National Aeronautics and Space Administration

Roundup

LYNDON B. JOHNSON SPACE CENTER

August | 2012

Adventures in analogs

THE FIRST 50 YEARS

50

JOHNSON SPACE CENTER

NASA/PHOTO

On the cover:

A weightless Steve Squyres uses a translation line and tethers to stabilize himself as he hovers above the seafloor. Squyres was part of the 16th NASA Extreme Environment Mission Operations excursion.

NASA/CARLA CIOFFI

Photo of the month:

The Soyuz TMA-05M rocket launches from the Baikonur Cosmodrome in Kazakhstan at 9:40 p.m. CDT on July 14, carrying Expedition 32 Soyuz Commander Yuri Malenchenko, NASA Flight Engineer Sunita Williams and Japan Aerospace Exploration Agency Flight Engineer Akihiko Hoshide to the space station.

Guest Column

NASA/MARKOWITZ JSC2011E027533

Janet L. Kavandi
Director
Flight Crew Operations

When I was about 5 or 6 years old, I really started looking up at the heavens. Some of my fondest memories are of searching a spectacular rural night sky with my father for the first spacecraft and wondering what it would be like to look back at Earth from that streaking point of light.

It was a thought that has been shared by millions of humans over the past centuries. Trips to the moon, the planets and the stars have been imagined by some of the most brilliant of minds. Even today, space exploration still tops the charts as the topic that most intrigues human curiosity. Despite themes of alien invasions and impending asteroid impacts, the thought of actually traveling into space is the ultimate adventure for many people.

We live in the perfect time for this adventure. Consider how much humanity has learned in the past century. One hundred years ago, humans were just beginning to defy gravity with winged aircraft. Seventy-five years ago, through advanced telescopes, we learned about the true size of the universe. Fifty years ago, humans were first adventuring off the planet for the first time. Only 10 years later, we landed on another heavenly body. Since that time, we have flown into space dozens of times and built an amazing orbiting laboratory. You and I, we—did that! What a privilege to have lived in this time and to have contributed such an achievement in human history.

Now you and I are ready for more. We want and need to go farther. We are trying to help others who have never really looked into those night skies see what is out there. We are seeking new and innovative ways to launch again and fly farther than we have flown before. You and I—and now our successors—are ready for that challenge. Johnson Space Center houses some of the greatest minds, with the greatest hearts, for exploration. We are ready to take the next steps. I can't imagine working with a better group of people to achieve such enormous goals. Together, we will achieve even more impossible feats—just like we and our predecessors have been doing for decades.

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New biology lab on station allows for testing in **artificial gravity**

By Lori Keith

NASA is expanding its existing capabilities for doing plant and animal tissue investigations on the International Space Station with the delivery of a new centrifuge scheduled for this summer. The centrifuge is a NASA and commercial industry collaboration and will be housed in station's NanoRacks facility.

NASA/PHOTO JSC2012E029875

During a ceremony on Feb. 14 at the Astrium North America facility in Houston, two principal participants shake hands as a gravitational research centrifuge gets handed over by Astrium Space Transportation (ST) to NanoRacks, LLC representatives. The handshake of Ulrich Kuebler (second right) of Astrium ST and Jeff Manber, managing director of NanoRacks, symbolizes the working relationship between Astrium ST and NanoRacks, who are working in cooperation with NASA to deliver the commercial centrifuge facility to station. At left is Achim Schwarzwaelder of Astrium ST.

The small Gravitational Biology Lab will allow biological experimentation in artificial gravity—from zero gravity to twice Earth's normal gravity—for prolonged periods of time. The new facility will provide environmental control, lighting, data transfer, command and observation of experiments in Mars and moon gravity conditions, as well as mimicking Earth's gravity. This is useful for biological research and could lead to advances in medications and vaccines, agricultural controls and discoveries in genetics—all beneficial to those of us on Earth.

NanoRacks hardware is available for many different investigation scenarios, including mini-aquariums, seed-germination boxes, plant-growth chambers, mammal and plant cell culture units, along with multi-generation chambers for fruit flies. There have been several multi-generational experiments involving drosophila—a type of fruit fly. Drosophila has a similar genetic makeup to humans and can serve as a genetic model for several human disease studies.

