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John C. Stennis Space Center

LAGNIAPPE

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Atlantis links up with ISS

STS-115 to perform crucial work

The six STS-115 astronauts entered the International Space Station for the first time at 8:30 a.m. EDT on Monday, Sept. 11, and were greeted by the station's Expedition 13 crew.

Their arrival follows the flawless launch of Space Shuttle Atlantis on Saturday, Sept. 9. The fuel cut-off sensor system, which malfunctioned and delayed the scheduled launch a day earlier, performed normally.

Upon arrival at the orbital outpost, the space shuttle and ISS crews turned their attention to beginning STS-115's major task at the station, the installation and outfitting of the P3/P4 integrated truss structure and solar arrays. Weighing 35,000 pounds, the girder-like structure includes a set of giant solar arrays, batteries and associated electronics. The arrays eventually will double the station's power capability.

LIFTOFF – Space Shuttle Atlantis leaps off the launch pad, heading for its rendezvous with the International Space Station on mission STS-115. Liftoff was on-time at 11:14 a.m. EDT, Sept. 9. Mission STS-115 is the 116th space shuttle flight, the 27th flight for orbiter Atlantis and the 19th U.S. flight to the ISS. The mission is scheduled to last 11 days.

The crews were preparing to conduct three spacewalks to ready the truss and arrays for operation. STS-115 is the first station assembly mission since STS-113 in 2002.

Before docking, Commander Brent Jett and Pilot Chris Ferguson commanded Atlantis to do a back flip maneuver, which allowed the Expedition 13 crew to photograph Atlantis' heat shield.

Mission specialists Dan Burbank, Heide Stefanyshyn-Piper, Joe Tanner and Steve MacLean, a Canadian Space Agency astronaut, comprise the rest of Atlantis' crew.

For information about the mission and crew, visit: http://www.nasa.gov/shuttle.

From the desk of

Dr. Richard Gilbrech

Director,
Stennis Space Center

August was another landmark month for NASA and Stennis Space Center. We reached a major milestone with the 1,000th space shuttle main engine test on the A-1 Test Stand.

Now, the center is seeing an increase in the pace of SSME testing as we move closer to temporarily decommissioning the A-1 Test Stand in October to allow modifications for testing components of the J-2X engine for the Constellation Program. The J-2X engine is a derivative of the J-2 that powered the second stage of the Apollo Program's Saturn V rocket, which took the first Americans to the moon.

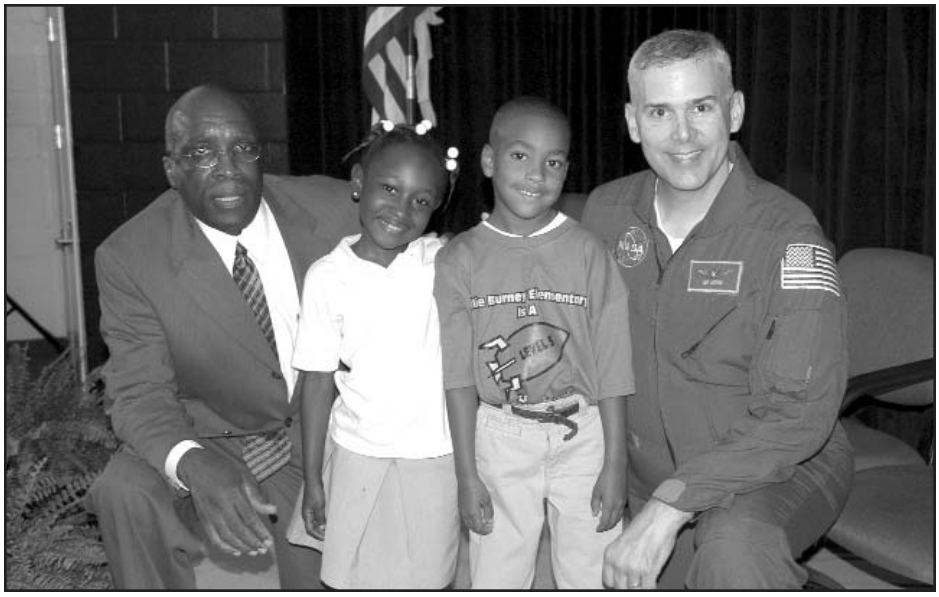
August also had a special significance this year as we held an observance ceremony on Aug. 29 to recognize the one-year mark since Hurricane Katrina made landfall. During the ceremony a plaque was unveiled commemorating the sacrifices and dedication of our employees.

