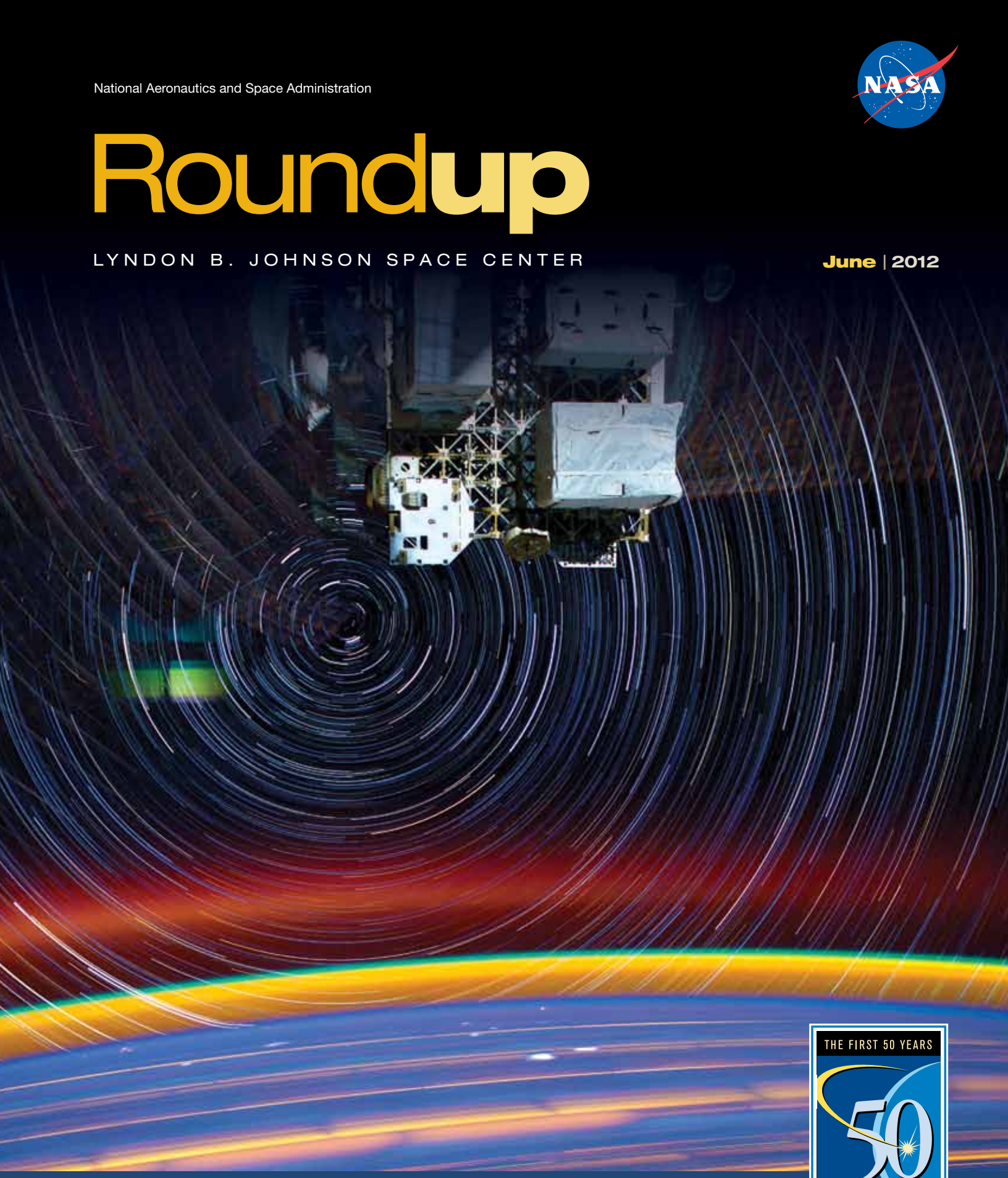
National Aeronautics and Space Administration

Roundup

LYNDON B. JOHNSON SPACE CENTER

June | 2012

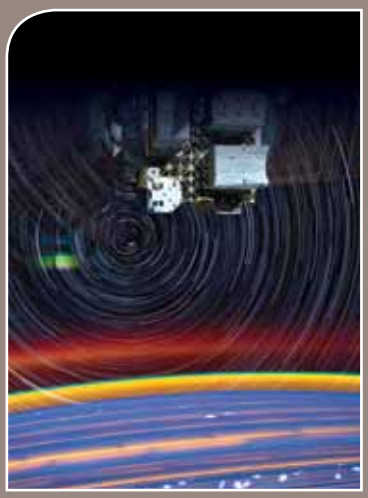


THE FIRST 50 YEARS

50

JOHNSON SPACE CENTER

As the world turns



NASA/PHOTO

On the cover:

This is a composite of a series of images photographed from a mounted camera on the Earth-orbiting International Space Station from approximately 240 miles above Earth.

