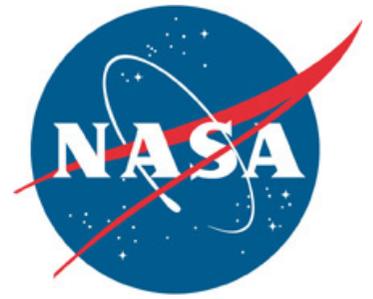


Spaceport News

John F. Kennedy Space Center - America's gateway to the universe

www.nasa.gov/centers/kennedy/news/snews/spnews_toc.html



NASA/Kim Shifflett

Virgen Fantauzzi a photographer with Central Florida News 13 is delighted with the opportunity to shake hands with Robonaut 2, or R2, a dexterous humanoid astronaut helper in the Space Station Processing Facility at Kennedy Space Center. R2 will fly to the International Space Station aboard space shuttle Discovery on the STS-133 mission, targeted for launch Nov. 1.

Workers prep Robonaut for STS-133

By **Steven Siceloff**
Spaceport News

Getting into space isn't necessarily easy for astronauts, and it's not much easier for a robotic astronaut, either.

Cocooned inside an aluminum frame and foam blocks cut out to its shape, Robonaut 2, or R2, is heading to the International Space Station inside the Permanent Multipurpose Module (PMM) in space

shuttle Discovery's payload bay as part of the STS-133 mission, targeted for launch Nov. 1.

Once in place inside the station, R2, with its humanlike hands and arms and stereo vision, is expected to perform some of the repetitive or more mundane functions inside the orbiting laboratory to free astronauts for more complicated tasks and experiments. It could one day also go along on spacewalks.

Making sure the first humanoid robot to head into space still works when it gets there has been the focus of workers at Kennedy and Johnson space centers. Engineers and technicians with decades of experience packing for space have spent the last few months devising a plan to secure the 330-pound machine against fierce vibrations and intense forces during launch.

See **ROBNAUT**, Page 2

Mobile launcher a tribute to hard work, dedication

By **Rebecca Sprague**
Spaceport News

Sitting beneath the cavernous exhaust hole of NASA's new mobile launcher structure, employees of Kennedy Space Center celebrated the completion of five years of hard work and dedication Aug. 12.

Called ML for short, the 355-foot-tall structure was initially built to launch the Constellation Program's Ares rockets into space.

In November 2006, it was just a concept on paper designed to be lighter so the crawler-transporters could pick up the heavier load of the tower and a taller rocket. Although it's only a support structure today, the next step will be to add ground support equipment, such as umbilicals, access arms and propellants and gases, for future rockets.

"I want to assure you, although this may have been built for a specific rocket, we are going to make use

of it," Center Director Bob Cabana said. "It truly is a fine piece of equipment."

Larry Schultz, Constellation senior project manager at Kennedy, echoed Cabana's sentiments, "This is American workmanship at its best."

Construction of the structure commenced in 2008 at the Mobile Launcher Park Site north of the Vehicle Assembly Building, or VAB. With every new steel segment, the growing launcher morphed the

appearance of Kennedy's horizon.

Constellation Program Manager at Johnson Space Center Dale Thomas asked the employees to "take a minute and look straight up."

"At Marshall (Space Flight Center) one of the sayings they have when you feel very passionate about something is 'before you give in, you'll lay in the flame bucket,'" Thomas

See **LAUNCHER**, Page 3



NASA/Jim Grossmann

NASA's new mobile launcher, or ML, will support NASA's future human spaceflight program.

Inside this issue . . .

NASA/'Star Wars' inspire



Page 2

STORRM brewing



Page 3

Blue Marble winners



Page 6

Heritage: Soda soars 25 years ago



Page 7

'Star Wars' fans suggest NASA build a hyperdrive

By Steven Siceloff
Spaceport News

It's not easy to get to a galaxy far, far away using engines powered by just liquid hydrogen and oxygen. So, NASA should develop a hyperdrive that would power astronauts through the cosmos at light speed, "Star Wars" makers and fans advised agency representatives Aug. 13 during the movie franchise's Celebration V in Orlando, Fla.

"The ultimate would be being able to travel faster than the speed of light and the whole hyperspace business that science fiction writers have been writing about because the idea of spending six months traveling to Mars doesn't



NASA/Gianni Woods

A Star Wars fan dresses as Darth Vader during the "Star Wars" V Celebration Aug. 12-15 at the Orange County Convention Center in Orlando, Fla.

seem very exciting," said Gary Kurtz, producer of the original "Star Wars" and its first sequel, "The Empire Strikes Back."