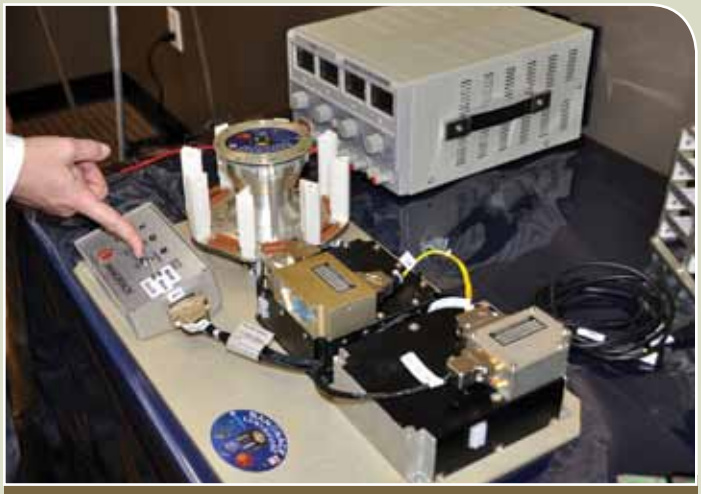
There are already two NanoRacks research platforms in use on space station, including two microscopes. More than 35 investigations have been conducted in the NanoRacks facilities, which operate under a Space Act Agreement with NASA and the U.S. National Lab. In 2005, Congress designated the space station a national laboratory in an effort to include other government organizations, schools and universities, and private companies in the use of the orbiting laboratory, increasing the amount of research being done in microgravity.

The centrifuge is a joint venture between Astrium Space Transportation and NanoRacks, LLC, with more joint projects planned. Additional facilities also are planned, with a Plate Reader scheduled for delivery this year to allow on-site microbiological analysis, expanding life science and biological research.

"This is an important step in the expansion of National Lab facilities aboard the space station," said Marybeth Edeen, former U.S. National Lab manager at Johnson Space Center. "Having companies develop research and facilities for the National Lab with their own funding demonstrates the beginnings of the commercial space marketplace that the National Lab was created to serve."

Centrifuges have been used in space since 1985 to conduct more than 130 experiments on 25 shuttle missions, resulting in the publication of more than 300 scientific papers. This heritage provides a large variety of flight-proven experiment designs now available for use by researchers for all types of molecular and cellular investigations on animal and plant tissues. The new NanoRacks facility design will provide fully automated culturing of cells and tissue, including "plug-and-play" payloads that require only a standard computer USB connection to access needed power and environmental controls.

Station crew members and researchers are looking forward to the addition of this new centrifuge. What they will learn from the research in the new facility can be used to better life on Earth, as well as provide knowledge to help advance future long-duration human spaceflight missions.



NASA/PHOTO JSC2012E029873

This is a close-up view of a gravitational research centrifuge that Astrium ST handed over to NanoRacks, LLC, during a ceremony on Feb. 14 at Astrium North America's Houston facility.

Fusible Heat Sink technology reaches milestone

By Neesha Hosein

PHOTO: ADVANCED THERMAL GROUP

The Fusible Heat Sink Engineering Development Unit in the Chamber E Thermal Vacuum Chamber for testing.

From the simplest satellite to the most complex human-rated vehicle, all space vehicles require thermal control. The Advanced Thermal Group designed and built a one-third scale Fusible Heat Sink (FHS) Engineering Development Unit (EDU) that underwent testing in June. The device is baselined as the primary source of heat rejection for the Multi-Mission Space Exploration Vehicle (MMSEV).

"The MMSEV is currently slated to have the fusible heat sink on the roof of the vehicle," said Rubik Sheth, lead for MMSEV cabin thermal. "It's supposed to perform two functions: harmful radiation protection to the astronauts and thermal control."

Sheth explained that the FHS combines the function of a car radiator and air bags in the car. It is used to keep the vehicle cool so that it can function in all aspects (power/avionics, air temperature and more). It is also designed to help protect the crew from any harmful radiation in the space environment.

"(Astronaut) Michael Gernhardt came up with the idea of putting 400 to 500 pounds of water above the astronauts to perform radiation protection; this is the harmful radiation protection from the sun," Sheth said.

FHS design

The Advanced Thermal Group came up with a novel way to use that water to do thermal control, combining the two functions into one system: the FHS. The device will eventually be located on the roof of the vehicle in a rectangular shape. Currently, the FHS is slated to have a total thickness of 2 inches per 500 pounds of water needed for radiation protection; interstitial material of aluminum fins to enhance thermal performance; a radiative outer surface for heat rejection via radiation heat transfer; and an integrated coolant fluid loop to transport the waste heat to and from the vehicle heat loads.

The FHS uses radiation heat transfer as its primary source of heat rejection. The water is used as a phase-change material to provide a source of thermal capacitance—ability to store electrical charge—to the vehicle. When the radiator is unable to reject an increased level of waste energy, water is used to reject and store it. An increased level of waste energy can be produced by the vehicle and its crew, which could be caused by running computers, human body heat (such as when the astronauts are exercising) and/or extreme space environment conditions.