NASA/SOWA JSC2012E041135

Photo of the month:

Lucky Charms, born on April 6 in the Longhorn Project enclosure at Johnson Space Center, romps with her mommy, Honey Nut Cheerio.

Guest Column

NASA/PHOTO

John Saiz
JSC Chief Technologist

As we've just completed the third annual Innovation Day at Johnson Space Center, I hope you had the opportunity to see the great variety and vast number of innovative activities across the center. There is a growing excitement I've been sensing behind our portfolio of technology projects and the focus on efforts to support NASA's strategic goals for human spaceflight beyond low-Earth orbit (LEO)—and no wonder. Here at JSC, we're working on critical technologies that will one day allow humans to venture far beyond LEO for longer periods of time and eventually set foot on Mars.

To get the word out about some of that work, this month we're launching a new website designed to be a one-stop shop for JSC technology news and events. In fact, we're calling it Technology@JSC, and you can find it at http://www.nasa.gov/centers/johnson/technologyatjsc/home/index.html.

Our hope is that whatever your technology itch is, you'll be able to scratch it there. If you just want to know more about what's going on, there are stories highlighting some of JSC's projects. If you're wondering how you can get more involved in technology developments at JSC, we have information links to policy documents, program pages, facilities and creative spaces around the center. We're also building a schedule of events that will include the timetables for current and upcoming proposal calls, speaker series and brown-bag seminars, open meetings of JSC's Technology Working Group and other technology events that may be of interest to you. If you're already working on a research or technology project, there's a "Technologist Toolbox" section with items we think you'll find helpful. We've even tried to cover people who don't work at JSC but are interested in partnering with us.

It's a brand new website, so we'll be tweaking it for a while, trying to make sure we're meeting your needs and JSC's needs. You can email suggestions to jsc-technology@mail.nasa.gov. We're building this site for you, so please take a look for yourself and let us know what you think.

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ISS Science Corner

By Jessica Nimon

Ready to launch! A new website sharing space station benefits for humanity

When the International Space Station was first imagined, the idea was to create an unprecedented research platform to support microgravity investigations for the benefit of all humankind. That goal is now a reality, and researchers have not waited for completion to begin working on studies to build on our knowledge of science and technology in space. Because of this, we can already see some amazing breakthroughs.

PHOTO CREDIT: JASON STANG

Paige Nickason is the first patient to have brain surgery performed by the robotic neuroArm, which was developed using space station technology.

So just what has the space station yielded to humankind? You can discover the benefits for yourself, thanks to another international collaborative effort. Working together, station partners launched the International Space Station Benefits for Humanity website on March 1. This site enables readers to look at the global progress resulting from the knowledge and technologies of the orbiting laboratory.

Camille Alleyne, International Space Station assistant program scientist with NASA, explains the goals behind this new effort.

"The website is a great resource for the general public and other stakeholders," Alleyne said. "It communicates the value of the International Space Station as a unique scientific and educational platform that enables discoveries that benefit all humanity."

The site will be featured on all of the partner agency websites, in both English and the applicable native languages. This includes the Canadian Space Agency, European Space Agency, Japan Aerospace Exploration Agency, Russian Federal Space Agency (or Roscosmos) and NASA. The stories contributed were the work of writers from around the world, representing each of the agencies whose collaboration took the station from conception to reality.

"Working with the partners on this initiative was truly an extraordinary experience," Alleyne said. "This effort is a continued demonstration of the unprecedented achievement in international cooperation, which is one of the great values of the International Space Station."

Prompted by the International Space Station Multilateral Control Board, the site will feature stories that raise awareness to the station benefits already making a difference in our world. These accounts will be updated as additional accomplishments come to light and vary in topic from education to technology to telemedicine advancements.

"Users will find stories about station research that benefits humankind in the areas of human health; Earth observations; global education; vaccine development research; station-generated images that assist in disaster relief and farming; and educational projects that inspire future scientists, engineers and space explorers are some examples of research benefits," Alleyne said. "The resulting knowledge of these benefits will be extended to more countries and people for the betterment of humanity. They will be used to improve the quality of people's lives globally."

NASA/BLAIR JSC2006E03488

A Westbrook Intermediate School student in Friendswood, Texas, looks for the longitude and latitude of her next target for the International Space Station's Earth Knowledge Acquired by Middle School Students, or EarthKAM, camera.