Fans like the idea of exploring new worlds, the same sentiment that made them "Star Wars" fans to begin with.

"I would like to see NASA work on ways to get to the different planets because when I watch 'Star Wars' I enjoy that they get to go to different worlds and if NASA could do that, that'd be fantastic," said Ben Jones, a fan who dressed as a Mandalorian commando for the convention.

Of course, "Star Wars" fans aren't the only ones who'd like to see a way to move around space quickly. Some of the space agency's own scientists envision the same thing.

"We need better propulsion systems, right now I'd say that would be the one invention that would really help us out a lot," said Joseph Tellado, a logistics manager for International

Space Station. "It'd be great if our astronauts could go at hyperspeed."

The inspiration works both ways, with NASA and "Star Wars" inspiring each other to stretch out and envision the future and then fill in details of what the future might look like.

"For us making 'Star Wars,' we wanted to celebrate space travel," Kurtz said, explaining that some of the dialogue heard in the movies was modeled on the countdown commentary from NASA launches. Also, a number of the conceptual artists who worked on "Star Wars" more than 30 years ago came from NASA's own artist ranks.

"The moon landings of course were very important

but I think more recently, the Hubble Space Telescope and the space station have been very good keys for people that this work is very important," Kurtz said.

"I believe 'Star Wars' and NASA have a lot in common," Tellado said. "We're looking to the future.

NASA is like the first stepping stone to ultimately get to that 'Star Wars' level," Tellado said.

So, if people can travel to distant worlds, what kind of life forms should they search for?

As Nicole Sampson, a "Star Wars" fan inspired to dress as Princess Leia for the convention, joked, "As long as we stay away from anything related to Jar Jar Binks, I'm good."

From ROBONAUT, Page 1

"I think back in May we realized we had a huge challenge on our hands," said Michael Haddock, a mechanical engineer designing the procedures and other aspects of preparing R2 for launch, including careful crane operations inside the Space Station Processing Facility's high bay.

By spaceflight standards, planning for the packing effort moved quite quickly, particularly considering R2 is perhaps the heaviest payload to be taken into space inside a cargo module.

"The mass is what's driving the crane operations, otherwise we'd be handling the robot by hand," Haddock said. "But the robot itself weighs on the order of 333 pounds and when it is installed in the structural launch enclosure, it will weigh over 500 pounds."

As they must when loading anything for spaceflight, the engineers designed the packaging so astronauts could easily remove R2 from its launch box, known by its acronym SLEEPR, or Structural Launch Enclosure to Effectively Protect Robonaut.

"We were trying to do something very unique and very

fast," said Scott Higginbotham, payload manager for the STS-133 mission. "And we've got the best team in the world for dealing with things like that."

There was talk of simply strapping the robot into the empty seat on the shuttle's middeck, Higginbotham said, but R2 was too heavy for that. So the teams came up with a plan to fasten R2 to a base plate and use struts to support the back and shoulders. Then dense foam will provide more support, followed by an aluminum frame.

Assembling the packing precisely is important for R2 because a space shuttle accelerates to more than three times the force of gravity during its eight-minute climb into orbit.

"The team had to educate ourselves, learn the uniqueness of it as well as learn how to install it into the vehicle," said Ken Koby, lead systems engineer for Boeing. "That's what the team has basically been doing every day for the last three months, educating ourselves about Robonaut."

Coincidentally, detailed analysis showed that R2's best position to withstand the launch forces will be the same as the astronauts -- facing toward the nose

of the shuttle with the back taking all the weight.

"The orientation is just like the crew flies," Koby said. "The crew will be facing straight up on their backs and Robonaut will be the same direction, obviously 30 feet behind them in the module here."

Although the robot is fundamentally a very complex machine full of state-of-the-art sensors and operated by phenomenally sophisticated software, it is its shape that stirs fascination.

Designed by NASA and General Motors as a robotic assistant for astronauts working in space, R2 looks like the upper torso of a sculpted bodybuilder and is topped with a helmeted head that includes two cameras to give it three-dimensional vision plus other sensors.

Its look has been compared to Star Wars bounty hunter Boba Fett, the endoskeleton from the Terminator films and the animated robot that plays football on Fox Sports.

"It's rather intimidating at first sight because of its size, its physique and you can't see its eyes," Haddock said.

It also has a pair of beefy arms

and two hands, complete with four fingers and one thumb each, that can shake hands. Its programming is sensitive enough to respond to a handshake with the same amount of force as the person squeezing R2's hands. In other words, it can hold a piece of equipment in space without crushing it.