The test is significant since it is the first time that such a heat-rejection device will be tested on a large scale. The investigation will help engineers rule out assumptions and thermal math models currently used to design the EDU. The group is in the process of taking the results and incorporating design changes to combat inefficiencies experienced during the test. The FHS team hopes to improve its thermal capability, as well as reduce mass of the heat-rejection device, by optimizing the coolant flow passage, coolant manifold and numerous other aspects of the FHS design as it currently stands.

NASA/PHOTO

An artist's concept of the MMSEV with the FHS. The FHS is depicted as the top surface of the cabin with the lines on it.

Friendly weight-loss wager leaves one participant **clucking**

by Catherine Ragin Williams

What can a chicken costume do to inspire weight loss? Turns out … a lot.

Back in February, two friends in the Commercial Crew Program (CCP) Spacecraft Office at Johnson Space Center decided to embark on a weight-loss challenge.

"We're pretty competitive people, so generally anything that we do, we can either turn it into a bet or a competition of some sort," said Dan Bell, Systems lead for the CCP Spacecraft Office. "So that's how the weight-loss bet started."

Justin Kerr, Risk and Requirements lead for the CCP Spacecraft Office, admitted that he was very eager to compete with Bell because he just knew that with their different body types, winning would be a sure thing.

NASA/LAUREN HARNETT JSC2012E103014

JSC's resident chicken for a day, Justin Kerr, and Dan Bell pose for a photo following their weight-loss wager.

"So Dan and I got to talking about it," Kerr said. "I was like, 'Yeah, I need to lose 50 pounds. Dan said, 'Well, I need to lose about 25 or so.' I was thinking there's no way he can lose 25 pounds … you don't have 25 pounds to lose. You're on!"

Both acknowledged that money alone would not be enough of a motivation. They needed a result that would be "highly undesirable," as Kerr put it. Enter: a chicken suit, resplendent with orange tights and a honking beak. To avoid donning it, each would need to meet a personalized weight-loss goal within the four months.

Both employed a variety of strategies. Kerr joined JSC's Weight Watchers at Work and continued to participate in 5Ks and some triathlons. He also did a session of Boot Camp with Starport. Bell used his own eating plan, avoiding certain food groups and concentrating on protein and vegetables. He, too, joined Kerr in the fitness arena, also taking part in 5Ks and triathlons.

The results were stunning in their own right.

"I started running, started working on my running times," Kerr said. "We went and did the Yuri's Night run, and I got a really good time—the best time I'd ever gotten."

And then came the moment of the hallway weigh-in at the conclusion of the four months, with all their co-workers around to witness.

"I got on the scale and had met my goal, and then Justin got on the scale," Bell said. "He had had to lose 50 pounds. To his credit he lost 46, so he was very close."

Despite the fact that Kerr had to morph into a chicken one hot July day, in essence, he still won along with his friend.

"It was a little disappointing I didn't make it, because I was trying so hard for it, but I did achieve a lot of what I was going for," Kerr said. "I think I've prolonged my life by doing this, and it wasn't that big a deal. The (health) effects were pretty quick."

Even with the great benefits, there was still the "minor" detail of Kerr having to go through his day at JSC as an oversized chicken.

"It pained me to watch him," Bell said. "I felt so embarrassed for him during our morning tag-up, so after that meeting I told him he could be let off the hook if he wanted to. But he stuck to it, even to the point where we went to lunch and he was still wearing the chicken suit. And oddly enough, we chose Wings 'N More to go to lunch."

Kerr also had some comical memories of the day.

"I think I was more comfortable in the chicken suit than everybody else was standing around me," Kerr said. "You know, you would get in the elevator and people would act like you weren't there. Here's this 6-foot-5 chicken! You don't have to pretend that I'm not here, I'm here.

(continued on page 9)

Take control of your health with tools right here at JSC

Services offered by Exploration Wellness, which are available free of charge to all JSC team members.

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- *Personal training

For more, visit: http://starport.jsc.nasa.gov/Fitness/

* Additional costs may be associated with these activities.

Advanced Exploration Systems
gears up for NASA's future

With deep space exploration in mind, the Johnson Space Center Advanced Exploration Systems (AES) team has been busily preparing for NASA's future. Project Morpheus and the Autonomous Landing and Hazard Avoidance Technology (ALHAT), the 16th mission of NASA Extreme Environment Mission Operations (NEEMO) and the advancement of new suitport technology have all experienced recent accomplishments that will allow NASA to explore new destinations in space.