Although devastating, Hurricane Katrina did provide some valuable lessons for us and we are updating capabilities to be better prepared should we be faced with another disaster. Our Center Operations Directorate has been hard at work to design and build a new Emergency Operations Center along with 20 other planned mitigation projects providing increased backup power and fuel storage, enhanced communications, underground utilities, increased high-pressure gas generation capabilities, records protection, enhanced security and logistics. Additionally, new satellite phones are operational, improved traffic control will aid in evacuation, and an updated sheltering strategy includes the expertise of the American Red Cross.

Center repairs are also well under way. Of 32 repair projects identified, six have been completed and 26 are currently in work. Completed projects include reroofing and renovation of Bldg. 1100's north wing; roofing and interior renovation work at buildings 2205, 5008 and 1020; various information technology repairs; and timber salvage operations on 5,500 acres damaged by Katrina's high winds. Approximately 1,419 areas of repair were identified, and more than 800 have been completed. My compliments go to our Stennis team supporting these vital efforts.

I take comfort in the fact that a year later we have emerged better equipped and better prepared, and I encourage each of you to keep your individual hurricane preparations current, both at work and at home. Be safe and keep up the great work.

Rep. Watson meets with Explorer School students



Rep. Percy Watson (left), Chairman, Ways and Means, Mississippi House of Representatives, talks with first-graders Savannah Jones and Levi Meyers, and Astronaut Lee Morin on Sept. 8 during the NASA Explorer School kickoff event at the Lillie Burney Elementary School in Hattiesburg, Miss. NASA Explorer Schools help promote student achievement in mathematics and science through activities using the excitement of NASA research, discoveries and missions. Rep. Watson, a member of the Mississippi legislature since 1980, is a longtime, staunch supporter of educational initiatives. He is especially interested in the NASA Explorer School program at Lillie Burney because his five children were educated at Hattiesburg public schools.

4 Silver Snoopys presented

Four employees at Stennis Space Center were honored Sept. 8 with a "Silver Snoopy," the personal achievement award given to space program workers by NASA's astronauts.

They were Mississippi Space Services' Kenny Fortenberry of Picayune and Ken Bourque of Gulfport; Defense Contract Management Agency's Rodney Sorapuru of Slidell, La.; and Computer Sciences Corp.'s Sharlene Majors of Slidell.

Each recipient was given a Silver Snoopy pin flown on a space shuttle mission, along with a letter of commendation and certificate, both signed and presented by Astronaut Lee Morin. Morin, who has logged more than 259 hours in space, is working on the cockpit design for NASA's new crew exploration vehicle, Orion.

Astronauts always present the Silver Snoopy because it is the astronaut corps' own award for outstanding performance, contributing to flight safety and mission success.

Ken Bourque
Weld Shop lead
Mississippi Space Services

Kenny Fortenberry
Composite Crew lead
Mississippi Space Services

Sharlene Majors
Managing associate safety professional
Computer Sciences Corporation

Rodney Sorapuru
Quality assurance specialist
Defense Contract Management Agency

Space Flight Awareness honors SSC employees

Fourteen employees at Stennis Space Center on Aug. 21 received the Honoree Award, the highest form of recognition bestowed upon an employee by NASA's Space Flight Awareness Program. They were selected to view the launch of the current space shuttle mission, STS-115; attended a reception in their honor; and received commendations and space shuttle models. They are (from left): front row, Anita Harrell, NASA; Eric Vanderklis, NASA Test Operations Group, Engineering Research Council; Gerald L. Martin, Paragon Systems Inc.; Ellen Titus, Alamo Travel; Mark Warren, NASA; back row, SSC Director Dr. Rick Gilbrech; Steven Martin, NASA Test Operations Group, Jacobs Sverdrup; Thomas E. Jacks, NASA; Samuel Brown, Applied Geo Technologies Inc.; Vincent Pachel, NASA; Ralph Fowler, Pratt & Whitney Rocketdyne; Donald Griffith, NASA; and David P. McConnell, Pratt & Whitney Rocketdyne. Not pictured are Mark Mills and Roger Blake, Mississippi Space Services.