The site focuses primarily on findings that are making their way into general use here on Earth. For instance, doctors are already operating with space station robotics technology when they employ the neuroArm to perform delicate surgical procedures. There are also products with the potential for worldwide impact that are on the horizon, such as vaccines to inoculate against salmonella and even advanced delivery methods of microencapsulation for cancer treatments. These are just some of the developments derived from the work done aboard the space station highlighted as part of this humanitarian website.

Many efforts provide valuable conceptual and scientific data, and researchers will continue to build upon the ever-growing body of space and microgravity knowledge. For results from specific investigations performed on the space station, readers can also visit NASA's International Space Station Program Science Results Web page at http://www.nasa.gov/mission_pages/station/research/results_category.html.

Visit the Benefits for Humanity website at http://www.nasa.gov/mission_pages/station/research/benefits/index.html.

Read International Space Station Program Scientist Julie Robinson's blog at http://wiki.nasa.gov/cm/blog/ISS%20Science%20Blog/posts/post_1332880376134.html.

One of the areas the International Space Station Benefits for Humanity website will highlight is Earth observations, which aid in providing information for disaster response to natural events like the Sarychev Peak volcano eruption pictured.

NASA/PHOTO ISS020E009048

Plan, train, fly (21st-century style)

By Catherine Ragin Williams

The Mission Operations Directorate (MOD) still adheres to the creed, "plan, train, fly," but with shifting missions and commercial partners joining NASA for galactic exploration, the training systems that were sufficient in the past are being modernized to a 21st-century standard.

Training Systems (TS)-21 is the project leading the way for the training aspect of plan, train, fly. Historically, MOD developed specific training simulation capabilities for each of its human spaceflight programs, with very limited commonality shared. But with TS-21, MOD can provide simulation services for more than one spacecraft—and more than one program—using a common framework. To do this, MOD is building an architecture that is flexible enough to provide training capability for a wide array of spacecraft.

NASA/HARNETT JSC2012E053431

An early prototype of the Orion Display and Control panel. The panel is driven by a simulation of the Orion vehicle that provides realistic displays to the crew and responds accurately to crew inputs. Later versions will be of much higher fidelity and incorporated into full cockpit mock-ups.

NASA/HARNETT JSC2012E052830

The U.S. Destiny Lab Module mock-up in the Space Station Training Facility. The simulation and systems software that support crew training in the mock-up is being converted to the TS-21 architecture to support a common simulation platform for all NASA manned spaceflight vehicles.

"We've basically got several product lines within the project, where our first delivery is for what they call a visiting vehicle training system," said TS-21 Project Manager Scott Killingsworth. "When they say visiting vehicle, that means vehicles that come up to space station (and) rendezvous, dock and do cargo transfers. There's a need for ISS (International Space Station) training to help get ready for the arrival of those vehicles."

Second in line is the network simulator, which has to do with assets in space such as communications satellites; ground sites where they receive the signals from those satellites; and the wires and connections from all the ground sites into the Mission Control Center (MCC).

The last major product line in work today is an upgraded space station simulator.

"MOD saw the benefits of modernizing that architecture to help drive down operations and sustaining costs," Killingsworth said.

While most of the glitz with TS-21 revolves around the simulators being mocked up for astronauts to train in, improved software and an integrated framework, though less glamorous, is at the core.

"It all starts with a simulation of the spacecraft," Killingsworth said. "And (that involves) very complex, mathematical equations represented in software that mimic the behavior of spacecraft. That's always at the heart of the training systems we build. There are other elements to it as well, beyond the vehicle simulator. You need the ability to pull together, or configure, a training session."

The more visible elements of TS-21 are the new crew stations, where the crew goes inside a representation of the craft they are going to fly.

"There will be switches and dials and hand controllers and displays and all those kind of things, and they'll interact with those and actually train how to fly that particular vehicle," Killingsworth said. "We look at the designs of the interior of each one of those vehicles, and then together with our customers, determine what level of fidelity we need to achieve in mimicking the interior of that spacecraft. How flight-like does it need to be in order for the astronauts to get good training? In some cases, like with shuttle, it was a very high level of fidelity."

Orion will most likely see that level of fidelity, too, but there's not only Orion and station to think about. A big advantage with TS-21 is adaptability of the training systems to fit new program and commercial provider needs.

"If we can assume responsibilities for simulating a number of different vehicles, then the cost of adding each one incrementally is driven down," Killingsworth said.

As the mission environment changes, "you've got the modernization for multiple vehicles," said Amy Melendrez, Systems Engineering branch chief. "And that modernization provides for easier integration of vehicle-specific models."

The MCC has executed many flawless missions in the past, and will continue to do so. But with TS-21, training will be more streamlined and flexible to meet newer demands.

