in Fredericksburg, Texas, is the founder and director of SystemsGo, which is centered around teaching students to design and launch rockets.

"It is a progressive, innovative public education program, developed to promote project-based learning (and) problem-solving. Its intent is to support workforce development in the field of engineering," Williams said.

The program is supported by NASA and is a two-year, junior-senior program. The first year is dedicated to the design and development of remotely operated and unmanned vehicles, which are used for research or industrial applications. The second year is when students design and fabricate rockets for testing, reaching elevations of 80,000 to 100,000 feet.

Aside from NASA, SystemsGo is certified by The Space Foundation, Johnson Space Center, the U.S. Army, as well as numerous government and corporate partners.

Williams made a visit last December to Houston to meet with NASA Shuttle Program's Flight Dynamics Division and also with some local school officials interested in replicating the program.

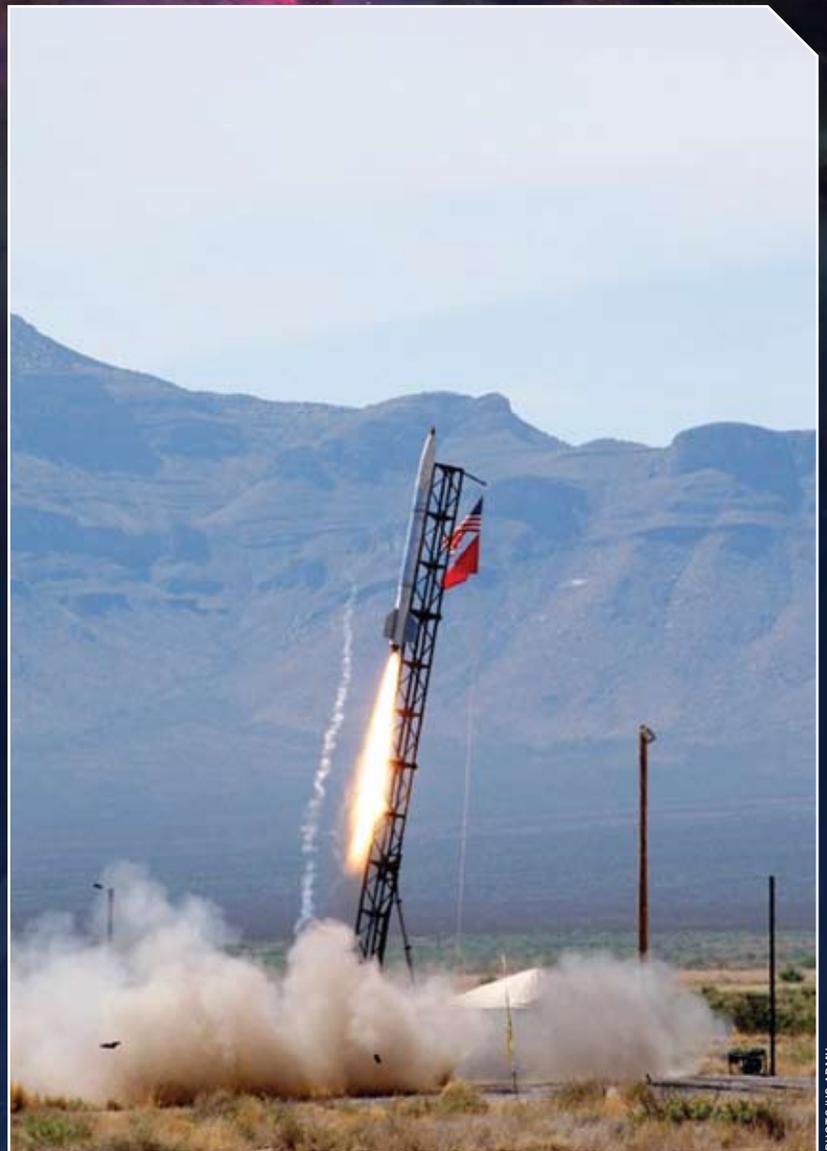
With Governor Perry's approval of funding, Williams said the program could extend beyond Texas to Tennessee, Indiana, Iowa, Maryland, Virginia and New York.

Michelle Woods, program coordinator, said that SystemsGo promotes teamwork.

"It is remarkable to see the kids divide into teams and delegate responsibilities, while at the same time, working together," Woods said.

Ignite President Carson Dickie said that "after two years of outreach, Ignite has established SystemsGo at 26 high schools across Texas."

