

National Aeronautics and Space Administration



Roundup

LYNDON B. JOHNSON SPACE CENTER

December | 2011

... and visions of
deep space danced
in their heads

JSC Director



On the cover:

Having a “home sweet home” base away from Earth is one piece of the overall goal of planning for deep space exploration.



MASA/HARNETT JSC2011E204821

Photo of the month:

JSC Director Mike Coats cuddles with a miniature bovine during the annual JSC Child Care Center Halloween Parade on Oct. 31.



MASA PHOTO

I wanted to tell you how pleased I am so far with our Johnson Space Center Employee Resource Groups (ERGs). Initially, I wondered whether affinity groups made sense when we were encouraging our JSC team to be more inclusive and innovative. But those of us on the Inclusion & Innovation (I&I) Council spent many months visiting and benchmarking with leading organizations around the country, including American Airlines, Georgia Power, Texas Instruments and Sodexo, as well as Kennedy Space Center and Goddard Space Flight Center. They were generous in sharing their lessons learned after setting up their own ERGs, including what worked well and what didn't. I talked one-on-one with several executives, many of whom initially had the same reservations I did. But they were also universally positive and enthusiastic about the benefits of ERGs, including the value added to the accomplishment of their missions.

At this moment, the I&I Council has approved ERG proposals for the following five groups: African-American; Asian-Pacific; Hispanic; Human/Systems Integration; and Lesbian, Gay, Bisexual and Transgender. We needed two executive sponsors for each ERG, and we had more than enough executive volunteers for each group. The ERGs are chartered to help with recruiting, on-boarding, mentoring and networking. For those of us who have taken one of the I&I courses and have heard about the concept of “insiders vs. outsiders,” we know ERGs can help greatly in making everyone feel more like an “insider.” Our research has indicated that the groups will become an excellent way to foster innovation, since they are cross-functional by nature and collaborative by design. They are not allowed to participate in any collective bargaining activities (a union responsibility), promote political positions, oppose other groups or advocate for individuals. We have already heard excellent ideas from some of the groups, and their enthusiasm and energy are impressive.

I'm delighted that I listened and kept an open mind about ERGs. (My family mentioned something about teaching an old dog new tricks, but I have no idea what they meant.) I'm pleased with the ERGs so far. I strongly endorse all of them and I encourage other groups to consider applying for ERG status as well. I've been asked a few times, “How does the I&I Council define success?” One good answer is, “When everyone at JSC feels like an insider.” Let's work hard to make that a reality as soon as possible.

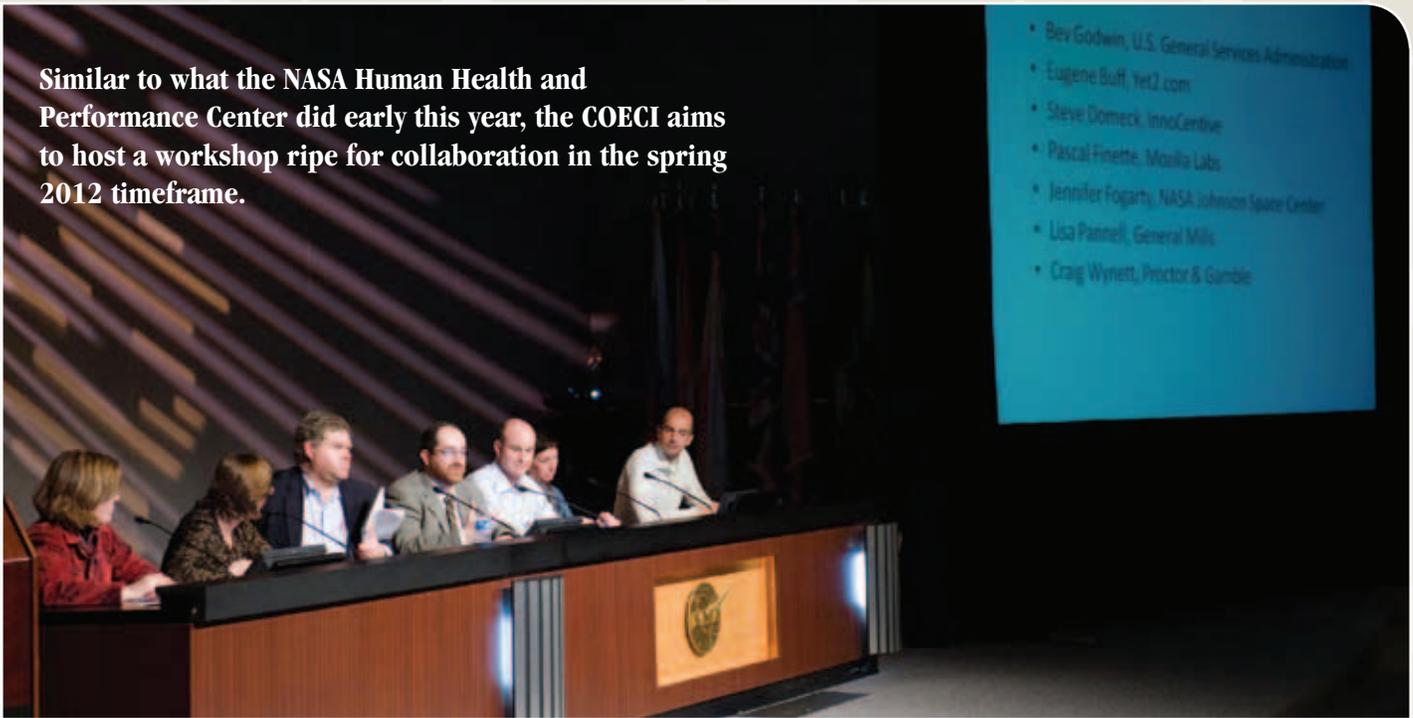
In this edition . . .