FULFILLING THE VISION FOR SPACE EXPLORATION

A-1 conducts 1,000th SSME test

The A-1 Test Stand at NASA Stennis Space Center, Miss., marked a historic moment Aug. 17 as the 1,000th test of a space shuttle main engine was conducted on that facility.

Water vapor billows from the A-1 Test Stand at NASA Stennis Space Center on Aug. 17 during SSC's 1,000th test of a space shuttle main engine on that test stand. SSC engineers began testing SSMEs in 1975, and since that time have tested every one of the complex engines that power the space shuttle. Set to retire in 2010, the space shuttle will be replaced by NASA's new crew and cargo launch vehicles, the Ares I and Ares V. In October, SSC will temporarily decommission its A-1 Test Stand to modify it to begin testing engines for the new spacecraft that will replace the shuttle.

In October, the A-1 Test Stand will be converted to begin the next phase of its distinguished history: testing the J-2X engine. The engine is a modification of the Apollo Program's J-2 that helped take the first Americans to the moon. The J-2s were also tested at Stennis.

Stennis will also test the J-2X and RS-68 rocket engines for NASA's new spacecraft, Ares I and Ares V. These crew and cargo launch vehicles will replace the space shuttle as NASA's craft for human space exploration. NASA will retire the space shuttle by 2010.

Meanwhile, NASA's remaining 16 scheduled space shuttle missions each will require three main engines to reach orbit. Stennis will continue to test the engines on its A-2 Test Stand, according to Don Beckmeyer, space shuttle main engine project manager in the Test Projects Office of Stennis' Project Directorate.

"We're driving ahead with our assignments," Beckmeyer said. It's critical to meet every deadline along the way "for scheduling propellant deliveries, for support systems, to have everything coordinated in order to maintain the test schedule," he added.

Since 1975, all SSMEs have been tested and proven flightworthy at Stennis. The thousand tests conducted on Stennis' A-1 stand have been crucial to the flight record of the powerful engines. In the 115 launches logged by the shuttle fleet, no main engine has ever experienced a major anomaly.

The test stand was built in the 1960s to test the stages of the Apollo Program's rocket engines. The A-1 and sister stand A-2 were modified in the 1970s to test-fire and prove flightworthy all space shuttle main engines.

Leland English was the test conductor for the first 40 SSME tests performed at Stennis' test complex. Now retired, the Utah resident said it took a lot of work to get the stands ready for testing the shuttle's main engines.

"I was just as excited then as we all were during the run-up to Apollo," English said, "because we worked so hard getting that facility ready."

Brian Childers, an employee of Pratt & Whitney Rocketdyne at Stennis, was the test conductor for the Aug. 17 test. He is also lead test engineer for the A-1 stand, which will make him an integral part of the stand's upcoming metamorphosis.

Childers, part of a generation of engineers who have benefited from their predecessors' zeal, believes Stennis' new work assignment will fan the flames of public enthusiasm for the nation's space program.

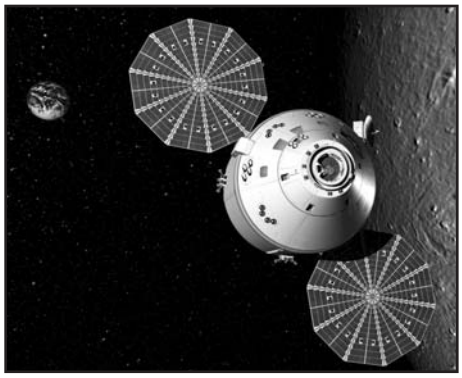
"I look forward to America going back to the moon," Childers said. "The goal to go to Mars is something for everybody to shoot for."

