National Aeronautics and Space Administration

LAGNIAPPE

John C. Stennis Space Center

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INFINITY visitor center opens

Ceremony participants prepare to cut the ribbon on the INFINITY at NASA Stennis Space Center facility April 11. Participating in the ceremony were (l to r): Gulfport Mayor and INFINITY Science Center Inc. Chairman George Schloegel; U.S. Rep. Steven Palazzo, R-Miss.; U.S. Sen. Roger Wicker, R-Miss.; Roy S. Estess granddaughter Lauren McKay; Mississippi Gov. Phil Bryant; Leo Seal Jr. grandson Leo Seal IV; Stennis Director Patrick Scheuermann; U.S. Sen. Thad Cochran, R-Miss.; NASA Chief of Staff David Radzanowski; and Apollo 13 astronaut and INFINITY Science Center Inc. Vice Chairman Fred Haise. See additional coverage, beginning on page 6.

"It is not the engaging exhibition or the incredibly beautiful building that will make INFINITY a success. Rather, it will be the enthusiastic Stennis employees."

From the desk of
Myron Webb
Legislative Affairs Officer and INFINITY Liasion, Stennis Space Center

The April 11 ribbon cutting of INFINITY was a grand day for Stennis Space Center, NASA, Mississippi and the region. Gov. Phil Bryant, Sen. Thad Cochran, Sen. Roger Wicker and Congressman Steven Palazzo all spoke enthusiastically about the benefits the new facility will bring. Gulfport Mayor and Chairman of INFINITY Science Center, Inc. George Schloegel proclaimed, "Mississippi has a new front door on Interstate 10, and this impressive facility will showcase to the world the little-known treasures of Stennis Space Center's unique federal city."

The 700 community leaders and students in attendance were excited about the more visible and convenient center that features Astro Camp facilities, classrooms, an Educator Resource Center, a café, a gift shop and conference rooms. There is also much anticipation about the 3.5-mile INFINITY heritage trail that will offer an ecotourism experience when it opens in November.

Outside, visitors were drawn to the magnificent 32-foot-tall eagle sculpture created by artist Marlin Miller. The priceless gift was carved from a huge oak tree destroyed by Hurricane Katrina, and contains metal from Stennis test stands and space shuttle main engine turbine blades flown in space. It is dedicated to Apollo 13 astronaut Fred Haise, who is also vice chairman of INFINITY's nonprofit board.

Guests also enjoyed the engines, buoys, submersibles and riverine warfare craft on the outdoor pavilion. Entering the towering, 72,000-square-foot, light-filled building, visitors were intrigued by the Great Nations Dare to Explore maze that showcases how innovation and technology propel nations forward. Other new exhibits on efforts to improve the health of the Gulf of Mexico were popular as well.

Everyone was mesmerized by the enhanced Science on a Sphere exhibit and attracted by two towering shiny 1:10 scale models of Saturn IB and Saturn V rockets. Talented employees volunteered and worked diligently for months restoring these treasures.

The upstairs Space Gallery was a hit, featuring several exhibits, including an Orion capsule cutaway to show visitors how future astronauts will travel to space. A centerpiece was the International Space Station laboratory module that offered visitors a walk-through tour narrated by astronaut Scott Altman, who has actually worked aboard the most sophisticated and complex science project in human history.

Guests also learned how lettuce can be grown in space aeroponically for long-duration missions and enjoyed a boom box exhibit that allowed everyone to feel the shake, rattle and roar of a J-2X engine test at Stennis.

It is not the engaging exhibition or the incredibly beautiful building that will make INFINITY a success. Rather, it will be the enthusiastic Stennis employees who are passionate about what they do and want to plant seeds to make a difference in a child's life or to enhance an adult's appreciation of science, as well as the numerous volunteers from our communities who are equally proud of our great state and its talented people. So, get involved and help INFINITY reach its full potential – the possibilities truly are infinite. Access www.visitinfinity.com for up-to-date information.

See you at INFINITY!