This Robonaut was not meant to fly at first. Instead, it was strictly a developmental model to be tested and perfected on the ground. However, it was adapted for flight and has tested well for launch. That is a bit of a theme for the STS-133 mission because the Permanent Multipurpose Module which Discovery is taking to the station also was retrofitted to add more capabilities.

The PMM was formerly the Multi-purpose Logistics Module known as Leonardo and was built to stay in space for only short periods at a time. But its mission has changed and engineers built up its armor and added some interior features so it can be permanently attached to the station and used as more of a storage closet than the moving van first envisioned.

"Someone said this mission is anything but ordinary," said Higginbotham, "and that is a fact."

STORRM brews aboard space shuttle Endeavour

By Anna Heiney
Spaceport News

STORRM, the next generation in docking and rendezvous technology will make its debut early next year during the STS-134 mission. Officially called the Sensor Test for Orion Relative Navigation Risk Mitigation, the system was installed Aug. 10 inside Endeavour's payload bay, where it will fly as a Development Test Objective, or DTO -- in other words, an in-flight experiment.

Designed for use on the Orion capsule, STORRM includes the Visual Navigation Sensor, or VNS, along with an advanced docking camera. The VNS relies on a light-based remote sensing technology called lidar to provide extremely accurate data while the docking camera offers high-resolution docking imagery.

When the STORRM's two hardware components -- the Sensor Enclosure Assembly, or SEA, and Avionics Enclosure Assembly, or AEA -- were lowered into place in Endeavour's payload bay,



NASA/Jim Grossmann

Technicians carefully prepare the second Sensor Test for Orion Relative Navigation Risk Mitigation, or STORRM, box for transport to space shuttle Endeavour.

an unusually large crowd of enthusiastic agency and contractor representatives were on hand to observe and celebrate the milestone.

"It's exciting that Endeavour will be contributing to the technology development for our future space program," said NASA's Vehicle Manager for Endeavour Shelley Ford as she surveyed a crowd of about 30 people vying for the best views among the myriad of access platforms surrounding the orbiter.

STORRM was developed at Johnson Space Center in Houston. Engineers at Langley Research Center in Virginia were in charge of

engineering management, design and build of the avionics, STORRM software application and reflective elements. They also are responsible for the integration, testing and certification of these components. Industry partners Lockheed Martin Space Systems and Ball Aerospace Technologies Corp. handled the design, build and testing of the VNS and docking camera.

Installation began with the SEA, a 52-pound box about the size of a microwave oven. United Space Alliance Lead Mechanical Technician Tim Keyser, serving as move director, oversaw the installation as

technicians using a jib hoist carefully lifted the SEA over several levels of platforms, then lowered it into the forward end of Endeavour's payload bay.

The SEA was mounted in place in front of the shuttle's airlock, alongside the existing Trajectory Control System. The location of the docking camera offers an accurate snapshot of how the system would handle on the Orion capsule, and provides precise visual cues to the crew.

"This works great for us," said Scott Cryan, Orion relative navigation hardware subsystem manager at Johnson. "The docking camera in the SEA is right in line with the orbiter's centerline."

Next, the team picked up the 82-pound AEA, which provides power distribution, data recording and memory for the camera and navigation system. The AEA is mounted in bay 3 on the port side of the payload bay.

According to Deputy Project Manager Rick Walker, the assembly's location in the payload bay is due to the large volumes of high-speed

data the hardware will have to digest.

But placing it in the bay resulted in the need for radiation-tolerant memory. The team succeeded by using a blend of commercial and Langley-developed technologies, completing the work in nearly half the time it would normally take.

"This was done in 14 months -- a pretty quick turnaround," Walker said. "Now, this is the exciting part. You see the hard work, long hours and travel away from home come together. This is what it's all about."

Electrical connections were completed the next day, followed by a round of functional testing that verified the STORRM hardware is ready to fly.

"The team successfully completed the test and checkout of the STORRM payload, so after the test cables are demated and some final inspections are accomplished, it will be ready for flight," Ford said. "We'll be cheering the STORRM folks on and wishing for their success when Endeavour docks to the ISS early next year."

From LAUNCHER, Page 1

said. "And that's where you're sitting today, so obviously we all feel very passionate about the future of human spaceflight."

The structure, Thomas said, draws on the lessons and legacy of NASA's Apollo and Space Shuttle programs.

"That's what the mobile launcher here represents. It is the next generation of mobile launching equipment," Thomas said.

"When you deliver a project that is technically excellent, on time and within budget, that says a lot," Cabana said.

The celebration wrapped up with an offer to tour the mammoth structure.