"That's our gold standard," Killingsworth said. "To make sure that the way it looks to the flight controllers on their display very much mimics the behavior of a real vehicle. That's where you get your highest quality training."

Commercial partners share in NASA's future

Compiled by Neesha Hosein

As NASA looks for avenues to take the space program to new frontiers, commercial partners will play a vital role in the future. Progress has been made, and NASA has new milestones to add to its growing list.

Parachute drop test

On May 2, the Boeing Company successfully completed the second parachute drop test for its Crew Space Transportation (CST) spacecraft. This milestone was part of the company's effort to develop potential commercial crew transportation capabilities to transport U.S. astronauts and cargo to and from low-Earth orbit (LEO) and the International Space Station. The company's CST system is designed for reuse and can hold up to seven crew members.

The test took place 10,000 feet above the Delmar Dry Lake Bed near Alamo, Nev., where a helicopter hauled up the CST-100 crew capsule. A drogue parachute deployment sequence was initiated, followed by deployment of the main parachute. Six inflated air bags softened the capsule's landing. The test demonstrated the performance of the entire landing system.

"Boeing's parachute demonstrations are a clear sign NASA is moving in the right direction of enabling the American aerospace transportation industry to flourish under this partnership," said NASA's Commercial Crew Program Manager Ed Mango. "The investments we're making now are enabling this new path forward of getting our crews to LEO, and potentially the space station, as soon as possible."

PHOTO CREDIT: BOEING

The integrated parachute system, including the two drogue chutes, were designed, fabricated and integrated by HDT Airborne Systems of Solon, Ohio. ILC Dover of Frederica, Del., designed and fabricated the landing air bag system used for the test.

Dream Chaser

The Dream Chaser model and its Atlas V launch vehicle is another potential means of transporting future crew members and cargo to station. It is part of NASA's Commercial Crew Development program's effort to regain the American capability to launch astronauts safely to station. Sierra Nevada Space Systems is developing the craft under a Space Act Agreement with NASA. The Dream Chaser model and its launch vehicle are undergoing final preparations at the Aerospace Composite Model Development Section's workshop for buffet tests at the Transonic Dynamics Tunnel at NASA Langley Research Center (LRC). The reusable spacecraft would carry as many as seven astronauts to the space station.

Hundreds of strategically placed sensors will help engineers from Sierra Nevada Corporation, United Launch Alliance and LRC analyze pressure fluctuations along the two vehicles during ascent, particularly at transonic speeds. Transonic wind-tunnel testing of large, highly instrumented scale models is the only method of determining the buffet environments of launch vehicles with complex shapes, suchas Dream Chaser.

PHOTO CREDIT: NASA EDGE/RON BEARD

The XX factor, then and now

Women inhabiting the workforce, and even now perhaps dominating the workforce if you read certain statistics, certainly wasn't a common occurrence in the 1960s. But NASA was ahead of the curve if you consider the dynamics that existed during the famed Apollo era. Yes, men comprised the largest portion of that workforce—but career women were growing in number. And at NASA, many even held technical positions uncharacteristic to females. It wasn't just the cusp of greatness for the space program—it was also so for equality.

Part of something special

It was history in the making in those days, and the ladies lucky enough to be employed at NASA, or with its contractors, knew it.

"I was more of a close observer of the Apollo planning effort than a participant, for my only Apollo assignment was alternate mission planning," said Cathy Osgood, who initially had worked on the Gemini Project developing rendezvous techniques at NASA. "However, I did get to follow the development of the 'Eight to the moon' activity from the time is was only whispered about in the halls until it was finally accomplished. It was very exhilarating to know exactly what was going on before it made it into the newspapers and TV."

NASA/PHOTO S66-68861

Cathy Osgood began her NASA career as a math aide, or a computer, in 1959. (In those days NASA employed women as computers, to provide data analysis with the use of calculators and to plot data.) Osgood, who had worked numerical problems with NASA engineers and had a bachelor's degree in mathematics, eventually became an aeronautical engineer at the Manned Spacecraft Center, where she worked on spacecraft rendezvous.

Indeed, it was a heady feeling to be so closely involved in the process and personally know the heroes kids learn about in books today.

"Those were exciting times," said Sylvia Stottlemyer, now a Human Resources program specialist at Johnson Space Center and the communication lead for the Inclusion and Innovation Office. "I was hired after Apollo 13 and just before Apollo 14. When one mission was launched, another was waiting in the wings. Even at a young age, I had a sense that I was playing a small part in America's spaceflight history. Working with the Apollo astronauts on a daily basis was exciting also. They knew they were creating history, and you could feel it in the office."