The AES team has been working closely with other centers to complete testing of Morpheus and ALHAT, as well as other projects. In fact, every NASA center is a partner in the AES program, formed in 2011 to begin early designs and tests of the systems and spacecraft that will enable missions to an asteroid in the 2025 timeframe or Mars in the mid-2030s. These projects are developing the components needed to assemble the systems that a crew would need to live and work when exploring an asteroid or Mars.

NASA/PHOTO

A simulated planetary surface is being created at the Kennedy Space Center Shuttle Landing Facility for the Morpheus/ALHAT integrated free-flight tests.

Morpheus and ALHAT partner up

Morpheus, the NASA JSC Engineering Vertical Test Bed prototype, has been teamed up to integrate with the ALHAT sensor systems. Most are familiar with Morpheus, but what is ALHAT?

As future space explorers aim to land on unfamiliar terrain across the solar system, they will need a safe way to locate and land near specific resources that could be situated in potentially hazardous terrain. To that end, NASA researchers and its partners are working to equip a new generation of robust planetary landers with the ability to automatically recognize a desired landing site, assess any and all potential landing hazards and adjust accordingly as they descend to the surface. Once proven, this technology could dramatically improve the safety and versatility of future robotic, cargo and crewed planetary descent vehicles, which could make it easier for human explorers to venture farther out into the cosmos.

The ALHAT project is developing advanced technologies, including surface-tracking sensors that precisely measure spacecraft altitude and velocity relative to the planetary surface. It can also actively measure the topography or roughness of the landing area. High-speed, high-volume computer processors combine ALHAT algorithms with this sensor data to navigate to what's known as the "pre-mission landing aim point." This is where ALHAT would determine safe landing areas close by. The spacecraft is then steered to a safe area near the landing aim point. From detection to touchdown, the process is done autonomously with automated guidance, navigation and control software aboard the spacecraft.

NASA/PHOTO JSC2012E064753

Morpheus has completed more than a dozen tethered and hot-fire tests at JSC, but will require evaluations at KSC to allow the program to grow further.

During testing in June and July, tethered flights of Morpheus carried ALHAT.

"ALHAT was successfully recording data and performing its hazard-detection scanning functions," said Steve Stich, associate director for Advanced Development, JSC Engineering. "ALHAT collected a wealth of data for the engineers to analyze after the test, so that was a real significant milestone for both the ALHAT and Morpheus teams."

Following the June testing, Morpheus had major upgrades, including the installation and testing of a Reaction Control System needed to get into the "real" free-flight tests, which are going to occur at the end of this fiscal year in the August/September timeframe.

"We're actually going to fly Morpheus at Kennedy Space Center (KSC) with the ALHAT sensor active and tracking a simulated hazard-detection field out at the Shuttle Landing Facility (SLF)," Stich said. "KSC has done an amazing job preparing the simulated planetary terrain, concrete landing pads and the hangar where the team will operate from. I would say that project has moved to a bigger scale."

The project is growing as it moves to the sunshine state.

"Before we were kind of a smaller project at JSC only," Stich said. "Now, we have a need to execute free flights at KSC at the SLF with the ALHAT system integrated on Morpheus. It's going to be an exciting time for the whole team. You can see the excitement in the team rising as we get closer to the testing at KSC."

NEEMO 16 dives into research

The NEEMO 16 mission took place at the Aquarius Reef Base, an undersea research habitat off the coast of Key Largo, Fla., from June 11 to 22. This mission evaluated spacewalk techniques and tools while operating under conditions that simulate a Near-Earth Asteroid (NEA). It also compared the effect of different combinations of

By Neesha Hosein

NASA/PHOTO

The NEEMO 16 crew gathers in front of the hatch to the Aquarius undersea laboratory on June 11 for the start of the mission.

exploration systems for four crew members.

NEEMO is part of the multi-disciplinary AES Analogs Project that simulates multiple features of human exploration missions in an integrated fashion using extreme, remote and isolated environments to adequately represent logistical challenges associated with human spaceflight.

NASA/PHOTO

European Space Agency astronaut Timothy Peake, foreground, during an underwater "spacewalk."

"NASA's analog missions allow us to complete objectives that we would need to assist with planning exploration missions," Stich said. "NEEMO 16 tested different techniques of how we would potentially explore an asteroid with humans, using a submersible vehicle to simulate the Multi-Mission Space Exploration Vehicle, which is another AES project. It also allowed us to piggyback scientific exploration objectives of marine science in exploring the reef."

The underwater explorers conducted all operations under a 50-second one-way time delay, which would occur during a real mission to an NEA.