The journey begins at the side of the base structure by climbing up

Constellation Program team honored

Program Manager Commendations		KSC Orion Landing and Recovery Team	
Mike Conroy	Rick Acosta		
Ed Stanton	Tom Topolinski		
Space Flight Awareness Team Awards		Space Flight Awareness Leadership Award	
Constellation Program Modeling and Simulation Team		John Branard	Russ DeLoach
Constellation Ground Operations Business Support Team		Jeff Gernand	J. Kevin Hankins
Ares I/Orion Mobile Launcher Construction Team		Eric Hanson	Kevin Ingoldsby
Ground Operations Safety Support Team		Cheree Kiernan	Bill J. Koenig
		Mike Lee	Jim Medina
		Ray Pestik	Art Scheuermann
		Wayne Thompson	Todd Turner
		Priscilla Stanley	

a couple of dozen steps to a grated walkway. Next, you walk through an entry that resembles a hatched metal door on a U.S. Navy ship. Outfitted with solid steel flooring, lights, air conditioning, electrical boxes and sprinkler piping, the ML's interior looks a lot like waiting to board the former Back to the

Future ride at Universal Studios. Next, it's up two more flights of stairs to the large elevators that travel to the 325-foot level of the tower in less than two minutes.

While riding the elevator, Cabana mentioned that he has trekked the whole way up by foot in five minutes and 35 seconds. If not for

trading his steel-toe boots in for dress shoes for the celebration, he probably would have tried to beat his time. He even received some offers of friendly competition from other employees.

Stepping out the elevator doors there is another 20 feet of stairs to climb. Once you get to the top of the tower and look out over the railing, though, it makes the trip worthwhile.

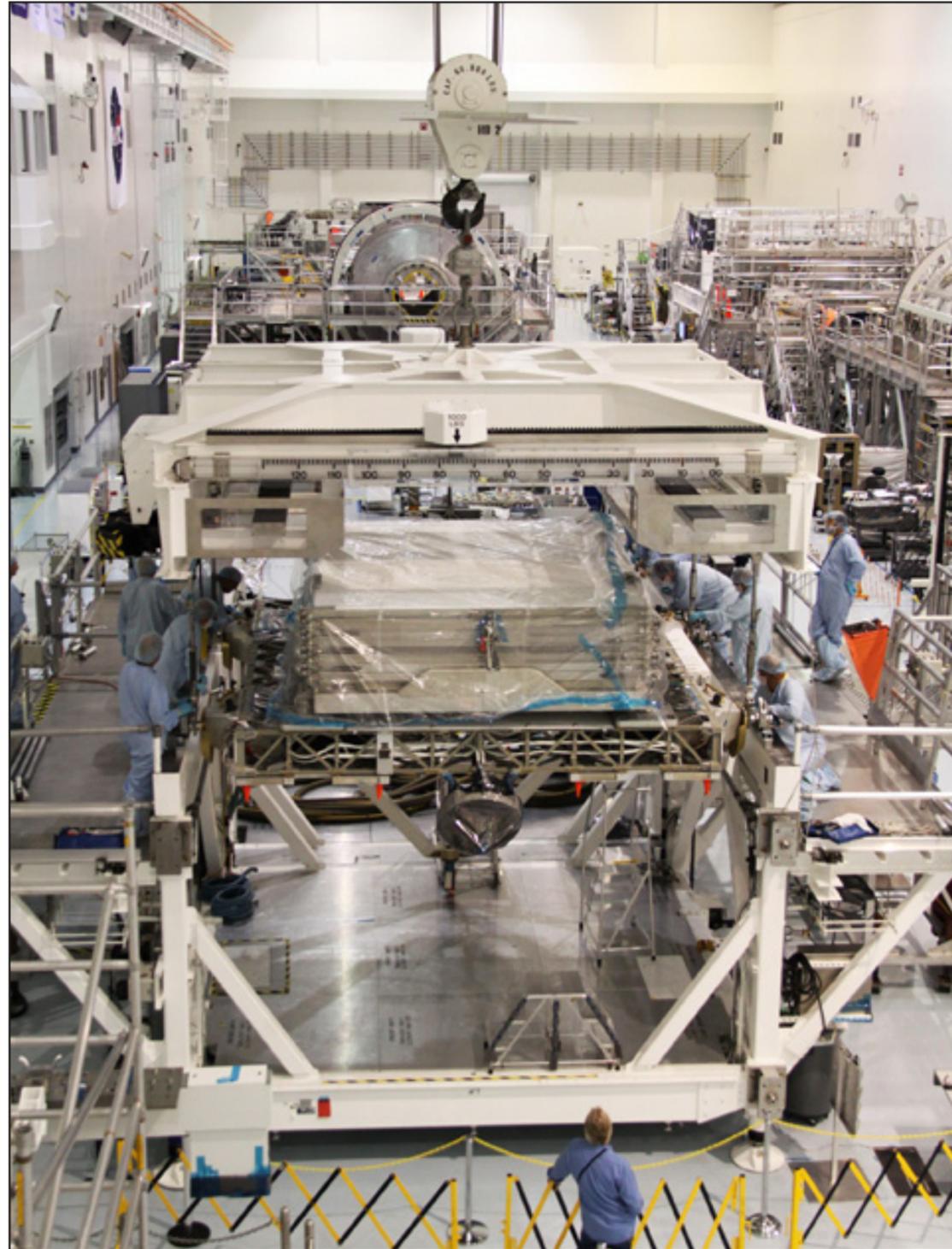
Standing at the top, Cabana said, "It's just a beautiful view from up here. You know, Kennedy is an amazing place and you get to take it all in from up here. You've got the launch pads, the VAB, the Shuttle Landing Facility, a wildlife refuge. It really is phenomenal. But this wasn't meant to be just a viewing platform . . . we're going to put it to use."