NASA/PHOTO S78-26111

Estella Gillette receives the Superior Achievement Award from Dr. Christopher C. Kraft during the annual awards ceremony in 1978.

People working at JSC, then the Manned Spacecraft Center, felt ownership of their contributions to the men flying those daring missions to space.

"Knowing our astronaut training activity helped prepare astronauts to fly to the moon and return safely made our jobs seem vital to our nation," said Selena Post, who began at NASA in 1967 as an engineering aide supporting the Lunar Module Simulator. "We passed those men in the halls, so they were very real and precious to us."

Then …

Though these ladies were in the minority at NASA, most didn't even notice.

"I was a teenager when I started, so a male-dominated world, at that time, seemed normal to me," Stottlemyer said. "It's just what it was."

Osgood began at NASA in 1959, along with her husband, who she said helped her learn the ropes. Unlike most couples, perhaps, they were able to have stimulating discussions about space and science.

"I never felt like a trailblazer," Osgood said along the same vein, though she acknowledges that while she was taking math, chemistry and physics in college, the classes were filled to the brim with guys.

Estella Gillette, who would later become the deputy director of JSC

By Catherine Ragin Williams

External Relations and director of Equal Opportunity Programs, said of the testosterone-filled workforce, "Actually, we didn't know how it felt any other way. Technical women were very much in the minority, probably a handful of women. Our roles were to support the mission, and we proudly did it our way."

PHOTO COURTESTY SELENA POST

One of Selena Post's teammates tests out a camera received for crew training by asking her to pose for a photo.

And men at NASA, too, were gentlemen about the changing work environment.

"I believe men of my age and older (I was 20 when I started work at JSC) were trained to be polite to women," Post said. "Perhaps because I was one of the few women, I came to enjoy working with men. I was frequently the only female in the room or working on projects. I recall one instance when my Unisys leader called me into his office to meet a corporate visitor from our headquarters. When my boss introduced me as the security and safety manager, the visitor looked astonished, or as if my boss was kidding. My boss quickly and humorously added, 'She is really a 6-foot-4-inch hairy armed man—in disguise.'"

… and now

An obvious perk of working in the 21st century: technology. At NASA, that is not only obvious in our workstations, but the programs reaching even deeper into the cosmos.

NASA/PHOTO S70-35148

A different kind of world. Staff members from NASA Headquarters, the Manned Spacecraft Center and Dr. Thomas Paine (center of frame) applaud the successful splashdown of the Apollo 13 mission, while Dr. George Low smokes a cigar (right) in Mission Control. Apollo 13 crew members splashed down at 12:07 p.m. CST on April 17, 1970, in the south Pacific Ocean.

"Advances in technology have made our jobs so much easier," Stottlemyer said. "Back in the Apollo era, we did everything by hand or in person. But strong relationships were built on that day-to-day interaction. It had its benefits."

Interestingly, even now, people are the best aspects of the job.

"On a personal level, meeting NASA people and contractors who became lifelong friends was an added gift," Post said. "So many people I've known through the years dedicated themselves to their jobs and gave of their time and energy far beyond a 40-hour workweek. In the Apollo era and far beyond, I was blessed to have worked with such wonderful people on such exciting programs."

In the center of spaceflight action is a great place to be now, as it was then.

NASA/STAFFORD JSC2012E039885

Now it's very common to see women not only working in mission control, but in technical fields such as engineering, robotics and more.

"After working from age 16 until age 60, I have loved being an American in the U.S. workforce," Gillette said. "We're always proactive. Having been born in Mexico, my family came to the U.S. seeking a better life, and we certainly found it. But we have also returned that gratitude many, many times by serving this country, by giving back. I have met many people throughout my work life, and there's nothing better than when someone tells me that something I did or said made a difference for them. It's when I know that, although it was not always deliberate and it's in retrospect, I have been 'paying forward' for all of those people who reached out to me—even when I didn't know they were—to make me a contributing member of the workforce. I liked that at NASA and JSC, I kept running into those kind of people."

Fashion students lend expertise to NASA technology development

By Rachel Kraft

Though it won't be coming to a catwalk near you, NASA engineers are tapping into the creativity of fashion students to help integrate displays, controls and sensors into clothing that will improve efficiencies for astronauts.

The Human Interface Branch in the Engineering Directorate is incorporating a variety of components like lights, alarms and gas analyzers into clothing and other wearable systems for astronauts, which will allow the explorers to gather information in space or wirelessly change how an aspect of a space vehicle operates.

"Wearable technology, at least in these early stages of the technology development, is really focused on putting sensors, displays and controls onto an astronaut's body," said Cory Simon, human interface engineer. "We're focused on inside the space habitat so that astronauts can perform additional functions and augment their capability to allow them to reach things that they couldn't reach through the controls on their body, or see things they couldn't see."