- 3** Center of Excellence for Collaborative Innovation to create a unified approach for success
- 4** Students help NASA design and build ARGOS
- 5** NASA milestone: Apollo 8 anniversary
- 6** Destination deep space
- 8** Much ado about Progress
- 9** Johnson Space Center slays the vampire to save energy
- 10** Meet Sergio Silva, Career Exploration Program Intern
- 11** Center Scoop
- 12** Space history snapshot

Center of Excellence for Collaborative Innovation to create a unified approach for success



By Catherine Ragin Williams



NASA/HARNETT JSC2011E006041

Most do not associate government with business savvy or being “cutting edge,” but that may soon change with the formation of the virtual Center of Excellence for Collaborative Innovation (COECI). NASA has already taken a proactive role in investigating new business models, tools and strategies that support innovation within the space agency’s mission. Now, NASA is poised to not only share its wealth of knowledge with other government agencies, but learn from them as well.

“The COECI is multidisciplinary,” said Johnson Space Center Director of Space Life Sciences Dr. Jeffrey Davis. “In October 2010 we established the NASA Human Health and Performance Center to advance human health and performance innovations for government, industry, academic and non-profit organizations. The new COECI will involve all disciplines across the federal government, contributing to the mission of stimulating innovation to improve processes and practices.”

“I think that (the COECI) will be just as valuable to people at NASA as it is to people at other agencies, because it will contain the collective knowledge based on the various federal government implementations,” said Open Collaboration and Innovation Manager Dr. Jennifer Fogarty in the Space Life Sciences Directorate.

“The expected results are not just from NASA to other federal agencies—it’s *for* NASA,” Davis said. “So whether it’s a best practice or prize competition, we hope to learn from other federal agencies. We certainly stand to learn from what everybody else is doing.”

“It’s not just about going into your laboratory as a technical expert and hammering away at something day in and day out; it’s about seeking a new way to solve that problem,” Fogarty said. “You could still be the owner of it, but your toolkit should be bigger than what you currently perceive it to be.”

Whether sharing ideas or working together on prototypes, “it allows someone who needs a solution to come in and interact with hundreds of thousands of people and get some pretty unique perspectives,” Fogarty said.

The COECI actively promotes the ideals of an open government concept.

“Another way to think of it is opening up the solution space,” Davis said. “Maybe we’ve only used certain tools in the past to solve a problem within NASA or other federal agencies. This gives people the resources to go out broadly and look for new ideas.”

The beauty of the COECI is that it also incorporates tenets that are essential to fostering an innovative environment, such as inclusion.

“There are no to low barriers of entry for people from very diverse experience and educational backgrounds,” Fogarty said.

Solutions are submitted in an anonymous fashion, and the best ideas are chosen.

Along with collaboration facilitated through the COECI portal, NASA aims to host its first workshop with other federal agencies in the spring. The workshop will share early results of open innovation competitions and build on those best practices to develop new collaborative techniques for the federal government.

“Always keep on the lookout for novel ideas that others have used successfully.”
- Thomas A. Edison

Students help NASA design and build ARGOS



By Rachel Kraft

In the Building 9 robotics section, a team of NASA engineers and students are busy testing and evaluating the Active Response Gravity Offload System (ARGOS), an apparatus that simulates reduced gravity for human participants and hardware by using electromechanical devices and sensors to replicate lunar, Martian or microgravity conditions.

“Four years ago nothing existed,” said ARGOS Project Manager and Design Engineer Larry Dungan. “From that time we’ve built the structure and basically all of the hardware.”

In the system, a human participant is secured in a harness. As the person moves and the angle of the cable holding the participant to the structure changes, bridge and trolley mechanisms move smoothly in the x-y plane with that person, while the cable acts as the z-axis. The test participant is able to move in any direction. ARGOS allows engineers and others to get a feel for the reduced-gravity environment.

“Putting the engineer in the micro-g experience gives them a better idea of the environment that they’re designing for,” Dungan said.