Scenes Around Kennedy Space Center



NASA/Kim Shifflett

NASA Associate Deputy Administrator Charles Scales, left, Commerce Secretary Gary Locke and Rep. Suzanne Kosmas of Florida, learn about research taking place in the Space Life Sciences Lab at Kennedy on Aug. 4. As part of Locke's visit, a meeting was held with about a dozen workers to discuss what the Commerce Department, NASA and the White House are doing to improve the local economy as the Space Shuttle Program winds down. NASA Administrator Charlie Bolden and Locke co-chair the White House's Task Force on Space Industry Workforce and Economic Development, which was formed in May and is expected to provide a report to President Obama this month.



NASA/Jack Pfaller

Technicians perform the Express Logistics Carrier-4, or ELC-4, deck-to-keel mate in Kennedy's Space Station Processing Facility on Aug. 3. The deck is about 14 by 16 feet and spans the width of a space shuttle's payload bay. It is capable of providing astronauts aboard the International Space Station with a platform and infrastructure to deploy experiments in the vacuum of space without requiring a separate dedicated Earth-orbiting satellite. Space shuttle Discovery and its STS-133 crew will deliver the carrier along with critical spare parts to the station later this year.



NASA/Jim Grossmann

Sen. Bill Nelson of Florida talks with Kennedy Space Center senior managers in the Operations and Checkout Building's Mission Briefing Room on Aug. 17.



NASA/Jack Pfaller

Storyteller Jay O'Callahan performs "Forged in the Stars" on Aug. 4 in Kennedy's Training Auditorium. The event, sponsored by the Academy of Program/Project and Engineering Leadership, or APPEL, features the stories of three prominent NASA personalities: J.C. High Eagle, a NASA engineer of Cherokee Indian heritage whose childhood dream was to help humans land on the moon; astronaut Neil Armstrong, commander of the 1969 Apollo moon landing; and New Hampshire teacher Christa McAuliffe, who died in the space shuttle Challenger accident.

Spaceport News wants your photos, ideas

Send photos of yourself and/or your co-workers in action for possible publication. Photos should include a short caption describing what's going on, with names and job titles, from left to right. Also, if you have a good story idea chime in. Send your story ideas or photos to:

**KSC-Spaceport-News@
mail.nasa.gov**



NASA/Dimitri Gerondidakis

Kennedy Center Director Bob Cabana presents a Gold Dollar award to Col. Derek Walls, commanding officer of the Florida Volunteer Search and Rescue (SAR). A Public Service Group Achievement Award also went to about 20 student cadets of the SAR Corps on Aug. 4. Recognition of these individuals was for their significant contributions to the KSC Picnic during the past 11 years.



NASA/Jim Grossmann

Chuck Dovale, deputy program manager of NASA's Launch Services Program, or LSP, left, shows Amanda Mitskevich; LSP program manager, Ana Stark and Billy McMillan a new touchscreen monitor in Kennedy's Operations and Checkout Building on July 23. The new screen is part of an Interactive Launch Information Center that showcases LSP's unique capabilities and successful history of one-of-a-kind missions with dynamic and interactive videos and interviews.



NASA/Dimitri Gerondidakis

On Aug. 3 in Firing Room 4 of Kennedy's Launch Control Center, Shuttle Launch Director Mike Leinbach, left, and Kennedy Center Director Bob Cabana admire 3-D wall art that is a tribute each of the space shuttles and the nearly 30-year-old Space Shuttle Program.