FULFILLING THE VISION FOR SPACE EXPLORATION

NASA names new vehicle Orion

NASA announced Aug. 22 that its new crew exploration vehicle will be named Orion.

Orion is the vehicle NASA's Constellation Program is developing to carry a new generation of explorers back to the moon and later to Mars. Orion will succeed the space shuttle as NASA's primary vehicle for human space exploration.



NASA's Constellation Program is getting to work on the new spacecraft that will return humans to the moon. This concept drawing represents the Orion crew exploration vehicle and service module.

In June, NASA announced the launch vehicles under development by the Constellation Program would be named Ares after the ancient Greek god, counterpart to the Roman god Mars. The booster that will launch Orion will be called Ares I, and a larger heavy-lift cargo launch vehicle will be known as Ares V. Stennis Space Center will test the engines to power both vehicles.

Named for one of the most familiar and easily identifiable constellations, Orion will be capable of transporting cargo and up to six crew members to and from the International Space Station. It can carry four crewmembers for lunar missions. Later, it can support crew transfers for Mars missions.

Orion will be 16.5 feet in diameter and have a mass of about 25 tons. Inside, it will have more than 2.5 times the volume of an Apollo capsule that took the first Americans to the moon. The spacecraft will return humans to the moon to stay for long periods as a testing ground for the longer journey to Mars.

Lockheed to build Orion crew vehicle

NASA has selected Lockheed Martin Corp. as the prime contractor to design, develop and build Orion.

The Orion crew capsule will carry astronauts back to the moon and later to Mars. The first flight with astronauts aboard is planned for no later than 2014. Orion's first flight to the moon is planned for no later than 2020.

Orion improves on the best features of Project Apollo and the Space Shuttle Program, increasing the likelihood of success.

New venture advances space commerce

NASA is making an unprecedented investment in commercial space transportation services with the hope of creating a competitive market for supply flights to the International Space Station.

Two industry partners will receive a combined total of approximately $500 million to help fund the development of reliable, cost-effective access to low-Earth orbit. NASA signed Space Agreements on Aug. 18 with Space Exploration Technologies of El Segundo, Calif., and Rocketplane-Kistler of Oklahoma City to develop and demonstrate the vehicles, systems and operations needed to support a human facility such as ISS.

The venture, Commercial Orbital Transportation Services (COTS) Program, marks a break with tradition for NASA. "This is the first opportunity NASA has taken to engage entrepreneurs in a way that allows us to satisfy our needs and lets commercial industry gain a foothold," said Marc Timm, acting COTS Program executive in NASA's Exploration Systems Mission Directorate.

Alan Lindenmoyer, manager of the Commercial Crew and Cargo Program Office at NASA's Johnson Space Center, said NASA's offer of seed money fulfills President Bush's Jan. 14, 2004, directive to promote commercial participation in space exploration. The 2005 NASA Authorization Act also calls on the agency to advance space commerce.

The demonstrations are scheduled to begin as early as 2008 and continue through 2010 or later. COTS will be carried out in two phases. Phase 1 will include safe disposal or return of spacecraft that successfully dock at ISS and deliver cargo. Once demonstrated, NASA plans to purchase transportation services competitively in Phase 2.

SSC marks anniversary of Katrina

NASA Stennis Space Center was back in business six weeks after Hurricane Katrina. The first post-storm rocket engine test, an RS-68 engine, was conducted Oct. 12, followed two weeks later by a test-firing of a space shuttle main engine. NASA honored SSC employees in March for their efforts to ensure the safety of the center and its occupants following the devastation wreaked by Hurricane Katrina.

At the Hurricane Katrina anniversary observance held Aug. 29 in the StenniSphere auditorium, SSC Deputy Director David Throckmorton (left) and RAdm. Timothy McGee, Commander, Naval Meteorology and Oceanography Command, unveil a plaque dedicated to SSC employees.

Dr. Richard J. Gilbrech became director of the center in January. He began his NASA career at SSC, and was deputy director at Langley Research Center, Va.