An integral part of the design and development of the project has been a steady stream of interns and Cooperative Education (Co-op) students, who have brought their enthusiasm and skills to the project.

“ARGOS has been a low-dollar developmental project,” Dungan said. “One of the things we’ve done is utilize Co-ops and interns. We’re able to give them actual projects that they have to develop, design, build and test.”

As many as seven students have worked on ARGOS during any one semester. With Dungan and the project team’s mentorship, the students are able to take what they’ve learned in the classroom and apply it to real-world applications.

“Within the first few days, I was turning wrenches and drilling holes,” said Adam Naids, a Co-op student in the Missions Operations Directorate. He previously interned on ARGOS through the Undergraduate Student Research Program (USRP).

Interns and co-ops are not just given simple tasks. Students have designed all of the project’s limit switches, which are primary parts of the safety system, as well as the z-axis prototype and mount, x-axis trolley and horizontal system. One student-designed project, a lightweight gimbal that acts as a human interface to the system and aligns the pitch, yaw, roll and lifting vector with the participant’s center of gravity, has been profound.

“The reason it’s important is that if you can get the axis of rotation close to your center of gravity, it allows the moments of the inertia around you to be very minimal, so it feels very realistic,” Dungan said. “This was game changing.”

“ARGOS is the perfect example of how organizations can leverage student involvement for productivity,” said Veronica Seyl, the Office of Education’s manager of the Career Exploration Program (CEP). CEP is just one of Johnson Space Center’s internship programs that have placed students on the project. “Mentors play an important role entrusting students with these opportunities while guiding and giving them the necessary tools for success.”

The Office of Education has placed many student interns from the CEP, USRP and space grant institutions with ARGOS.

“I felt like I had been a part of the team for a while after first arriving because they gave me projects and responsibilities to run with right from the start,” said Lindsay Crossan, a mechanical engineering major



NASA/PHOTO JS/C2010E051706

Adam Naids, who interned with the ARGOS project in 2010, tests out the system that he spent the semester working on.



NASA/PHOTO JS/C2010E051707

interning through USRP and one of two students who worked on the project this fall. “Each team member asks for my opinion on design decisions, and adding in my thoughts and ideas is highly encouraged among the team.”

Among other tasks, Crossan designed and built an approximately 20’ x 6’ x 6’ mock-up of the International Space Station’s Destiny module. The engineering team designing legs for Robonaut 2 will use the mock-up in future ARGOS tests to help determine how the humanoid robot will move in space with legs.

Young people from nearly every student program have had a hand in developing ARGOS and, as a result, several full-time employees have emerged from the project.

NASA milestone: Apollo 8 anniversary



Compiled by Neesha Hosein

Forty-three years ago this month, the Apollo 8 crew broke humans' bond to planet Earth and launched from Cape Kennedy on Dec. 21, 1968. This historic mission placed astronauts Frank Borman, James A. Lovell Jr. and William A. Anders into what was the second human flight in the program and the first human lunar orbit mission.



NASA/PHOTO AS08-14-2383

The rising Earth is about five degrees above the lunar horizon in this photo view taken from the Apollo 8 spacecraft near 110 degrees east longitude. The horizon, about 350 statute miles from the spacecraft, is near the eastern limb of the moon as viewed from Earth. The crew took the photo around 10:40 a.m. Houston time on the morning of Dec. 24.

It was the first crewed flight using a Saturn V launch vehicle, America's most powerful machine. Astronauts Borman, Lovell and Anders became the first humans to see the far side of the moon.

Never before had humans traveled so far, so fast or looked so closely upon another celestial body. Many millions of space enthusiasts listened and watched as the explorers spoke across the emptiness of time and space.

The mission achieved operational experience and tested the Apollo Command Module systems, including communications, tracking and life support in cislunar space and lunar orbit and allowed evaluation of crew performance on a lunar orbiting mission. The crew photographed the lunar surface, both far side and near side, obtaining information on topography and landmarks as well as other scientific information necessary for future Apollo landings.

The Apollo 8 spacecraft consisted of a Command Module similar to Apollo 7 except that the forward pressure and ablative hatches were replaced by a combined forward hatch, which would be used for transfer to the Lunar Module on later missions. The spacecraft mass