Myron

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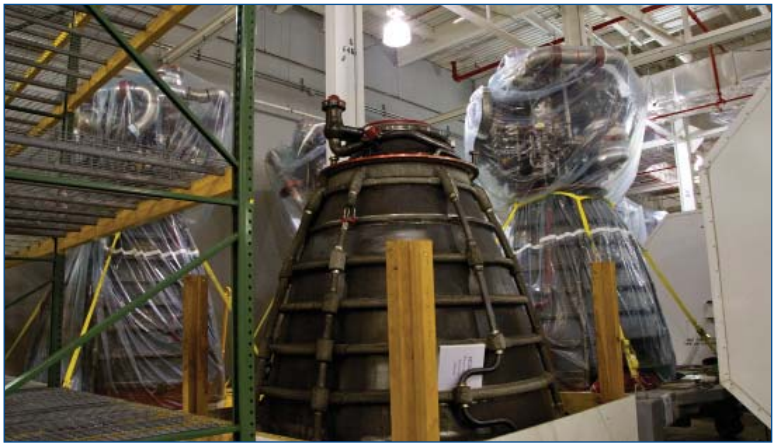
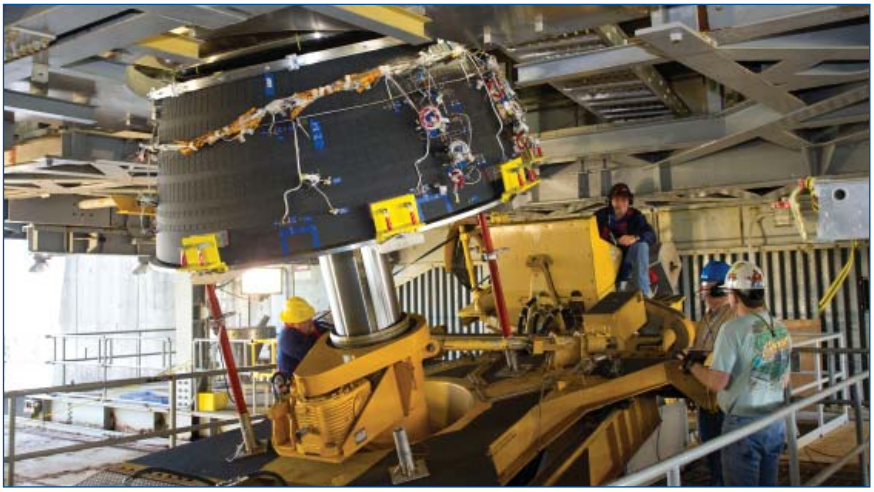
FULFILLING NASA'S EXPLORATION MISSION