As part of the development, the human interface team, in collaboration with the Habitability and Human Factors' advanced pressure garment technology development team, connected with a group of fashion students at the University of Minnesota through a professor who directs the university's Wearable Technology Lab.

"We asked them to help us work on how we can attach and remove functionality from our garments so that we can have a single garment that has a diverse set of capabilities," Simon said. "The human interface group is focused on hardware and display capabilities, so we're more concerned with the physical aspect and how the technology functions."

PHOTO CREDIT: KHAMPASITH DAVISON

University of Minnesota fashion students pose for a photo in Building 7.

Fashion students tend to think differently about garment design and consider different aspects of developing something wearable, such as aesthetics or fit, which can help make a garment more practical.

Student teams worked on a variety of projects. One group designed a liquid cooling garment using new pattern techniques to help improve spacesuit cooling. They considered fabric selection, the placement of cooling loops around joints and the different designs needed to cool the torso compared to extremities.

Another group tackled wearable electronics placement and designed a garment for hands-free computing and communication. Prototypes helped them analyze fit and comfort in various positions while maximizing mobility and reducing tension. The teams also developed a prototype for consumer use.

PHOTO CREDIT: KHAMPASITH DAVISON

Students show their wearable technology design.

"The best part about this project was that after we had done all the research and had this incredible collection of information, (we) finally got to synthesize this information and design something based on that information to solve a specific problem," said Jennifer Voth, a Minnesota student who helped create a prototype of a spacesuit boot that conforms to the user's foot shape and size while preventing injuries from abrasion and impact.

"I've learned how to back up my design, test different aspects on an objective scale … and I learned how to incorporate design and science to get a better result," said student Issa Mello, who also worked on the boot project.

Working with fashion students allows NASA to rapidly test a wearable function.

"When we get to the point where we can put this on the space station or on a future habitat, we'll have refined it iteratively with different swatches and garments, so that hopefully we'll have a very functional garment that really allows the astronauts to act more efficiently and be enabled more so than they are now," Simon said. "We're definitely looking forward to working with them again and other universities as well. There's a lot of expertise out there that we can leverage and a lot of students with creative ideas."

This partnership was also made possible by the University Research, Collaboration and Partnership Office within the Johnson Space Center External Relations Office.

PHOTO CREDIT: CORY SIMON

Students visited Johnson Space Center to share their prototypes, including the Reconfigurable E-Textile Garment project.

Center Operations paves way for **energy savings**

By Rachel Kraft

As the summer quickly heats up, the Center Operations (Center Ops) Directorate is working to quench the center's energy consumption habits with a slate of energy savings and water conservation projects. Improvements are taking place in response to executive orders and a December 2011 presidential memo that set energy-use savings, renewable energy generation and water consumption requirements for all federal agencies.

"We're required to save 3 percent energy per year with a baseline year of 2003, so by 2015, we're required to save 30 percent of our energy from that baseline," said Johnson Space Center Energy Manager Rob Way. "For water conservation our baseline year is 2007, and we're mandated to save 2 percent per year, with a total of 26 percent, by 2020 from that baseline."

In 2003, the center had completed an energy savings performance contract that reduced energy consumption. Energy *costs* savings, though, are different from energy *use* savings.

"Our electricity cost is so low that when we want to look at doing a renewable energy project, the cost analysis indicates that the payback is many, many years, and it doesn't make sense to pay that amount for the savings," Way said.

Center Ops is putting together a Combined Heat and Power (CHP) project that will be bundled with a renewable energy initiative, which will help reduce the cost payback of the renewable project. If cost proposals are favorable for including the renewable energy project with the CHP, it will remain as part of the total project. The CHP is a gas-powered turbine that will serve as a back-up power source. It uses excess heat generation to make steam that can then be used to run chillers and heat or dehumidify buildings. When Building 12 is fully operational later this year, it will be 40 to 50 percent more efficient.

NASA/BLAIR JSC2012E018607

Building 12, with its novel vegetative roof, will be 40 to 50 percent more efficient with its energy use savings.

NASA/PHOTO JSC2005E11876

Excess water in the ponds used to be filtered to a storm drain. Now, water is recirculated back from the pond near Building 1 to the pond closest to Building 8, resulting in increased conservation.

Agencies are also required to generate 7.5 percent of their energy from renewables on site, such as wind and solar sources, by 2013.

To conserve water, new water meters installed around site will measure water consumption in each building. Center Ops is changing JSC's piping system to separate the potable water and fire suppression systems, and a project designed to conserve water pumped to the ponds in the mall area has also helped.