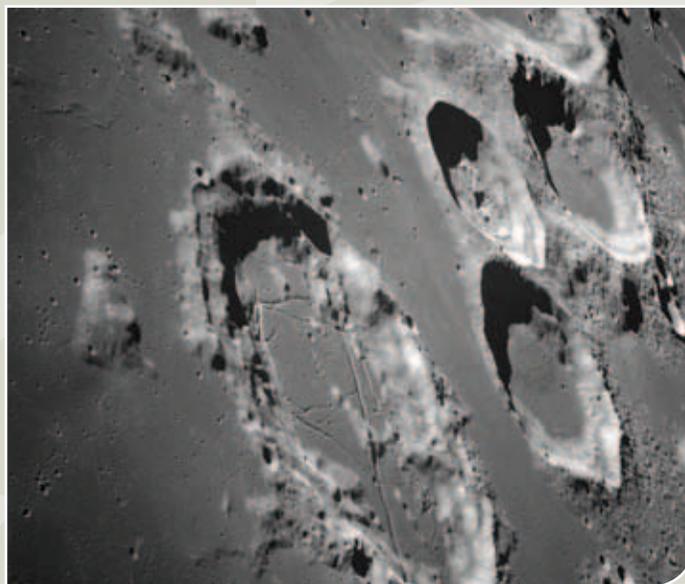
of 63,531 pounds is the mass of the Command and Service Module, including propellants and expendables. A Lunar Module was not used on the Apollo 8 mission, but a Lunar Module Test Article, which was equivalent in mass—19,901 pounds—to a Lunar Module, was mounted in the spacecraft/launch vehicle adapter as ballast for mass loading purposes.

What the astronauts saw of the moon, from 70 miles above that foreboding surface, can now be seen by all and studied by scientists in the array of still and motion pictures, many of them in color, taken from Apollo 8. What the astronauts succeeded in proving about the reliability of the spacecraft and its rocket vehicle was that it was possible for future explorers to set foot upon the moon, which became reality with Apollo 11.

As Apollo 8 hurtled itself from the orbit of the Earth and into flight toward the moon, it was the first time that men had sped at nearly 25,000 miles an hour.

Each time Borman, Lovell, and Anders vanished behind the far side of the moon, they lost all contact with the Earth for 45 minutes during each of the 10 orbits. During the first long silence, the black void crackled with tension until Mission Control in Houston reported, "We've got it! Apollo 8 is in lunar orbit."

"Good to hear your voice," Lovell said.



NASA/PHOTO AS08-13-2224

This oblique view of the lunar surface was taken from the Apollo 8 spacecraft looking southward toward Goclenius and other large craters near 45 degrees east longitude and 10 degrees south latitude in the Sea of Fertility. Goclenius, the crater in the foreground with a rille-broken flat floor, is about 45 statute miles in diameter. In the background, the two large craters with smooth floors are Colombo A (left) and Magalhaens.

Destination deep space



By Neesha Hosein

NASA architects, engineers and scientists are busy creating a “home sweet home” base that will serve as a sustainable, space-based living quarters, inclusive of workspaces and laboratories for next-generation human spaceflight missions. This is one part of the overall goal of planning for deep space exploration. Despite what surface they are exploring, astronauts will need a base of operations to call home after a long workday of activities, such as collecting geological samples and performing scientific experiments. This will be a safe and reliable place where they can eat, sleep, shower and reenergize.

Knowledge lives on

The wealth of knowledge gained from NASA’s remarkable spaceflight history and low-Earth orbit (LEO) projects such as the International Space Station is being used in conjunction with Earth-based analog research from Desert Research and Technology Studies (RATS) tests in Arizona. The aim is to identify and evaluate the most efficient combination of systems, the optimum crew size and best operations conceptions for exploration.

NASA will be able to use this data as the idea of deep exploration becomes more of a reality. This research will help expand our presence to new destinations like asteroids, near-Earth objects, Lagrange points, the moon, Mars or Mars’ moons.

Unlike LEO projects, deep space exploration missions could last from one to one-and-a-half years, without the luxury of having resupply vehicles to replenish much-needed materials. Equipment taken with them on these missions must pass rigorous testing to ensure these items are long lasting.

“Since we will operate so far from home for so long, all of the habitat systems must be more than just reliable, they must be robust enough to survive being whacked repeatedly with a big hammer,” said Habitat Systems Project Manager Alvin Drew.