Final RS-25 engine arrives at Stennis



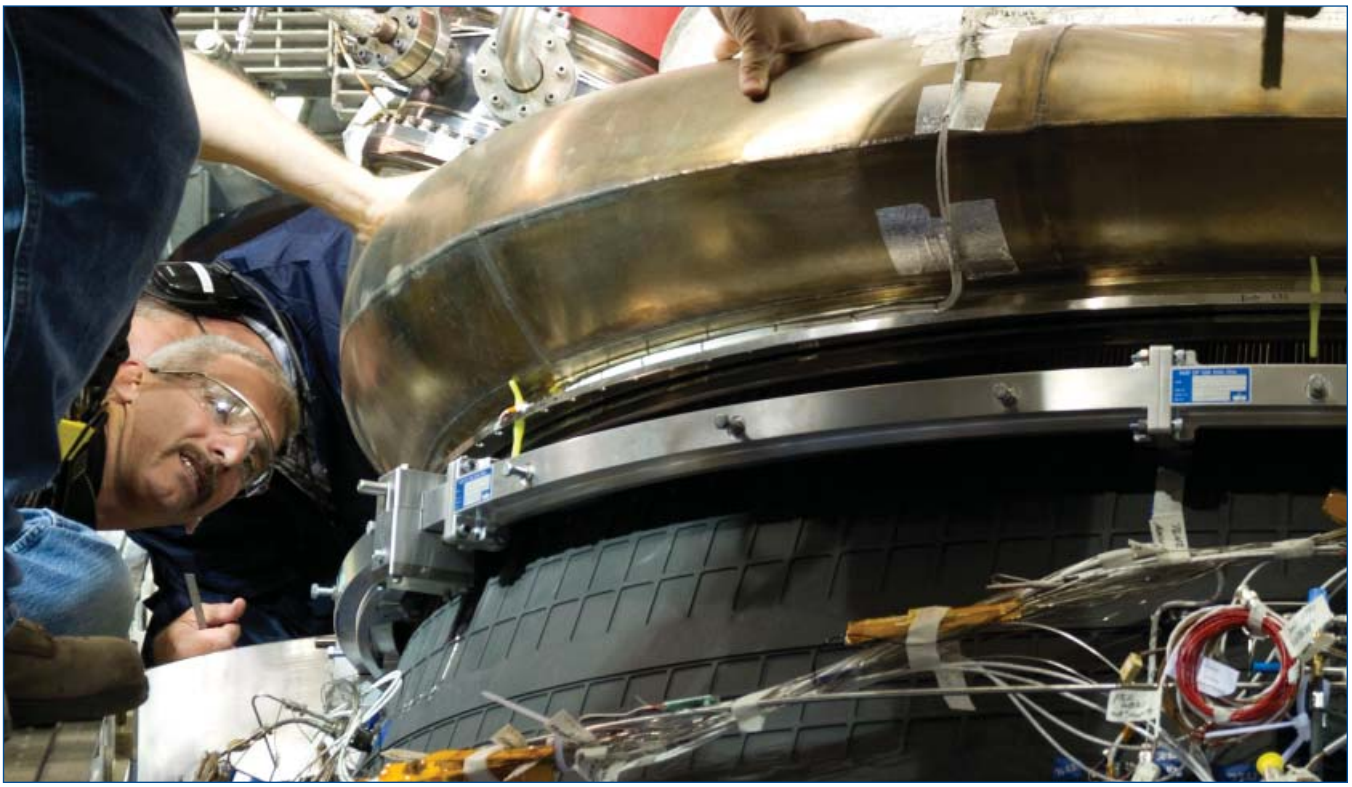
RS-25 series rocket engine No. 2059 is unloaded and positioned at Stennis Space Center on April 10 for future testing and use on NASA's new Space Launch System (SLS). The engine was the last of 15 RS-25 engines to be delivered from NASA's Kennedy Space Center in Florida to Stennis, where all will be stored until testing can begin. Engines arrive in protective crating and wrapping. Some have been uncrated and hoisted into upright position for warehouse storage; others will be left in crating until needed for the SLS Program. The SLS is a new heavy-lift launch vehicle that will expand human presence beyond low-Earth orbit and enable new missions of exploration across the solar system. The new system consists of a core stage, to be powered by RS-25 engines, and an upper stage, to be powered by next-generation J-2X engines. Development testing of the J-2X engine already is under way at Stennis. A test schedule for RS-25 engines has not yet been determined. The 15 RS-25 engines now at Stennis were transported on the 700-mile journey from Kennedy one at a time. Built by Pratt & Whitney Rocketdyne of Canoga Park, Calif., the RS-25 engine powered NASA's Space Shuttle Program with 100 percent mission success. Stennis tested all of the engines used on 135 shuttle missions and will build on that experience and record of excellence in testing engines for the new SLS.