For more information on NASA's analog missions, go to: http://www.nasa.gov/exploration/analogs/

AES advances in Extravehicular Activity (EVA) Suit Technology

"With the EVA Suit Technology project, we're looking at, for the first time, building a new spacesuit for the crew to use on exploration spacewalks," Stich said. "The team recently completed an extensive design review for the packaging of the Portable Life Support System."

This new concept is to have a suit that can be used for many more spacewalks than the current suits, which have a limit of about six years in space. The team is planning for the new suit to be used for a design goal of 100 spacewalks over a longer lifetime. The updated suit is used in concert with a suitport that allows a more rapid egress than the current shuttle heritage Extravehicular Mobility Units. The current prototype suit, known as Z-1, was successfully tested in mid-July in Vacuum Chamber B here at JSC. This was the first ever donning of a pressurized spacesuit with the suit pressurized to 8.3 psi. The test involved a subject undocking the suit from the suitport and performing some basic tasks, such as reaching down to tighten the boots and inspecting the suitport seal prior to re-docking.

Testing to go farther ... out there

"The AES projects are important because today the Orion and SLS (Space Launch System) programs are focused on developing the transportation capability," Stich said. "AES is designing and testing the technologies and systems that enable the missions to go to an asteroid in the 2025 timeframe or to Mars in the 2030 timeframe. We're investing in the future by having these small projects, working on exploration today as we build Orion and SLS."

NASA/NASA/ROBERT MARKOWITZ JSC2012E101041

The EVA Suit Technology project undergoes a major test milestone in Vacuum Chamber B at JSC.

Aquanauts perfect techniques for an asteroid … 63 feet below the sea

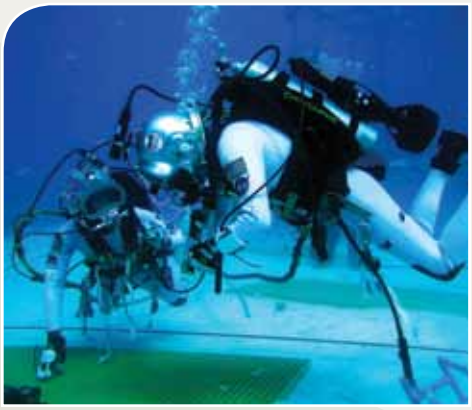
by Catherine Ragin Williams

Aquarius Reef Base, an undersea research habitat off the coast of Key Largo, Fla., does *not* mark the spot of newly found pirate treasure. It is, however, an analog experience that will allow NASA to one day explore a much larger scientific treasure sailing through our solar system—an asteroid.

NASA's Extreme Environment Mission Operations (NEEMO) 16 focused their activities on understanding what a mission to an asteroid would be like for future astronauts.

"Asteroids are a much more difficult beast than going to the moon or Mars as far as the surface itself, because there's a total absence of gravity," said NEEMO Project Lead Bill Todd. "It changes the way we think about doing business."

Aquarius, which is operated by the University of North Carolina at Wilmington for the National Oceanic and Atmospheric Administration, "is a uniquely suited mission environment that addresses many aspects of a deep-space mission," said Barbara Janoiko, NASA's Advanced Exploration Systems Analog Missions project manager. "The crew, or aquanauts, saturate inside Aquarius. This requires a 17-hour decompression protocol, because once your body is 'saturated' with nitrogen from the increased pressure of living under the sea, it simply is not possible to return to the surface at will. This makes NEEMO an extreme and isolated environment for testing."



NASA/PHOTO

Aquanauts Steve Squyers and Kimiya Yui use "jet packs" to help accomplish simulated asteroid surface tasks during NEEMO 16.

The NEEMO crew spent 12 days completing a whole suite of exercises associated with their mock asteroid surface.

"The primary focus of NEEMO 16 was the quantitative evaluation of EVA (Extravehicular Activity) techniques and tools while operating under conditions that simulate a Near-Earth Asteroid, while also comparing the effect of different combinations of exploration systems for a crew size of four," Janoiko said.

Results of NEEMO 16 would also identify how to best move, or translate, on an extraterrestrial body.

"We did sample-collection tasks," Todd said. "We did science tool deployment, like a seismic array, how you would deploy that and how you would put out the sensors and accomplish it, remembering that you don't have any ground reaction force. All these things become very, very difficult and have to be well thought out. And then we looked at each of those tasks being done in a different way."

The aquanauts were able to use a whole slew of devices to help them with their complicated procedures, including a modified jet pack with an underwater thruster device to "fly" around the asteroid.