"We presently have five schools in Houston," Williams said. Williams hopes the program, in partnership with NASA, will continue to grow to other areas and draw more schools to participate.



PHOTO/US ARMY

The 500-pound Red Bird-11 rocket launched on May 31, 2008, from the White Sands, N.M., army base. It was the research project of six graduate students out of Stanford University.

The most precious gift and it's free

By Catherine E. Ragin

Even though we are mired in an economic downturn of historic proportions, there is still one gift out there that is extremely precious and completely free—your blood donation. The “gift of life” is something you can give every eight weeks, and your donation can potentially help others in your community who are sick or injured.

Best of all, you can give blood right here at Johnson Space Center with very little effort on your part. All you need to do is show up.

“JSC has partnered with St. Luke’s (Hospital) for blood drives since 1974. The first blood drive was held to help a JSC employee undergoing heart surgery,” said Teresa Gomez, astronaut recruiting specialist and JSC blood drive coordinator.

The program has been a success ever since. The ease of the donation process and convenient locations to donate, such as on site or at Ellington Field, give JSC team members the chance to have a profound impact on someone else’s life.

“There is no substitute for blood. Only another human can supply it,” Gomez said. “Blood can be separated into three components: plasma, platelets and red blood cells. So one blood donation can, in effect, help three patients.”

In a study supported by the National Blood Foundation, more than 5,000 blood donors were asked why they choose to donate. Nearly 75 percent said it was to help others. Respondents also said that giving blood helped them feel good about themselves and was their way of “paying back” for times when they or their families have needed blood transfusions.

JSC has an amazing record of giving.

“We have employees who are regular donors and have donated more than 100 times,” Gomez said. “Also, we have had several ‘special need’ calls for employees during our blood drives. An employee can designate their blood donation in the name of a particular person, and that person receives a credit for the blood they have used.”

JSC’s next drive is Feb. 17 (at Ellington Field) and Feb. 18 and 19 (on site), so there is no need to wait for the spirit of generosity to hit you. Line up, donate and leave a pint lighter ... but filled with pride.

Cream of the crop

JSC’s top donors (as of January 2009)

- Aubrey McDaniel (USA) – 26 gallons
- Ted Kell (MV6-ESCG) – 17 gallons
- Joe Victor (EV-ESCG) – 10 gallons



NASA/BOLDT_JSC2008E155398

A JSC team member steps up to give the “gift of life” at a December blood drive.

For a list of upcoming blood drives, visit:

<http://jscpeople.jsc.nasa.gov/blooddrv/blooddrv.htm>.

Click the “St. Luke’s” link on the Web site to see if you are eligible to donate blood.



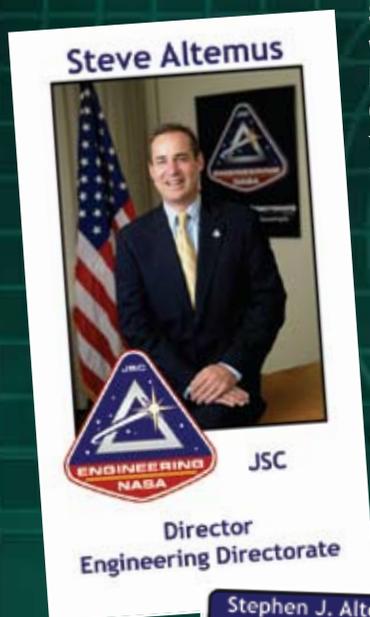
NASA/BOLDT_JSC2008E155415



How many NASA engineers does it take

Answer: All of them.

That was the theory behind an Engineering Leadership Workshop held in December—the first time in history that all the Engineering Department heads and division chiefs from all the NASA centers across the country got together in one room.



“Engineering really can move this agency along the lines of keeping 10 healthy centers if we work together, knowing where all the technical capabilities are in the agency,” said Steve Altemus, director of Johnson Space Center’s Engineering Directorate.

The plan for the workshop started here at JSC. A year ago, the division chiefs from JSC’s Engineering Directorate got together for their annual retreat

and picked several strategic initiatives that they planned to make priorities in the coming year. One was to foster collaboration, innovation and inclusion across the agency. Trish Petete and Matt Ondler, chiefs of the Crew and Thermal Systems Division and the Automation, Robotics and Simulation Division, respectively, were put in charge of figuring out how to make that happen. They decided that for engineers across the agency to collaborate, they first had to know each other.