"This is an exciting time for our nation and for Stennis Space Center," Gilbrech said. "By building on more than 40 years of experience in rocket propulsion testing, Stennis will continue to serve in its traditional role of testing NASA's rocket engines."

SSC marked its 40th anniversary of rocket engine testing in 2006, as well as the 25th anniversary of NASA's STS-1, the first space shuttle mission.

Stennis Space Center's positive effect on the surrounding communities and the state was reaffirmed in March. Dr. Charles Campbell, economics professor at Mississippi State University, presented figures detailing SSC's impact on the 2005 economy of Mississippi. SSC had a direct economic impact of $503 million on the area within a 50-mile radius of the center. According to Campbell, if Stennis Space Center had not been in operation in 2005, employment for the area would have been reduced by more than 19,700 jobs; personal income would have been reduced by more than $818.7 million; and retail sales would have been reduced by $327.5 million.

SSC recently received a new work assignment: to test the engines for the new spacecraft that will replace the space shuttle. The vehicles, Ares I and Ares V, will carry cargo and crew to the moon and travel to Mars as part of NASA's Constellation Program.

StenniSphere, SSC's visitor center, reopened in January. Since reopening, StenniSphere has had nearly 22,000 visitors, including many of the volunteers who helped the area recover after Katrina.

Mementoes, photos and messages make up the Collage of Hope (above). For several days prior to the anniversary of Hurricane Katrina's strike against the Gulf Coast, the collage was in the Bldg. 1100 Atrium, where SSC employees participated in its creation by adding personal items. Jim Matthews (left, photo at left) of the University of Southern Mississippi Center of Higher Learning talks about hurricane preparedness and services with NASA DEVELOP students Jason Jones and Cara Waite on Aug. 29.

Women's Equality Day observance

Samantha Lewis (left), outreach coordinator with the Mississippi Secretary of State's Office, shows Rachel Woodard and Kim Billingsley, both of Pratt & Whitney Rocketdyne, how to use a new voting machine to be placed in all Mississippi voting precincts this fall. The voting machine was part of a display observing Women's Equality Day on Aug. 24. Organized by SSC's Office of Diversity and Equal Opportunity, the observance tries to emphasize the importance of the 1920 constitutional amendment guaranteeing women the right to vote. Lewis demonstrated the machine in Bldg. 1100's Cafeteria Lobby.

Tips for speaking to diverse audiences

By learning to speak to a diverse audience, you can extend your message to more people. We need to be more "positively conscious" of our audiences and understand how to make people feel included. The more people feel included, the more they will listen to you, use your information and come back for more.

From the **Office of Diversity and Equal Opportunity**

Following are 10 tips for communicating with a diverse audience:

1. Use pronouns and metaphors that include rather than exclude.
2. Learn the demographics of the audience before your presentation, and prepare.
3. Do not assume everyone shares your religious beliefs.
4. Look at and smile at everyone in the audience.
5. Do not use humor that puts down any particular group.
6. Examine your assumptions about people who are different than you.
7. Do not be afraid to ask for the correct pronunciation of someone's name.
8. If someone has an accent and you can't understand them, ask them to repeat what they said slowly, because what they are saying is important to you.
9. Accommodate different learning styles in presentations: visual, auditory and kinetic.
10. Be comfortable with silence, with direct interaction and with saying, "I don't know."

AROUND NASA

■ **NASA tests technology under harsh desert conditions:** Arizona's high desert is a long way from the moon and Mars, but its temperature extremes, gusty winds and dust make NASA's robots, rovers and latest space gear feel right at home. The state's famed Meteor Crater-Cinder Lake area represents a surrogate planet surface for NASA's Desert Research and Technology Studies team of scientists and engineers who test futuristic equipment. This is the ninth year for the team to take on the high desert and volcanic ash beds found near Flagstaff, Ariz. The team of about 100 scientists and engineers from six NASA centers will test advanced prototype equipment and operational concepts that may support planetary exploration.