Safety and wellness are top priorities

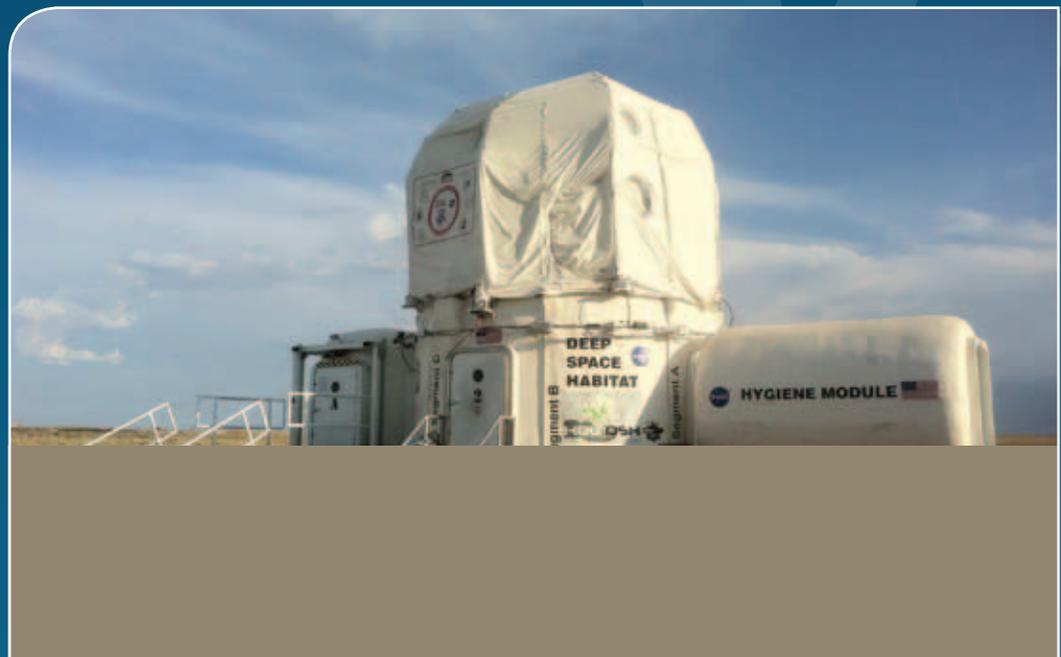
It is critical to long-term exploration to have a space habitat to maintain good physical and mental health of the crew members. During the research process, certain issues have to be addressed that will allow humans to perform deep space missions: “smart” habitat systems; safety features to mitigate the effects of hazardous natural environment; supplying adequate air and water; providing

waste disposal and recycling; regulating temperature; preserving food supplies; and accommodating physical exercise.

Another aspect of NASA’s preparation for future space travel is the development of new intelligent operating systems and hardware. To assess new technologies, NASA has brought together the Habitat Demonstration Unit (HDU) Project to develop habitat configurations for testing and evaluation. The HDU Project provides flexibility in testing and evaluating architectural configurations and mission operations concepts for possible destinations, as defined by NASA’s Human Spaceflight Architecture Team. The project employs a multi-center team, led by Johnson Space Center, that pulls together resources, people and skills to contribute to this unique project.

“The demonstration unit is the place into which all habitat technology rivers flow—where we can develop and integrate new habitability systems from across JSC and all NASA centers,” Drew said.

NASA is now testing its second habitat architecture concept, the



The Habitat Demonstration Unit in the field during Desert Research and Technology Studies in Arizona.

HDU Deep Space Habitat. The module will be placed in space-like locations and situations, or analog environments, so that engineers and scientists can test multiple concepts for operations and technologies simultaneously.

Communication

Communication will not be instant, and constant contact will be lost between the crew and Mission Control during these deep space missions, which differs from how the space station and shuttle operated. The crew would have to be more autonomous.



NASA/PHOTO

An artist's concept of an astronaut spacewalking during a near-Earth asteroid mission.

"If we go to Mars, it could take as long as 20 minutes for a signal—traveling at the speed of light—to reach a receiver, (or) 40 minutes round trip," Drew said. "So we will not be able to talk or control systems from Earth in real time."

Radiation an issue

Another tremendous concern about deep space travel is the issue of radiation.

"The Earth's atmosphere and magnetic field protect us from potentially lethal radiation from our sun and from the Milky Way galaxy," Drew said. "We will need to recreate those layers of protection around our spacecraft if we are going to survive and operate in deep space for such long periods."

So close—and yet so far

There is a long road of research and experimentation ahead for NASA architects, engineers and scientists before the idea of deep space exploration becomes reality. For now, continued collaboration among NASA team members and the persistence of those who dare to dream will lead the way.

"Over the last decade of analog testing, NASA engineers have supported scientists gathering critical knowledge about habitability," Drew said. "(For) the next decade of developmental testing, those scientists will help our engineers design habitats and habitation systems to allow people to explore ever more distant frontiers in our solar system."

The design and construction of deep space habitats will enable us to explore further in the solar system.

Speaking of deep space ... wanna go?

Adventure. Commitment. Leadership. Achievement. These are the core values of NASA's distinguished astronaut corps. These values are also the rewards of fulfilling work. The 21st century astronaut will serve on long-duration missions aboard the International Space Station and future deep space missions.

NASA is now accepting applications for the agency's next class for the Astronaut Candidate Program. Qualified individuals can submit their applications through Jan. 27, 2012, via the federal government's jobs application website: <http://www.USAJobs.gov>

Qualifications include a bachelor's degree in engineering, science or math and three years of relevant professional experience. Successful applicants frequently have significant qualifications in engineering or science or extensive experience flying high-performance jet aircraft. Educators teaching Kindergarten through 12th grade with these minimum degree requirements are also encouraged to apply. After applicant interviews and evaluations, the agency expects to announce the final selections in 2013. Training will begin that summer.