FULFILLING NASA'S EXPLORATION MISSION



Stub nozzle installed on A-2 Test Stand

NASA moved a step closer to beginning its second round of testing on the next-generation J-2X rocket engine with installation of the engine's stub nozzle April 12. Stennis employees at the A-2 Test Stand lifted and installed the nozzle on engine No. 10001, which will provide critical developmental data when testing resumes soon. In the bottom left photo, Ray Keim with Pratt & Whitney Rocketdyne checks the fit of the nozzle to the engine. The J-2X engine nozzle is different from the nozzle used on the space shuttle main engine for the last 30 years. The shuttle nozzle was hydrogen cooled, while the J-2X nozzle is made out of materials that need no cooling. Dozens of sensors are installed on the engine No. 10001 nozzle to help engineers collect data on its performance during test firings. Collecting nozzle data and continuing to learn about the performance of the engine itself are primary goals for the second round of J-2X testing. A total of 16 tests are scheduled, expected to conclude just before the end of the year. In its first round of testing, the J-2X engine was fired 10 times for a cumulative 1,040 seconds, testing various aspects of performance. The J-2X is a redesign from the heritage J-2 engine that helped send humans to the moon during the Apollo Program missions. It will power the upper stage of NASA's new space Launch System now in development.



INFINITY opens

Officials, guests gather for ribbon-cutting ceremony; Mississippi governor announces plans to develop world-class ocean research facility at Stennis

About 700 officials and guests from NASA, Stennis Space Center, Congress, state government, media outlets, area schools and local Mississippi and Louisiana communities gathered for a ribbon-cutting ceremony to mark opening of the INFINITY at NASA Stennis Space Center facility April 11.

"Today's ribbon cutting will open the doors to learning, to exploration, to inspiration and to discovery," Stennis Director Patrick Scheuermann told attendees.

The 72,000-square-foot visitor center and museum opened to the general public April 12. During the ribbon-cutting ceremony a day earlier, elected officials praised the site as a Smithsonian-type facility that will inspire and educate visitors about space exploration and the work of Stennis Space Center for years to come.

In addition, Mississippi Gov. Phil Bryant used the occasion to announce a second major science and technology advancement for the state. Bryant said plans were under way for a world-class ocean research facility to be located at Stennis.

The National Oceans and Applications Research Center (NOARC) will combine the capabilities of NASA, the National Oceanic and Atmospheric Administration and U.S. Navy teams to analyze data that can give scientists a "space to sea floor" understanding of the entire Gulf of Mexico watershed and other oceans that NOAA monitors. Officials aim to use the data not only to drive restoration efforts throughout the entire Gulf, but to drive technology innovation and business development in the private sector as well.

"Along with INFINITY, NOARC will establish Stennis and Hancock County as a world-class destination for scientific research and innovation," Bryant said.

Scheuermann said he was pleased with the decision to locate the world-class facility at Stennis. "Locating NOARC at Stennis brings about an opportunity for increased collaboration and growth at this unique federal city for the benefit of the entire Gulf Coast region," he emphasized.

INFINITY is located at Interstate 10, Exit 2 and is open daily 10 a.m. to 4 p.m. Admission is: $8 for adults (age 18-54); $6 for children (age 6-17), senior adults and military personnel; $5 per person for school groups and groups of 20 or more (bus driver/tour guide admitted free); and free for children under age 6. For additional information, visit: www.visitinfinity.com.

(Top left photo) Gulfport Mayor and INFINITY Science Center Inc. Chairman George Schloegel speaks during ribbon-cutting activities for INFINITY at NASA Stennis Space Center on April 11. He is flanked by an impressive lineup of officials (l to r): Stennis Director Patrick Scheuermann; NASA Chief of Staff David Radzanowski; U.S. Rep. Steven Palazzo, R-Miss.; Mississippi Gov. Phil Bryant; U.S. Sen. Roger Wicker, R-Miss.; and U.S. Sen. Thad Cochran, R-Miss.

(Bottom left photo) The INFINITY at NASA Stennis Space Center visitor center and museum.

(Above photo) Mississippi Gov. Phil Bryant looks on as Fred Haise points out features of the spacesuit he wore on the Apollo 13 lunar mission in 1970.

(Below photo) Stennis Director Patrick Scheuermann addresses guests at the INFINITY ribbon-cutting ceremony.

(Top far right photo) Clare Johnston, 10, and Eden Landis, 3, stare in wonder at the moon rock on display at the INFINITY at NASA Stennis Space Center facility. The children toured INFINITY exhibits during ribbon-cutting activities for the facility April 11.