■ **NASA continues space exploration research with undersea lab:** NASA's third mission this year to an undersea laboratory off the Florida coast began when four astronauts splashed down Sept. 16. Veteran space flyer astronaut Sandra H. Magnus led the crew on a seven-day undersea mission Sept. 16-22 onboard the National Oceanic and Atmospheric Administration's Aquarius underwater laboratory. Army Lt. Col. Timothy L. Kopra, Army Col. Timothy J. Creamer and Air Force Maj. Robert L. Behnken rounded out the astronaut crew. During the NASA Extreme Environment Mission Operations 11, astronauts imitated moonwalks, testing concepts for mobility using various spacesuit configurations and weights to simulate lunar gravity. Techniques for communication, navigation, geological sample retrieval, construction and using remote-controlled robots on the moon's surface also were tested.

■ **NASA, NOAA data indicate ozone layer is recovering:** A new study finds consistent evidence that Earth's ozone layer is on the mend. A team, using observations gathered from balloons, ground-based instruments and NASA and National Oceanic and Atmospheric Administration satellites, analyzed 25 years of independent ozone observations at different altitudes in Earth's stratosphere. The stratosphere, which lies between 6 and 31 miles above the surface of the Earth, is the second lowest atmospheric layer. It contains approximately 90 percent of all atmospheric ozone. The researchers concluded the Earth's protective ozone layer outside of the polar regions stopped thinning around 1997. Ozone in these areas declined steadily from 1979 to 1997.

Hail & Farewell

NASA welcomes the following to SSC:

Greg Byrd – Engineering & Science Directorate

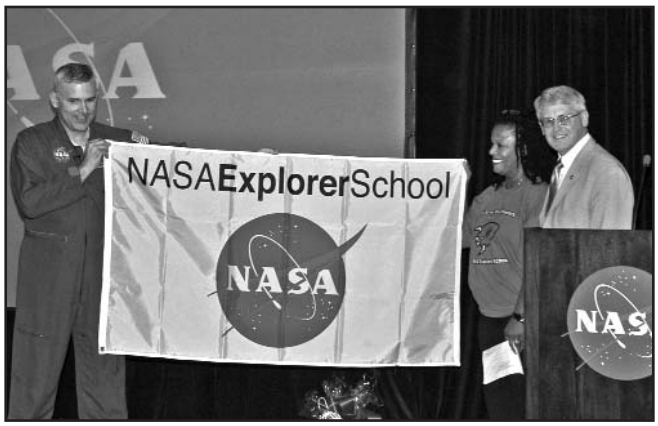
Laura Linhardt – Engineering & Science Directorate

And bids farewell to the following:

Timi Vann – Project Directorate

SSC partners with newest Explorer School

NASA marked the beginning of a three-year partnership with Lillie Burney Elementary School in Hattiesburg on Sept. 8.



Astronaut Lee Morin (left, photo at left) and Stennis Space Center Deputy Director David Throckmorton present a NASA Explorer School banner to Hattiesburg's Lillie Burney Elementary Principal Deborah Woullard at the school's NES kickoff event Sept. 8. The school held a special afternoon assembly and family night for students and their families, where SSC staff members conducted hands-on activities. SSC External Affairs Officer Pam Covington (right, in photo below) talks with first-grader Micah Baskin and his mother, Felicia, about career opportunities with NASA.

The school was one of 25 nationwide selected to be part of the NASA Explorer Schools program.

NASA's Explorer Schools program addresses the nation's need to promote student achievement in mathematics and science studies through activities that use the excitement of NASA research, discoveries and missions.

Lillie Burney Elementary held two activities for the kickoff event. Astronaut Lee Morin made a presentation to the student body in the afternoon assembly, and the school held a family night with NASA activities and demonstrations that evening.

The activities included demonstrations of cryogenic fuels, a spacesuit and LEGO robots. NASA engineers discussed careers with NASA, and Starbase Atlantis provided free astronomy lessons inside its portable planetarium.

There are five other Explorer Schools in Mississippi: South Delta Middle School, Anguilla; Aberdeen Middle School; Bay-Waveland Middle School, Bay St. Louis; Magnolia Junior High, Moss Point; and North Gulfport 7th and 8th Grade School. The three Gulf Coast schools' partnerships were extended a year after Hurricane Katrina devastated their campuses and communities.

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