For more information about astronaut selection and training, visit: <http://www.nasa.gov/astronauts>

Information to help promote the program can be found in the Astronaut Recruiting Tool Kit section on the agency's communications tool kit website: <http://communications.nasa.gov>

To follow the latest news via NASA accounts on Twitter, Facebook and YouTube, visit: <http://www.nasa.gov/flynasa>



NASA/PHOTO

Much ado about **Progress**



By Catherine Ragin Williams

During the lifetime of the International Space Station Program, there had never been a Progress craft lost—until Progress 44 launched on Aug. 24. At five minutes and 25 seconds into flight, the Soyuz rocket experienced a third-stage engine shutdown due to an anomaly. Given its trajectory and energy, the craft did not reach orbit and landed in the Altai region of Russia.

Thankfully, the impact on the station program was minimal, as there were plenty of supplies onboard to support the crew. After the incident, a Russian commission was formed to investigate the root cause of the vehicle mishap and determine the next steps for the program.

Progress made!

After a full investigation into the anomaly that occurred late summer, NASA and its international partner, the Russian Federal Space Agency, cleared the way for a new Progress 45 launch on Oct. 30. The unmanned cargo vehicle was filled to the brim with 2.9 tons of food, fuel and supplies for the station and her crew, including 1,653 pounds of propellant, 110 pounds of oxygen, 926 pounds of water and 3,108 pounds of maintenance gear, spare parts and experiment hardware.

After the successful liftoff from the Baikonur Cosmodrome in Kazakhstan, Associate Administrator for Human Exploration and Operations Bill Gerstenmaier of NASA Headquarters released the following statement:

“We congratulate our Russian colleagues on Sunday’s successful launch of ISS Progress 45, and the spacecraft is on its way to the International Space Station. Pending the outcome of a series of flight



NASA/CARLA CIOFFI

An uncrewed Progress 45 resupply vehicle nears docking with the space station, carrying 1,653 pounds of propellant, 110 pounds of oxygen, 926 pounds of water and 3,108 pounds of maintenance gear, spare parts, experiment hardware and resupply items for the residents of the space station. Progress 45 docked to the station’s Pirs docking compartment on Nov. 2.

readiness meetings in the coming weeks, this successful flight sets the stage for the next Soyuz launch planned for mid-November. The December Soyuz mission will restore the space station crew size to six and continue normal crew rotations.”

First real test

The real test for the Russian rockets would come on Nov. 14, with the launch of the Soyuz TMA-22 to the space station and its human cargo of a NASA astronaut and two Russian cosmonauts. Not only did the spacefaring group launch successfully, they roared off in dramatic flair during the height of whiteout blizzard conditions.

On Nov. 15, NASA astronaut Dan Burbank and Russian cosmonauts Anton Shkaplerov and Anatoly Ivanishin joined Expedition 29 Commander Mike Fossum of NASA and Flight Engineers Satoshi Furukawa of the Japan Aerospace Exploration Agency and Russian cosmonaut Sergei Volkov. The six crew members would only be with each other for a matter of days before Fossum, Furukawa and Volkov, who have been station residents since June, returned to Earth. Expedition 30 commenced with the undocking of the Soyuz TMA-02M on Nov. 21, leaving Burbank at the helm of the orbiting laboratory.

Full steam ahead

The station will once more operate at full capacity late in the year when NASA astronaut Don Pettit, Russian cosmonaut Oleg Kononenko and European Space Agency astronaut Andre Kuipers launch to the station on Dec. 21. They will join Expedition 30 as flight engineers and bring the station back to a six-person crew.



NASA/CARLA CIOFFI

The Soyuz TMA-22 rocket is seen at the Soyuz launch pad during a snowstorm the morning of Nov. 14 from the Baikonur Cosmodrome in Kazakhstan.

Johnson Space Center slays the vampire to save energy



By Catherine Ragin Williams

While dressed-up ghouls and goblins had real bloodsuckers on the brain this past autumn, Johnson Space Center slayed a different kind of foe: the energy vampire. During the JSC Green Team's Power Play vs. Power Slay competition from Aug. 15 to Oct. 24, JSC team members attacked this increasing problem with impressive results.

If you did not even realize you had an enemy in this particular fiend, now is the time to get acquainted. His favorite prey? Your power outlets. Vampire energy is the electricity that an appliance pulls from an

outlet after it has been turned off, or "anything sucking power when it doesn't need to be, like a monitor left on," said Life Support Systems Analyst Mike Ewert.

Results went above and beyond what the JSC Green Team had even hoped for when they first decided to go with the energy-



reduction competition—a modification of the 2010 Beetle Battles paper-usage crusade.

"We did not anticipate to see buildings with very much percentages in reductions, because in most of the mall-area buildings, the lights are on automatic, (as well as) the air handlers," said JSC Energy Manager Rob Way. "But when you look at the results, we got quite a bit of reduction in a lot of our buildings. The winning building for the mall area (Building 16) actually reduced their energy use by 20 percent."

In fact, "all but five buildings showed energy savings during the competition period," Ewert said.

Power Play vs. Power Slay also helped JSC, in a playful way, show noticeable progress in energy reduction.