Chiefs take different approach to strategic leadership

Perfected mix of strategy, tactics drive Deloach

By Rebecca Sprague
Spaceport News

Effective leadership is all about strategy and tactics, according to Russ Deloach, a chief safety officer for NASA's Safety and Mission Assurance Directorate.

"I've heard strategic defined as 'doing the right things,' whereas tactical is 'doing things right,'" Deloach said. "Both are important . . . but clearly you have to have a strategy in place for tactics to be of value."

The more-than-20-year NASA veteran recently won Kennedy Space Center's Strategic Leadership Award and said working for the space program has always been his life's calling.

"My father worked out here in the '60s, and I was a small child living in Titusville and I got to watch the Saturn Vs lift off standing in my backyard," Deloach said. "We ended up leaving the area, but that experience stayed with me the rest of my childhood . . . and then when I hit college, I knew I wanted an engineering degree and I knew I wanted to work for the space program."

Fresh out of the University of Florida, he joined NASA to help with the Space Shuttle Program's ground systems recertification process following the space shuttle Challenger accident. From there, he assisted in the development of Kennedy's Space Station Processing Facility for Space Station Freedom, which became the International Space Station. He then went back to shuttle operations for a few years



and currently is working to develop the agency's future programs.

"I really enjoy the designing and developing phases of a program. With shuttle, even in an operations phase, there is still a lot of planning that goes on. There are always modifications to make and safety issues to address," Deloach said.

He said, though, it's his team that really makes him an effective leader. He oversees about 25 employees, which include NASA civil servants and contractors from Millennium Engineering, ManTech, and SAIC.

"I got lucky and was able to help build my own team, and it's a really good mix of experienced folks and fresh-outs," Deloach said. "It's really been neat watching the interaction . . . they are all learning from each other every day."

Right now, his team is working on Constellation projects, but Deloach said he is looking forward to future work at Kennedy, which may include the 21st Century Space Launch Complex and Flagship Technology Demonstration programs.

There is one phrase in particular that has helped shape him as a leader, Deloach said, and he heard it early in his career.

"It's easy sometimes to get overwhelmed by all the stuff and sometimes I would let it frustrate me . . . but someone told me, 'Russ, sometimes you've just got to rise above it,'" Deloach said.

Opportunity to help work force inspires Wilson

By Rebecca Sprague
Spaceport News

The depth of David Wilson's ability to lead runs deeper than his team in NASA's Human Resources Operations Office at Kennedy Space Center. He recently was recognized for his ability to strategically lead the center's entire work force toward a successful future.

"Human Resources is all about, 'What do the center employees need and how do you help them?'" Wilson said.

As chief, Wilson is guiding the center's transition efforts as the Space Shuttle Program winds down and new opportunities arise.

Those efforts include opening four Workforce Transition Offices, on-site and off-site job fairs that attracted about 3,000 employees, interview and resume workshops, and a website that serves as a forum for workers to exchange ideas, information, concerns and opportunities.

"Probably one of my favorite things I've done in my career, which I know sounds strange when you talk about people losing their jobs, has been helping contractor personnel find new work," Wilson said. "We're doing our best to prepare them to compete in today's difficult job market."

Wilson said the most satisfying part is seeing his office's hard work pay off. An example is an e-mail he and his co-worker, Laura Gallaher, an organizational development specialist, received from a contractor employee telling them that their resume and interviewing sessions



led to two job offers.

"I have recommended your services to my co-workers, because I definitely feel that you contributed to

my success," the engineer wrote.

Born in Bountiful, Utah, Wilson began his career while attending Brigham Young University. In 1989, he was accepted into the Presidential Management Fellows Program, which helps recruit graduate students interested in working for the federal government. Wilson said he interviewed with several federal agencies and landed an internship at NASA Headquarters in Washington, D.C. Five years later, he came to work for the Human Resources Office at Kennedy.

It's his team, Wilson said, that makes coming to work enjoyable.

"You're only as good as your people," Wilson said. "They're excited about their work, they're technically very good at what they do . . . and they are the reason I succeed."

That team of about 20 employees is a mix of seasoned folks who bring experience to the table and younger ones with fresh ideas.

Wilson's leadership advice: "Be passionate and excited about what you do. And make sure the people who work with you see that passion because they are more likely to follow your example."

He also adds this simple rule: "Strategic leadership is trying to figure out what is down the road and what you need to do to position yourself for what's coming."

Kennedy collects three of NASA's Blue Marble Awards

Kennedy Space Center was recognized for its green efforts with three NASA Blue Marble Awards at a ceremony in Denver recently.