“There’s so much movement and change in the leadership team,” Petete said. “It wasn’t really easy to know who your counterparts were unless you’d been in that discipline for a long time. And with our limited resources and all the work that’s ahead of us, we have to do things differently—we have to work collaboratively at all levels of the Engineering organization.

At the highest levels, there was already the engineering management board that got the directors together quarterly. And Petete said employees tend to reach across center and agency boundaries, as needed, to get their job done. But there was no good way to keep up with who

was in charge of what at the middle-management level. Every center was organized differently, and up-to-date organization charts were hard to come by.

The JSC Engineering Directorate decided to do something about that, and the first-ever NASA Engineering Leadership Workshop was born.

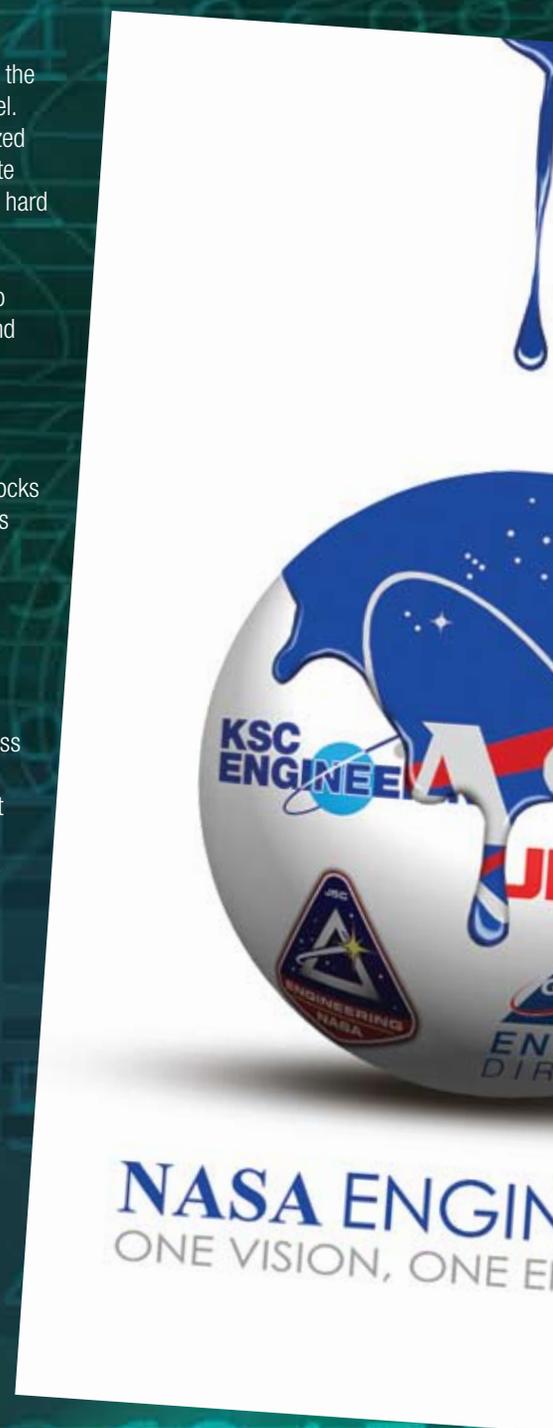
“We went and talked specifically about roadblocks to collaboration,” Altemus said. “How do we emphasize and enable collaboration across the agency, knowing that we have these top-down efforts that say make sure you’re working across 10 centers?”

The workshop brought some 120 directors, division chiefs, associate administrators or their

deputies and NASA’s chief engineer to Arlington, Va., for two days of learning who their counterparts were and what they did. During the first day,

the director of each engineering department spoke to the group about their organization so that the group could begin to see where the lines would connect. During the second day, they started connecting those lines by

breaking into small groups—first along functional lines, and then by discipline—to come up with a list of high-priority work that could



How to change an agency?

By Brandi Dean



be done to make collaboration easier. Seemingly simple things like using a common interface

standard for computer-aided design drawings, or being able to share financial resources so that employees from one center are more easily able to work on a project from another. And more complicated things, like strengthening the agency's systems engineering capability.

"That's 'solve world hunger,'" said Beth Fischer, JSC Engineering associate director. "Everybody, in pockets, is doing that. JSC Engineering has been doing a lot in that area.

But I think that's kind of a broader action."

The idea of the workshop wasn't to overcome all of the agency's challenges in two days, but rather to build the relationship necessary to make headway on those challenges.