"We have executive mandates that we're supposed to meet, (which include) a three percent energy reduction per year," Way said. "By 2015 we're supposed to have reduced the site's energy (usage) by 30 percent."

The competition created awareness for this environmental issue and provided concrete evidence to team members that small changes can make a huge difference.

"I think that's the big thing," said Project Manager Lindsey Foreman of the Center Operations Directorate. "People don't think that their little bit can help. In case they're still thinking, well, just little ol' me, what can I do? This proves that you can do a whole lot."

JSC team members in Building 241, the winner of the outlying buildings at JSC, reduced their energy consumption by 25 percent—quite a vast reduction.



This graph shows an example of a JSC office building that powers down on the weekends (Vampire Slayer), and one that doesn't (Vampire Victim).

"What we're really trying to do is have a good building profile," Way said. "The building should actually operate from 6 a.m. to 6 p.m. When folks go home, we want to see that energy usage go down considerably."

Baseline statistics show otherwise. For instance, "energy use at night is 70 percent of the amount that is used during the day," Ewert said.

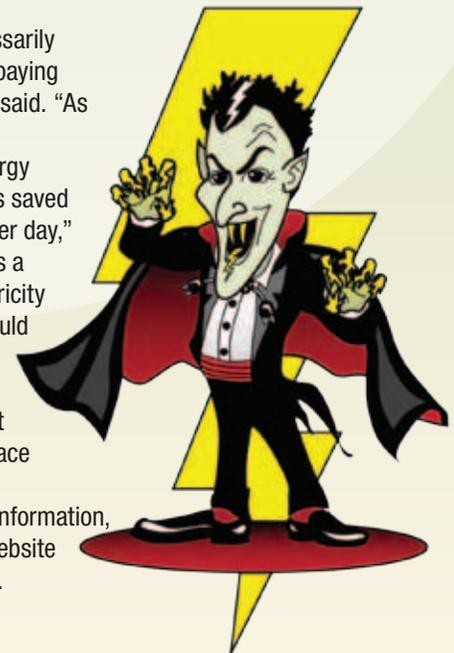
It's not a big disparity, which means we seem to be supplying excess electrical power to a phantom workforce.

But it doesn't have to stay that way. Actions such as turning off your computers, speakers, auxiliary equipment, task lights and more when you leave for the night has proven effective in slaying the energy vampire, as well as keeping electrical devices unplugged when not in use. These behavioral shifts not only conserve energy—they also conserve money.

"Most people don't necessarily think that they are actually paying for the JSC utility bill," Way said. "As taxpayers, they are."

"During the 10-week energy competition, JSC employees saved over 9,000 kilowatt hours per day," Ewert said. "This represents a savings of \$35,000 of electricity during this period, which could turn into \$180,000-per-year savings for JSC if we can keep it up—money that could be better spent on space exploration."

For more green tips and information, visit the JSC Green Team website at: <http://www.greenjsc.jsc.nasa.gov/>





Spotlight: Sergio Silva

Career Exploration Program Intern, Universities Space Research Association (USRA), Engineering Directorate

PHOTO COURTESY OF SERGIO SILVA



Q: Coolest part of your job?

A: When I applied as an intern, I truly expected to be filing papers, handing out coffees and making phone calls. Well, I was wrong—completely wrong. The best part is definitely that I'm currently working on a project that I would normally be working on as a real engineer. The opportunities and small projects that I've had the privilege to be a part of are all due to the great people and engineers around me. They, too, make this internship extraordinary.

Q: Favorite hobbies or interesting things you do away from the office?

A: Ever since I was a little kid, I have been fascinated with computers and software. During my free time, I work on coding and development for the Galena Park High School Robotics website. I can code for hours. I absolutely love it!

Q: What was your first job (not necessarily at NASA, but ever)?

A: My first job was another internship for GE in a program created from a partnership between GE and Galena Park Independent School District.

Q: If you could trade places with any other person for a week, famous or obscure, living or dead, real or fictional, who would it be?

A: No doubt, Harry Potter.

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

A: I have an extreme passion for riding dirt bikes. Although time constraints limit me from doing so today, it's something that the entire family has always enjoyed doing.

Q: What is your favorite school subject and why?

A: Math has always been my favorite and strongest subject. I love the ability to use mathematics and incorporate it into real world applications. However, this year, calculus has been getting extremely tough! Let's see where it goes from here . . .

Q: What is your favorite holiday indulgence?

A: Christmas presents!

Q: Last good book or article you read?

A: "Paradise Lost" by John Milton. It took me a while, but I read through it.

Q: What cosmic destination would you want to travel to if you were an astronaut?

A: I don't know if it would be possible, but in a theoretical world, I would love to go into a black hole.

Q: What would we find in your refrigerator right now?

A: Leftovers from this weekend's Carne Asada.

Q: What was your proudest moment?