For 40 years, excess water in the ponds was filtered to a storm drain. A recently completed project now recirculates water back from the pond near Building 1 to the pond closest to Building 8.

"It's as if you had a hose at your house, took it down to the street and put it through the storm sewer, and turned it on 40 years ago and just let it run," said Joel Walker, director of Center Ops.

The new system will save approximately 10 million gallons of water each year.

Currently, the center is beating water conservation requirements, but doesn't fair as well on energy savings.

"Unfortunately, on energy use, we're about 22 percent above our goal," Way said.

Center Ops also plans to concentrate on smaller initiatives that contribute to energy savings. With the help of facility managers, the organization is continually trying to modify most building operating hours to a 6 a.m. to 6 p.m. schedule during the workweek for buildings not critical to mission or Center Ops.

"When you get a person who wants to come in and work on a Saturday morning, you have to turn the whole air handler on for that one person, and it really uses a lot of energy," Way said. "So we're trying to work with the occupants to identify their exact operating need."

"We'll be doing more as we go throughout the summer, working on the big stuff but also the little stuff," Walker said. "If you can save, you can put it right back into maintenance and other services."

Spotlight: **Courtney Barringer**

Education and Outreach Specialist, Tietronix Software, Inc., as part of NASA's Human Research Program Education and Outreach team

NASA/STAFFORD JSC2012E052190

Q: Coolest part of working at Johnson Space Center?
A: Working with Space Life Science researchers and specialists to bring exciting research to others. People are always fascinated to learn about the human body in space, and what is exploration without the human element?

Q: Favorite hobbies or interesting things you do away from the office?
A: Cooking, entertaining, blogging and reading.

Q: When you were a little tyke, what did you tell people you were going to be when you grew up?
A: A forensic scientist. I always knew I wanted to do something relating to biology. My dad was an electrical engineer at NASA, and my mom is a teacher. I think I sort of melded both worlds in going into math and science education.

Q: What would people be surprised to know about you?
A: Before I started working at NASA, I was a fitness center manager and a personal trainer. People would be surprised to know that I used to physically train police cadets.

Q: If you could trade places with any other person for a week, famous or not famous, living or dead, real or fictional, who would it be?
A: Julia Child while she was at Le Cordon Bleu in Paris. She was a trailblazer and an inspiring role model for women.

Q: What is your favorite indulgence?
A: I consider any free time I get an indulgence!

Q: What is the best advice someone has given you?
A: What good is learning if we don't take on the responsibility to become mentors? It's our duty.

Q: What seemingly "little things" bring you joy?
A: Time with my husband and twin two-year-old boys. Also, listening to the Pops always puts me in a good mood.

Q: What sparks your creativity?
A: Inspiration and encouragement from other creative people. I share my office with our team's graphic artist, who is also my friend and daily source of creative inspiration.

Q: You are given three wishes. What are they?
A: World peace, the end of world hunger and lifetime provisions for my family.

Q: Describe yourself in three words.
A: Optimistic, organized and motivated.

Q: When did you first become interested in space and why?
A: Probably when I was in first grade because of my dad, Mark Schuette. He was an electrical engineer at NASA for over 30 years, working on communication in the space program (even back during STS-1). I remember him giving me space food and shuttle tiles to take to school for show and tell. Even then, I knew it was pretty cool stuff for a kid to see. He has since passed, but I see his legacy in my daily work.

Q: What is your favorite memory of JSC or the space program?
A: Traveling to Star City, Russia, to schedule and perform post-flight testing on International Space Station crew members as a mission coordinator. It was the experience of a lifetime!

Q: JSC turns 51 in September. Where do you hope to see NASA 50 years from now?
A: Embracing the commercial space sector and working together to establish space colonies and advancements in science and medicine.

WANTED!

Do you know a JSC colleague or team that 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(s) may deserve the spotlight!

The Roundup shines the light on one special person or team each month, chosen from a cross section of the JSC workforce. To suggest "Spotlight" candidates, send your nomination to the JSC Roundup Office mailbox at jsc-roundup@mail.nasa.gov. Please include contact information and a brief description of why your nominee(s) should be considered.

Center Scoop

Johnson Space Center creative spaces initiatives changes things up

The cheapest way to paint the interior of Johnson Space Center buildings is to buy yellow paint in 55-gallon drums and coat the walls with it; but that doesn't consider that paint color, among other workspace features, contributes to or detracts from productivity. The JSC creative spaces initiative, spawned by Center Operations, infuses new elements of change to several buildings around the center to improve creativity and work habits.