NASA Environmental Quality Award

Barbara Naylor,

who manages Kennedy's Cultural Resources Management program and is the historic preservation officer of the center's Environmental Management Branch, was recognized for her work with internal mitigation plans for historic properties that may be af-

ected by the Space Shuttle Program's retirement. She also assisted in the demolition of the original Mission Control Center used to support NASA's Mercury and Gemini programs.

NASA Environmental Quality Award

The Waste to Disney

Dirt team helped reduce waste generated at the center's All-American Picnic by shredding food waste and compostable items and shipping them to Walt Disney World's composting facility in Orlando, Fla., for future use at Disney parks.

NASA Director's Environmental and Energy Award

The NASA Causeway Seawall Project Team was recognized for saving \$3 million while recycling 23,000 tons of concrete demolition debris for the coastal revetment project.

Remembering Our Heritage

Soda reached new heights 25 years ago

By Rebecca Sprague
Spaceport News

“Gulp . . . gulp . . . gulp . . . ah-hhh . . .”

That’s the sound often made while drinking a tall glass of ice-cold soda here on Earth. In July 1985, tasting the bubbly goodness became a little more scientific.

After rigorous testing by NASA, the Carbonated Beverage Dispenser Evaluation experiment was accepted to fly on space shuttle Challenger’s STS-51F mission.

The experiment included the “Coke Space Can,” which, according to the Coca-Cola Company, featured a drinking spout activated by a plunger-type lever, a screw-on cap to protect the spout, a valve safety lock to help prevent accidental dispensing, a liquid-flow adjustment screw, safety cap retainer cord and adhesive fastener strip. Quite a mouthful for a can that was only about 5 3/4 inches tall.

PepsiCo., the maker of Pepsi, also was interested in this out-of-this-world project and developed their own, slightly different space can, which resembled an aluminum whipped cream dispenser and was about 7 inches tall.

“These cans were considered more of an experiment or payload than a food item,” said Dave Andrews, a systems specialist for United Space Alliance Flight Crew Systems Engineering at Kennedy Space Center. “They were packed with other ‘menu food’ trays on the middeck.”

Commander Gordon Fullerton and Mission Specialist Story Musgrave performed the taste test in orbit. Next, the Coke Space Can was tested aboard space station Mir in August 1991.

Today, space’s first soda contraptions are on display at the Smithsonian National Air and Space Museum in Washington, D.C.

Coca-Cola’s next partnership with NASA came in 1995 on shuttle Discovery’s STS-63 mission. The company developed a “Coca-Cola Space Dispenser/Monitor,” which NASA officially called a Fluids



NASA file photos/1985

Astronauts Karl Henize, left, and Anthony England, drink from a special carbonated beverage dispensers labeled Pepsi and Coke in the middeck area of space shuttle Challenger on July 30, 1985. Note the cans appear to have their own built-in straws.

Generic Bioprocessing Apparatus-1, or FGBA-1. This time, the pre-mixed carbonated beverages were stored at a constant temperature of 40 degrees F.

Commander James Wetherbee, Pilot Eileen Collins and Mission Specialist Bernard Harris were to drink 4 ounces of Coca-Cola and Diet Coke on three different days to report their flavor, carbonation, sweetness and tartness.

Andrews said packing for that mission was a little different because the dispenser was part of the commercially owned SPACEHAB logistics module. SPACEHAB

modules were prepared for launch at the company’s SPACEHAB Payload Processing Facility in Cape Canaveral, Fla. Once the hardware was tested and certified to fly, it was transported to Kennedy. It was installed in Discovery’s payload bay, with an adjoining tunnel to the middeck, allowing access to the module.

An upgraded version, FGBA-2, flew aboard shuttle Endeavour’s STS-77 mission.

The apparatus’ goal was to produce carbonated beverages from separately stored carbon dioxide, water and flavored syrups. It also featured a non-carbonated beverage



NASA file/1996

STS-77 astronauts aboard space shuttle Endeavour experiment with the Fluids Generic Bioprocessing Apparatus-2, or FGBA-2. The apparatus’ goal was to produce carbonated beverages from separately stored carbon dioxide, water and flavored syrups. It also featured a non-carbonated beverage, orange-flavored POWERade. The astronauts added their own “price tag” to the top-right of the soda dispenser.

-- orange-flavored POWERade.

Coca-Cola’s senior vice president and manager of Technical Operations at the time, George Gourlay, said, “Our objective is to have Coca-Cola products available to consumers wherever they live, work or play.”

The astronauts even added one more “comfort” of home to the dispenser -- a piece of tape on the top-right of the dispenser that read “50¢.”

During a crew interview, Mission Specialist Dan Bursch described the soda as “foam that tends to drift around anywhere in the container.”

The soda’s mixed reviews in space could stem from the effects after it is gulped. Even bubbles in water can cause quite a stomachache in orbit.