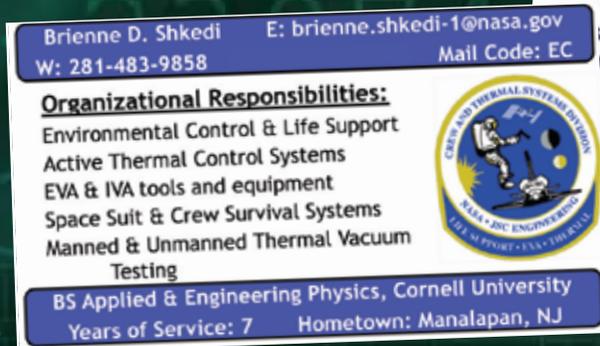
"The key to this was (to) build the relationships so that you can pick up the phone and give someone a call," Altemus said. "Once you have a relationship, you can work out just about any problem you have. But until that relationship's there, your tendency will be to stay within the tribe—to call the people you know and the people within close proximity."

To help make that easier, attendees of the workshop exchanged "baseball cards." Like business cards, but more specific, they included not only contact information, but education background and areas of expertise

and responsibility, as well as a photo so that everyone would be able to put names with faces long after the workshop was over.

All this is coming at a good time, as getting away from the tendency to segregate by center or divisions will be especially important in the work ahead of the agency, according to Steve Poulos, deputy director of JSC's Engineering Directorate.

"Constellation has distributed the work content across the



Associate Division Chief
Power & Thermal Systems
Division

event. In the meantime, some of their goals are already being realized: an avionics working group with members from multiple centers met in January, and the

engineering management board is prioritizing the list of suggestions that came out of the workshop.

"It was a resounding success," Altemus said. "Everybody, to a person, complimented the whole process for how valuable it was in meeting other people, your counterparts, knowing who to talk to, to pick up the phone and work problems out for the good of the agency."

entire agency," Poulos said. "If everyone were to stay solely focused on their own area, whatever they've been assigned and not take a more global view and recognize the need for integration across all the centers, across the different elements that are being produced, then we're going to fail. Engineering, in many respects, is the linchpin to help ensure that the whole depth and breadth of systems engineering and systems integration is happening and that we're going to be successful."

With that in mind, the group intends to ensure that this first time isn't also the last time they get together. Plans are underway to make the workshop an annual

Pictured are a couple of trading cards produced for the Engineering Leadership Workshop.

Johnson Space Center team works to preserve center's history on film

Johnson Space Center has come a long way since it opened as the Manned Spacecraft Center in 1963. Thanks to foresight of the generation that started it all, most of that journey has been documented on film. But what if that historic footage succumbed to the deteriorating effects of an inhospitable environment? Because of a talented team at JSC, we may never have to know.

JSC has millions of feet of historic motion-picture film taken from 1959 to 1995 that contains both institutional and mission footage. While the most precious mission films are kept under lock and key in a cold vault in Building 8, some of the institutional film footage was previously stored in a vault in Building 2N.

that we (may) lose it entirely," Gederberg said.

For the past two years, Gederberg has led a tiger team tasked to preserve and catalog 1,425 miles of historic JSC institutional film footage. Since the restoration process began, about 600,000 feet of film has been outsourced to be transferred to High Definition video.

With almost 7 million feet left to be transferred, JSC and the Information Resources Directorate recognized the need to have this capability in house. As a result, the films are now being converted to digital format using a telecine system in Building 39B.

"The majority of what we do here is interpreting the scopes for color correction," said Rex Ellis of JIMMS TV operations. "The set-up of the facility, lighting and paint allows for a completely neutral environment to get the most accurate color correction possible.

Ellis says that after the transfers are completed, the original film will be shipped out to the National Archives and Records Administration (NARA), and two copies will be made—one for JSC and another for NARA.

"We are addressing a problem that is not unique to us," said Patrick Chimes, who, along with Jim Wheeler, led the development of the new facility.

Chimes points out that, according to the Library of Congress, fewer than 20 percent of American silent films exist in complete form, and half of American films produced before 1950 no longer exist. Even post-1950 films face danger from threats such as color-fading, vinegar syndrome, shrinkage and soundtrack deterioration.

With thousands of films being converted, a new database was created to catalog them and provide an access point to the JSC community. However, this isn't your typical database.

"As the films are scanned, the plan is to make low-resolution video files that will be linked to the database (so) the videos can be played online," Gederberg said.

Ready access to such historical footage couldn't come at a better time. Maura White, Multimedia technical monitor, sees an active need for this endeavor.

"Five years ago there was no practical use for this film footage," White said, "but NASA's Constellation Program is a big customer for historical footage from Apollo."