"For those tasks, the boom devices and jet packs are great, but they're very difficult to get stable," Todd said. "They require a lot of workload. What really became apparent was the (need for the) use of a vehicle in conjunction with the astronaut."

For NEEMO 16, analogs to the Multi-Mission Space Exploration Vehicle were also used by the crew, and the little one-person submersibles received favorable ratings for their usefulness to the aquanauts.

Though preparing for asteroids under the ocean may seem counterintuitive, NEEMO will lead to decisions on "what technologies we need, what we don't need, and how we will need to design technologies and systems for end-user performance," Janoiko said. "Finding out these changes early in the hardware development and design saves more costly changes later in the flight development, making spaceflight more affordable at a modest early investment."

The crew "splashed up" on June 22 and encountered the sweet smell of success (and salt) that came with the most complex NEEMO mission yet.

"It was amazing in its technical achievement," Todd said. "Every day when I was diving, I would look around and see the complexity of it and just reflect on how neat it is to be part of something that had grown to that level, where we had multiple submersibles, multiple astronauts in the water, a dive team of 10 or 12 divers, an undersea habitat, and everybody was communicating together on the same communication loops. It's like a community underwater."

For more on NEEMO and other exploration analogs, visit: http://www.nasa.gov/exploration/analogs/

The Aquanauts

- **Dottie Metcalf-Lindenburger**
  NASA astronaut, NEEMO 16 commander
- **Kimiya Yui**
  Japan Aerospace Exploration Agency astronaut
- **Timothy Peake**
  European Space Agency astronaut
- **Steve Squyres**
  Cornell University astronomy professor and chairman of the NASA Advisory Council

NASA/PHOTO

From left, Dottie Metcalf-Lindenburger, NEEMO 16 commander, and NEEMO Project Lead Bill Todd work together on asteroid translation operation concepts under the sea.

Time to kick up some **red dust**

by Catherine Ragin Williams

NASA's most advanced planetary rover yet, the car-sized Curiosity, will kick up scarlet dust on the surface of Mars on Aug. 6.

The Mars Science Laboratory (MSL) mission is a precursor mission for a future human mission to Mars. President Obama has set a challenge to reach the Red Planet in the 2030s.

To achieve the precision needed for safe dropdown inside Gale Crater, the spacecraft will fly like a wing in the upper atmosphere rather than dropping like a rock. The air-bag method, which was used on previous Mars rovers, will not work this time around. Mission engineers at the Jet Propulsion Laboratory (JPL) in Pasadena, Calif., designed a "sky crane" method for the final several seconds of the flight. A backpack with retro-rockets controlling descent speed will lower the rover on three nylon cords just before touchdown.

In a scant seven-minute period, the MSL spacecraft carrying Curiosity must slow from 13,200 mph to about 1.7 mph to allow the rover to execute a landing.

"Those seven minutes are the most challenging part of this entire mission," said Pete Theisinger, JPL's MSL project manager. "For the landing to succeed, hundreds of events will need to go right, many with split-second timing and all controlled autonomously by the spacecraft. We've done all we can think of to succeed. We expect to get Curiosity safely onto the ground, but there is no guarantee. The risks are real."

During the initial weeks after the actual landing, JPL mission controllers will put the rover through a series of checkouts and activities to evaluate its performance on Mars while gradually ramping up scientific investigations. Curiosity then will begin investigating whether an area with a wet history inside Mars' Gale Crater ever hosted an environment favorable for microbial life.

PHOTO CREDIT: ADVANCED THERMAL GROUP

This photo of the NASA MSL rover, Curiosity, was taken during mobility testing on June 3, 2011, inside the Spacecraft Assembly Facility at JPL.

"Earlier missions have found that ancient Mars had wet environments," said Michael Meyer, lead scientist for NASA's Mars Program at NASA Headquarters. "Curiosity takes us to the next logical step in understanding the potential for life on Mars."

Information about the many ways to watch and participate in Curiosity's mission on the surface of Mars is available at: http://mars.jpl.nasa.gov/msl/participate

Follow the mission on Facebook and on Twitter at:
http://www.facebook.com/marscuriosity
http://www.twitter.com/marscuriosity

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NASA/JAMES BLAIR JSC2006E02292

Starport's Fitness Center can help team members reach their health goals.

They would kind of glance over and look the other way. Every now and then someone would say, 'Oh, you must've lost a bet.'"

Perhaps you don't need something as humiliating as a chicken suit to get motivated about your health. But if you do … it may just be worth it.