A: Winning the website award at the Lone Star Regional FIRST Robotics Competition last year. I felt a huge sense of pride and accomplishment knowing that something I coded from the ground up was deemed successful and honored in such a prestigious competition.

Q: When did you first become interested in space and why?

A: When I heard about the Big Bang Theory, I was amazed at the possibility that the entire universe was created due to the collision of two particles.

Q: Describe yourself in three words.

A: Determined. Outgoing. Adventurous.

Q: JSC turned 50 in September. Where do you hope to see NASA 50 years from now?

A: I've heard that technology is growing at an exponential rate, so I would hope to see NASA traveling past another galaxy and beyond. Although, it wouldn't hurt to also have Robonauts all across the world—and by that I mean having one at home that could do all the good cooking.

Q: What about JSC or NASA are you thankful for?

A: The opportunities. There is so much to learn while working as an intern. I have received the opportunity to venture out and learn from other people, extracting exquisite qualities from different positions and determining whether it's something I would like to do for the rest of my life. NASA and JSC are clearly impacting and making a positive change toward my future.



PHOTO COURTESY OF SERGIO SILVA

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.



Wings Over Houston **wows** again

Johnson Space Center once again supported the popular local air show, Wings Over Houston, and brought many of its exhibits and “toys” to showcase to the public. On Oct. 15, community members got a taste for aeronautics and exploration with the Super Guppy aircraft, Morpheus, exploration rover, spacesuit displays and more.



NASA/MARKOWITZ JSC2011E196693



NASA/MARKOWITZ JSC2011E196647

A lean, mean **green machine**

NASA won a GreenGov Presidential Award from the White House Council on Environmental Quality, celebrating exceptional efforts to promote sustainability in federal agency operations. The award recognized nine efforts from four agency centers, including two from JSC.

JSC was nominated for its Bio-based Coolant Pilot Project, which converted a building and its machinery to bio-based alternative fuels and coolants and

dramatically reduced costs.

The center also was nominated for its electronic waste (e-waste) collection events held in conjunction with its Contractor Environmental Partnership and federal and local community volunteers. Five events have been held since 2008, including the event this past November, and the partnership diverted approximately 600,000 pounds of e-waste from local landfills.

NASA was recognized in

the Lean, Clean and Green category for consistently moving toward sustainable and efficient operations by setting exemplary

goals in agencywide energy and water efficiency, reduced emissions and greater renewable energy usage.

Change is upon us

JSC is headed into 2012 with a new organizational look. Four new directorate-level organizations at JSC were created in the past year.

In September, Charles M. Stegemoeller was appointed director of JSC's Office for Performance Management and Integration, which is responsible for the integration of the center technical-cost-schedule-risk performance. The office will also develop JSC-specific strategies for reaching center commitments and providing common tools and best practices for performance management.

Yolanda Marshall was appointed director of the Strategic Opportunities and Partnership Development Office. Marshall is responsible

for providing strategic planning for future NASA/JSC business opportunities and partnerships and for managing partnerships with external entities.

With the completion of the Space Shuttle Program, former program manager John Shannon took on a new role as the deputy associate administrator for Exploration Planning. As a direct-report to NASA Headquarters, Shannon will identify potential human exploration scenarios on the horizon.

Also a direct-report to Headquarters, Dorothy Rasco became manager of the Space Shuttle Transition and Retirement Office, which will work to preserve the program's 30-year legacy.

PHOTO: CHRISTAL BANKS OF EARTH RESOURCES TECHNOLOGY, INC.



The e-waste event held at Space Center Houston on Nov. 5 kept about 600,000 pounds of e-waste out of local landfills.

Roundup

The Roundup is an official publication of the National Aeronautics and Space Administration, Johnson Space Center, Houston, Texas, and is published by the External Relations Office for all Space Center employees.

The Roundup office is located at the Johnson Space Center, Building 2. The mail code is AD94. Visit our website at: <http://www.jsc.nasa.gov/roundup/online/>
For distribution questions or to suggest a story idea, send an email to jsc-roundup@mail.nasa.gov.

Catherine Ragin Williams Editor
Neesha Hosein Assistant Editor
Logan Goodson Graphic Design
Rachel Kraft NASA Publication Manager
Cassandra V. Miranda Contractor Publication Manager

PRSR STD
U.S. POSTAGE
PAID
WEBSTER, TX
Permit No. 39

OR CURRENT RESIDENT

Space history snapshot

NASA/PHOTO

On Feb. 12, 1984, astronaut Bruce McCandless ventured farther away from the confines and safety of his ship than any previous astronaut had ever been. This space first was made possible by a nitrogen jet-propelled backpack, previously known at NASA as the Manned Maneuvering Unit, or MMU.

After a series of test maneuvers inside and above Space Shuttle *Challenger's* payload bay, McCandless went "free flying" to a distance of 320 feet away from the orbiter. This stunning orbital panorama view shows McCandless out there among the black and blue of Earth and space.