Engineers working on Constellation have requested Apollo footage to aid them in developing new systems for future lunar missions.

The team has begun converting the earliest films and is working their way through the archives. White believes that this project will take close to five years to complete.

The telecine facility has been operating since late November 2008, and JSC is the only NASA center to have this capability. White hopes to eventually make these resources available across the agency.



NASA PHOTO JSC2008E157190

JIMMS employee Chris Mayberry performs restoration of institutional archive film using a nova scanner.

When construction started on Building 2N in 2006, the historical films stored in the building needed to be relocated. While moving the collection, the team smelled vinegar and tested the film for a debilitating film condition called vinegar syndrome.

"We found low levels in almost all of the films," said Silvia Gederberg, JIMMS contract Multimedia Repositories Records manager.

Vinegar syndrome is characteristic of the decomposition of acetate-based film. Even the slightest hint of vinegar scent is of concern because indicates that the film stock is in a state of decay.

"There was a concern about the deterioration of the collection, and

By Sean Elizabeth Wilson

NASA/PHOTO JSC2008E157184



JIMMS employee Rex Ellis performs film restoration in the telecine transfer facility.

NASA/PHOTO JSC2008E157197



The new telecine transfer facility located in Building 39B.



A moment in space history



NASA/PHOTO S77-28138

On Feb. 18, 1977, Space Shuttle *Enterprise* completed its first flight test.

Spotlight

Barry Tillman

Q: Your work title and company?

A: I work for Lockheed Martin and just received a promotion from senior Human Factors engineer to Lockheed Martin fellow.

Q: How long have you been with NASA?

A: About four years. I have consulted on and off with NASA since 1986.

Q: What kind of hobbies or interesting things do you do away from the office?

A: I enjoy (home) construction. I built my own house and volunteer regularly with Habitat for Humanity. I also like flying—I haven't done it for many years but would like to get back into it.

Q: What is your idea of a perfect vacation?

A: It varies with my mood. Right now it would include a lot of lounging on a quiet, tropical beach.

Q: What is the last good book or article you read?

A: I have enjoyed going back to some of the older works, downloading them and reading them on my PDA. I think Jules Verne's "A Trip to the Moon" was really fun.

Q: What is the best movie in your collection?

A: I'm not much of a movie buff—I think "2001: A Space Odyssey" and "The Wizard of Oz" made the biggest impressions on me.

Q: What is the coolest part about your job?

A: Helping to write engineering design guidelines (NASA-STD-3001, Vol. 2 and handbook) to help make it possible for humans to successfully live and work in space. Also, meeting and working with very smart and interesting people.

Q: What does Johnson Space Center mean to you?

A: Johnson Space Center is a nest for the next phase of human evolution.

Q: What do you look forward to at NASA?

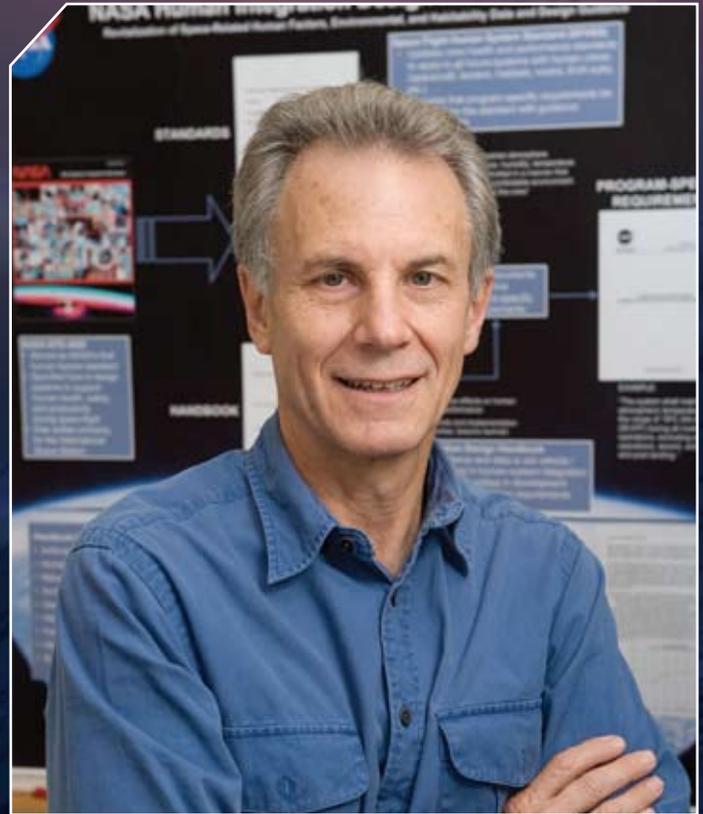
A: Standing in Teague auditorium, watching the 13th NASA astronaut step on the moon.