"Studies have shown that modest weight loss of as little as five to 10 percent of one's total body weight can result in positive changes to blood cholesterol, blood pressure, blood sugar and even sleep apnea symptoms," said JSC's Registered Dietician Glenda Blaskey. "Additionally, research shows that maintaining that weight loss over the long term can benefit not only one's physical health, but can also help improve mobility, mood, energy levels and self-confidence."

Kerr and Bell's results are a great example of that.

"My blood pressure is normal now," Kerr said. "My health is right. And I think I would say it's on account of taking the time to think about what's important to you and putting your priorities in the right place, and then having friends that encourage you to do the right thing, and work you over when you don't … like make you wear silly costumes to work."

PHOTO COURTESY OF DAN BELL

Kerr was unable to fly under the radar when taking a seat at the Commercial Crew Program morning tag-up meeting.

Spotlight: **Adam David Burnett**

Engineering Technician, Oceaneering Space Systems, in support of the Software, Robotics and Simulation Division on the Robonaut team

Q: Coolest part of working at Johnson Space Center?
A: Flat out, it is the pleasure of working in an environment filled with the world's most brilliant scientists, roboticists, engineers, designers and technicians, whose raw intelligence, dedication and drive fill the air with that crackling, tangible feeling of "intelligence at work." NASA's Robotics Division has gained a well-deserved reputation for incredible works in very short timeframes, and the fast-paced, diverse nature is fun and constantly exciting and challenging. I love to grow and learn new things, and there is nothing better than to sometimes participate in such a rare conversation of how to design, build and innovate in the field of biomimetic (biologically inspired) and humanoid robotics. My NASA and Oceaneering team mates are a true inspiration to me at all levels, and I'm proud to just be in their "space." I love to solve problems … I have a very diverse skill set and have been called a "Macgyver," or human Swiss Army Knife. This is the perfect place to flex and challenge those titles while increasing my skills and being of nimble service to my team.

Q: Favorite hobbies or interesting things you do away from the office?
A: I love playing Minecraft and LEGOs with my two sons, Goku (age 9) and Xavier (age 5). They are awesome, budding little scientists. I also founded a non-profit organization called Creatorspace.org, which unites creative people toward mutual success. We have a 2,500-square-foot workshop with tools on Medical Center Boulevard and Highway 3 that meets every Tuesday night at 7 p.m., and is growing rapidly. I also have a small product-development company that is developing some amazing new technology.

Q: What big dreams did you have growing up?
A: My biggest dream has been to work in the biomimetic and humanoid robotics field … period! As a kid, I wanted to be a scientist, inventor and entrepreneur.

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: Batman or Tony Stark/Iron man, in that order. Not only do they lead very exciting lives and defend justice, they had all the research capital, resources and time in the world to bring their creativity to life.

Q: What is your favorite indulgence?
A: Reading Wikipedia. Sad to say, I can read it for hours upon hours.

Q: What advice do you have for the high school and college graduates of 2012?
A: Stay in school. Read everything. Listen to people's complaints as an opportunity to solve them (and, if possible, start a business to do so). Live creatively. Oh, and the major one: The only mistake you can REALLY make is not making any.

Q: What seemingly "little things" bring you joy?
A: Learning a new skill, talking with people who are skilled in an art I know nothing about and trying new things … and of course my sons. (Daddy loves you always, Goku and Xavier!)

Q: Describe yourself in four words.
A: Creative, motivated, helpful, problem-solver.

PHOTO COURTESY OF: ADAM BURNETT

Q: When did you first become interested in space and why?
A: My dad had the dream experience with NASA. He got to do all the best stuff during the Apollo era. He did the Survival Lab, suit soft goods fabrication and design, "Vomit Comet" astronaut training, Neutral Buoyancy Laboratory astronaut training, and he was even dropped off the coast of Florida in the capsule to test the effectiveness of astronaut evacuation in many different conditions. His diverse skill set and fearlessness to learn has always inspired me and has exposed me to many skills years earlier than most get to have them.

Q: What do you think is NASA's most awe-inspiring achievement in space so far?
A: Robonaut and the first-ever human-to-humanoid robot handshake in space.

Q: What is your favorite memory of JSC or the space program?
A: Getting to take a guided tour through the Building 9 high bay at the age of 13 and seeing all the amazing science going on. Funny enough, the person who led that tour works just feet from away from me now (Hi, Bill!). Also, my dad sewing a spacesuit for my older brother for Halloween. (I got to wear it later on.)

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.