In his book, “Sky Walking,” Tom Jones, a veteran of four spaceflights, may have described it best: “. . . without the downward tug of gravity, trying to burp out the excess air was surprisingly difficult.”

Jones also said gas pains often ruined an astronaut’s appetite, and “if the problems continued, dehydration could potentially force an early end to a mission.”

Andrews said today drink and food items are tested and packaged at the Food Lab at Johnson Space Center in Houston and shipped in mid-deck stowage lockers. Then, United Space Alliance technicians install the lockers into the spacecraft.

“Same with pantry food items, such as small crackers, nuts and color-coated candies,” Andrews said. “We also fly at least one fresh-food locker, usually filled with fruit and maybe some snack cakes, which is packed here at Crew Quarters by a Johnson food rep and then we put it in the middeck about 24 hours before a flight.”

Don’t expect shuttle astronauts and International Space Station Expedition crew members to eat those snack foods with a glass of soda pop today, though, because they primarily stick to coffee, tea, juices, punches and lemonade.

Badged NASA, KSC contractor employees receive free admission to Visitor Complex

All active, permanently badged NASA and Kennedy Space Center contractor employees will receive free admission to the Kennedy Space Center Visitor Complex until further notice. Employees must present their badge at the will-call window to receive a complimentary admission ticket. NASA employees from other centers also may receive complimentary admission with proof of badge. This offer does not extend to friends or family members, and discounted tickets are not available through this program.

Upcoming events . . .

Aug. 28 The KSC Education Office hosts NASA Family Education Night; 6 to 10 p.m., Astronaut Hall of Fame
POC: Beverly Davis, 867-3399, beverly.davis@nasa.gov

Aug. 30 The Innovative Partnerships Program hosts a lecture by Dr. Nannette Stangle-Castor on "Open Innovation"; 9 to 11:30 a.m. or 1 to 3:30 p.m., Kennedy Learning Institute
POC: Carol Anne Dunn, 867-6381

Sept. 25 KSC Family Day/Take Your Children to Work Day;
For more information, go to <http://familyday.ksc.nasa.gov>
POC: Layla Higgins, layla.m.higgins@nasa.gov

For more, go to the internal Kennedy Events and Schedules Calendar at www.nasa.gov/centers/kennedy/events/index.html

Looking up and ahead . . .

Targeted for NET September	Launch/CCAFS: Falcon 9, Dragon C1; TBD
Targeted for Oct. 19	Launch/CCAFS: Delta IV Heavy, NROL-32; TBD
Targeted for Nov. 1	Launch/KSC: Discovery, STS-133; 4:40 p.m. EDT
Targeted for Nov. 17	Launch/CCAFS: Atlas V, GPS IIF-2; TBD
Nov. 22	Launch/VAFB: Taurus, Glory; 5:09 a.m. EST
Targeted for Jan. 22, 2011	Launch/CCAFS: Atlas V, SBIRS GEO-1; TBD
Targeted for Feb. 26, 2011	Launch/KSC: Endeavour, STS-134; 4:04 p.m. EST
Aug. 5, 2011	Launch/CCAFS: Atlas V, Juno; TBD
Aug. 15, 2011	Launch/Reagan Test Site: Pegasus, NuSTAR; TBD
Sept. 8, 2011	Launch/CCAFS: Delta II Heavy, GRAIL; TBD
Sept. 23, 2011	Launch/VAFS: Delta II, NPP; TBD
To Be Determined	Launch/VAFB: Delta II, Aquarius / SAC-D Satellite; TBD
No Earlier Than Nov. 25, 2011	Launch/CCAFS: Atlas V, Mars Science Laboratory; TBD

WORD ON THE STREET

Robonaut 2 will fly to the International Space Station aboard space shuttle Discovery on the STS-133 mission. If you had a Robonaut at your disposal, what would you do with it?



"Make it clean the house . . . everything . . . bathroom, kitchen and even the litter box."

Jennifer Morgan,
with NASA



"I'd have it do underwater exploring. Maybe find a way to fix an oil leak. Definitely make it a pathfinder."

Daniel Walter,
with United Space Alliance



"It's going to do all the chores in my house . . . yard work, wash cars, clean the garage and even fetch cold refreshments."

Alan Grenville,
with The Boeing Co.



"Maintenance around the house, such as plumbing, painting and dusting. Maybe even rotating my tires."

Michael Modeen,
with Brevard Achievement Center



"Mow my lawn, change the oil in my car. Pretty much anything to free me up so I can spend time with the family."

Francisco Soriano,
with NASA



John F. Kennedy Space Center

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