Q: What would people be surprised to know about you?

A: A lot of people might not know that before coming to NASA, I spent nearly 25 years working for myself as a human factors engineering consultant. They might also be surprised that I flew a light airplane (Cessna 150) on round trips from the West Coast to Michigan, and from the West Coast to Tennessee.

Q: What is your best memory at JSC?

A: I think one of the most exciting times was my trip to Rome with JSC colleagues to work with other countries in the International Standards Organization to establish worldwide human factors design standards for space systems. In quieter times, I love the peaceful environment at JSC and sitting by one of the ponds, eating lunch and watching the ducks.



NASA/STAFFORD JSC2009E017931

Q: What is your favorite quote?

A: "A positive attitude will not solve all your problems, but it will annoy enough people to make it worth the effort," by Herm Albright.

Q: Who are your heroes?

A: No special one—I've found heroic qualities in almost everyone I've met. Those heroes mean more to me than the ones historians come up with.

WANTED!

Do you know a fellow JSC team member who does something extraordinary on or off the job? Whether it's a unique skill, interesting work, special professional accomplishment, remarkable second career, hobby or volunteerism, your nominee may deserve the spotlight!

The Roundup shines the light on one person each month who is chosen from a cross section of the JSC workforce. To suggest a "Spotlight" candidate, send your nomination to the JSC Roundup Office mailbox at jsc-roundup@mail.nasa.gov with the person's name, title and a brief description of why he/she should be considered.

Center Scoop

SAVE THE DATES SPACE WEEK TEXAS 2009 MARCH 4 TO 12

On Oct. 1, 2008, NASA turned 50. Johnson Space Center is taking a road trip across the Lone Star State to celebrate our accomplishments of the past and share our plans for the future. NASA exhibits, astronaut autograph sessions and educational opportunities are all part of the festivities. The next two stops are in Austin and College Station. Come by and see what NASA's next giant leap will be.

Events Schedule:

- **March 4:** Kickoff event in Austin, Texas
- **March 5:** Space Day at the Capitol in Austin, Texas
- **March 6-8:** NASA Driven to Explore mobile exhibit at the LBJ Library and Museum in Austin, Texas
- **March 9-12:** NASA Driven to Explore mobile exhibit at the Bush Library and Museum in College Station, Texas



A FAREWELL

As of Jan. 20, NASA Administrator Mike Griffin's resignation from NASA became effective.

He spoke to JSC team members in person for the last time on Jan. 9 during an all-hands meeting, where he said, "I think we're all aware we have a political transition in front of us. I was asked in an interview what I was proudest of in my years (with NASA), and I said, 'The quality of the team we've put together.'"



NASA/B0.LDT jsc2009e007734

ROUNDUP THOSE ROUNDUPS

Don't throw away those *Roundups*. Kathy Scheer in the Mission Operations Directorate (MOD) Library in Building 4 North got the idea of "rounding up" the *Roundups* that people may not keep, collecting and then mailing them to our troops during Operation Shoebox, which Bastion Technologies, Inc. participates in twice a year. If you have any *Roundups* (old or new), save them to donate when your company does an "Operation Shoebox." You can also mail or bring them by the MOD Library in Building 4 North, Room 2023.



Goodwill to all



NASA/PHOTO DSC_1668



NASA/HARNETT jsc2008e156300

As the Johnson Space Center team invaded Galveston Island to celebrate NASA's 50th Anniversary, they left behind more than confetti and dirty dishes. The JSC team donated a mountain of toys to give to Galveston children whose lives were impacted by Hurricane Ike.

Joyce Abbey worked with the Family Service Center in Galveston to determine how best to get the toys into the hands of children in need. The perfect opportunity to reach Galveston's children appeared in the annual "Cookies and Punch with Santa" event, hosted by Paige Fertitta and the San Luis Resort and Conference Center.

On Dec. 22, Space Center Volunteers, along with volunteers from Galveston's Ball High School and employees from the San Luis Resort and Convention Center, helped Santa distribute gifts to approximately 1,000 children to make their holidays brighter. Not only did Santa visit with the children, so did JSC Director Mike Coats and JSC's own mascot, Cosmo.



NASA/HARNETT jsc2008e1563038

Roundup

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