"If you have the same conference room, you have the same meeting all the time," said JSC Director of Center Operations Joel Walker. "By changing it up with color, with style, with organization, with design, you make people think differently."

NASA/STAFFORD JSC2012E052581

Leah Galindo (left), communications specialist for the Center Operations Directorate, uses a "creative space" with Joel Walker.

The new spaces in 14 locations around the center were created with the office of the future in mind. Collaborative areas can help people get out of their cubicles or four-walled offices to locations that look and feel different and are designed to ignite innovative thinking.

Other initiatives are under way to provide alternatives to working in the same place day in and day out. JSC "campsites" are unassigned cubicles and offices where team members can relocate and work.

Over time, the center has tuned into what makes people more productive.

"For some people that is a smaller daily footprint, but a bigger community footprint," Walker said.

View the creative spaces at http://spaces.jsc.nasa.gov.

TOMCCAT receives JSC group achievement award

The Orion Mission Control Center A-Team, or TOMCCAT, recently received a JSC Group Achievement award for their exemplary work with the development, configuration and successful execution of the first Orion Exploration Flight Test (EFT-1) Mission Control Center (MCC) data flow tests this past winter. TOMCCAT is a facility working group that has been given the responsibility of preparing the MCC for the EFT-1 mission.

As a result of their outstanding work, the MCC successfully received and processed data from the Engineering Data Lab Houston (EDL-H) on Nov. 15, and then again from the Houston Orion Test Hardware rig located at the EDL-H on Dec. 15. This was a great first step in preparing the MCC facility to support the EFT-1 pre-mission testing and roll through mission execution.

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Roundup

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NASA's **Invention of the Year** basks in adulation (and the sun's rays)

By Lori Keith

You may not be the only one catching the sun's rays this summer while on Galveston Beach or someplace equally steamy. NASA's Invention of the Year, the Solar-Powered Refrigeration System, may be doing just the same—except in remote locations or developing countries around the world.

The Invention of the Year Awards are an important part of the NASA patent program. This year the patented solar-powered refrigerator, brainchild of inventors Mike Ewert and David J. Bergeron III, won the title.

The ability to keep medical supplies or food cold where there is no electricity has long been a challenge, but not so much now that NASA has a solar-powered refrigerator at its disposal. Always looking for renewable energy sources on Earth, NASA chose a solar photovoltaic concept that requires no batteries to power a traditional compressor—which is the cooling source for the refrigerator. In space, this helps store medical samples and food or cool habitats. Some 2 billion people on Earth have no access to electricity, so this refrigerator could have a major impact on human health, particularly in developing countries and other hard-to-reach regions. It would also be a convenience for recreational uses in campgrounds, cabins or on boats.

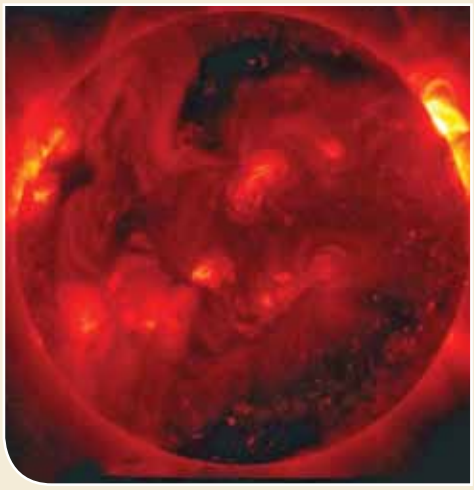

PHOTO CREDIT: JAXA/HINODE

Harnessing the sun's raw energy on Earth may be the secret to spreading technological and medical advances throughout the world.

"This technology is scalable from a solar refrigerator up to building cooling," said Ewert, a Life Support and Thermal Systems engineer at Johnson Space Center.

The cost of the solar panels is a driving factor in how this technology is currently being explored.

"The solar refrigerator application in off-grid scenarios is starting to take off commercially," Ewert said. "The application that is taking off first is to provide cooling for vaccines in developing countries."

Ewert discussed an experiment that he was involved with a few years ago involving a solar panel and heat pump, along with how this concept originated and how power is stored. The World Health Organization certified the refrigerator for use as a vaccine solar refrigerator, keeping vaccines at the proper storage temperature in developing countries and areas without power. The company that has licensed this technology from NASA is now marketing these vaccine solar refrigerators.

The inventors will be recognized at a ceremony to be held at the NASA Project Management Challenge next February and will receive Space Act Awards from the NASA Inventions and Contributions Board.

Watch more about this invention at http://www.nasa.gov/multimedia/videogallery/index.html?media_id=140699431.

NASA/PHOTO

Solar-powered refrigerators like this one may soon reduce the cost and increase the availability of vaccines to people in remote regions.