Driven to Explore dazzles large crowds in Ohio

NASA was on display at the Vectren Dayton Air Show from July 7 to 8 with Johnson Space Center's Driven to Explore (DTE) traveling exhibit, as well as Goddard Research Center's Mobile Orion Vehicle Explorer (MOVE). NASA astronaut and retired U.S. Air Force Col. Gregory H. Johnson made an appearance both days of the show and served as the grand marshal of the Dayton Air Show parade on July 6. More than 7,000 visitors had a chance to touch the DTE's 3-billion-year-old moon rock, see the MOVE exhibit showcasing the Orion spacecraft and get autographs from Johnson, making it the second most well-attended DTE venue of Fiscal Year 2012.

PHOTO CREDIT: GODDARD RESEARCH CENTER/DAVID DEFELICE

The famed Blue Angels soar over JSC's DTE exhibit at the Vectren Dayton Air Show, where visitors got a taste of space and aeronautics.

Fifty is nifty for Starport

The JSC Exchange, which later morphed into what we now fondly know of as Starport, was established July 24, 1962, to promote the welfare and morale of the JSC workforce. To commemorate turning 50, Starport remembered the past, promoted its services of the present and looked forward to exciting offerings of the future with a bevy of events throughout the end of July.

First up was a Classic Car Show in front of Building 1 reminiscent of the Apollo era on July 18. That was followed with a fun, leg-warmer-filled aerobics class called "Get Fit '80s Style." Starport, in partnership with the JSC Federal Credit Union, also thanked the workforce with an ice cream social. On July 26, the festivities ended with an open house and social hour at the Gilruth Center that included the ribbon-cutting ceremony of the new mind-body studio.

NASA/LAUREN HARNETT JSC2012E103172

NASA/LAUREN HARNETT JSC2012E103239

Roundup

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OR CURRENT RESIDENT

Don't forget—we're in the thick of hurricane season

By Jenny Knotts and Linda Spuler

Are you ready for a hurricane? August is the midway point of hurricane season, so now is a good time to double-check your evacuation plans and supplies.

Have I planned my evacuation route?

Plan a safe evacuation route before you need it. Be prepared to drive 20 to 50 miles inland to locate a safe place. Learn where shelters will be open and where you can safely board your pets. Contact the humane society for more information on animal shelters in the area.

■ Will I stay or leave?

When a hurricane threatens your area, you will have to make the decision to evacuate or stay. The "Candyland" graphic guide, available at http://www.jscsos.com/, can help you decide whether or not you can ride out the storm safely at home. It also has some helpful tips for whatever path you choose.

If local authorities recommend evacuation, you should leave! Their advice is based on knowledge of the strength of the storm and its potential for death and destruction.

IF YOU DO STAY, EXPECT TO BE WITHOUT EMERGENCY SERVICES, POWER AND RUNNING WATER FOR AT LEAST 72 HOURS. No ambulance service, police or fire department support will be guaranteed. Be sure to have enough food and water for that time period. (You will need one gallon of water for each person and pet per day.)

■ What do I do during a Hurricane WATCH?

A hurricane watch is when conditions are possible within the area. Check your supplies, including batteries and medicines, stock up on canned foods, secure lawn furniture and other loose materials outdoors and keep your car fueled.

■ What do I do during a Hurricane WARNING?

A hurricane warning is when conditions are expected within the area. This is when you make the decision to stay or leave. Stay tuned to the radio, TV or National Oceanic Atmospheric Administration weather radio for official bulletins, board up windows and move valuables to upper floors. Fill containers with several days' supply of drinking water. Turn your refrigerator to maximum cold and do not open it unless necessary.

■ When should I return to work?

Do not return to work until notified. Check http://www.jscsos.com for information on center status and stay tuned to local news stations.

NASA/PHOTO ISS017-E-015752

This picture of Hurricane Ike was downlinked by the crew of the International Space Station on Sept 10, 2008. Ike's damaging storm surge and winds showed Johnson Space Center team members the importance of hurricane preparedness.

Checking in after a storm

What: The Employee Notification and Accountability System (ENS).
Who: All civil servants and contractors with a Johnson Space Center badge.
When: As soon as possible after a hurricane passes.
How: Respond to the phone or email questionnaire sent by Emergency.NASA@dccnotify.com. If you do not have email access, you can call the NASA Emergency call center at 1-877-470-5240.
Why: To report your safety status to the center. Your status will be made available to your supervisor, and employee status information will be used to help determine when to reopen the center.

Civil servants can verify or revise contact information by logging into Employee Express: https://www.employeeexpress.gov/DefaultLogin.aspx (Path: Home/Miscellaneous/Emergency Contact Information)

Contractors can verify or revise contact information within IdMax at: https://idmax.nasa.gov/idm/user/login.jsp (Path: User Self Service/ Update - Emergency Notification Information)