(Bottom far right photo) "Astronaut" Patrick Johnston, 8, is interviewed about his INFINITY experience by Heath Allen, a reporter with WDSU-TV in New Orleans. Ribbon-cutting activities for the NASA visitor center and museum attracted print and broadcast journalists from a dozen area media outlets.

(Top near right photo) Apollo 13 astronaut and INFINITY Science Center Inc. Vice Chairman Fred Haise (right) talks with Mississippi First Lady Deborah Bryant prior to the ribbon-cutting ceremony for the INFINITY at NASA Stennis Space Center facility April 11. The pair are followed by Stennis Director Patrick Scheuermann (right) and Mississippi Gov. Phil Bryant.

(Middle near right photo) Five current and former directors of Stennis Space Center attended INFINITY ribbon-cutting activities. The directors, years served and current positions are (l to r): Bob Cabana, 2007-08, now director at Kennedy Space Center in Florida; Gene Goldman, 2008-10, now acting director at Marshall Space Flight Center in Huntsville, Ala.; Jerry Hlass, 1976-89, retired; Patrick Scheuermann, Stennis director since 2010; and Rick Gilbrech, 2006-07, now deputy director at Stennis Space Center.

(Below photo) Astronaut Scott Altman speaks to schoolchildren during INFINITY ribbon-cutting activities. More than 160 area students attended April 11 activities. Students from South Hancock Elementary School in Bay St. Louis sang the national anthem to begin the ribbon-cutting ceremony. Following the ceremony, they and other students toured the facility and enjoyed a presentation by Altman about his experiences in space. Schools participating in the activities included: Bay Waveland Middle School in Bay St. Louis, Lillie Burney Elementary School in Hattiesburg, Nicholson Elementary School in Picayune, Pearl River County Middle School in Carriere, Petal Upper Elementary School in Petal, and South Hancock.

NASA in the News

Musician highlights NASA spinoffs

NASA has released a new public service announcement that features musician will.i.am talking about how some of the agency's outstanding accomplishments in space are used to improve life on Earth. Much of the technology people rely on daily was developed by NASA for space exploration and adapted or enhanced for use here on Earth. This includes many technologies used in schools, homes, cars, computers and industry. The new public service announcement was made available March 28 on NASA Television and the agency's website. To view the will.i.am and other public service announcements, visit: www.nasa.gov/multimedia/PSA/index.html. Hundreds of examples of NASA spinoff technologies and innovations adapted for use in everyday life appear on NASA's spinoff website at: http://spinoff.nasa.gov.

NASA craft transmits moon photos

One of two NASA spacecraft orbiting the moon has beamed back the first student-requested photographs of the lunar surface from its onboard camera. Fourth-grade students from the Emily Dickinson Elementary School in Bozeman, Mont., received the honor of making the first image selections by winning a nationwide competition to rename the two spacecraft. The image was taken by the MoonKam, or Moon Knowledge Acquired by Middle school students. Previously named Gravity Recovery And Interior Laboratory A and B, the twin spacecraft are now called Ebb and Flow. Each washing-machine-sized orbiter carries a small MoonKAM camera. Over 60 student-requested images were taken aboard the Ebb spacecraft from March 15-17 and downlinked to Earth on March 20. "MoonKAM is based on the premise that if your average picture is worth a thousand words, then a picture from lunar orbit may be worth a classroom full of engineering and science degrees," a project spokesperson emphasized.

Museum honors NASA mission team

The Smithsonian's National Air and Space Museum bestowed its highest group honor, the Trophy for Current Achievement, on NASA's Cassini mission to Saturn on March 21. "This joint mission has produced an unprecedented science return," said William Knopf, Cassini program executive at NASA Headquarters in Washington. Launched in 1997, the Cassini spacecraft entered Saturn's orbit in 2004 with the European Space Agency's Huygens probe bolted to its side. It successfully released Huygens, which entered the atmosphere of Saturn's largest moon, Titan. Cassini completed its prime mission in 2008 and has been extended twice. Its current mission will last through September 2017.

For the latest NASA news, visit: www.nasa.gov/news/releases/latest/index.html

NASA showcases Mississippi company

A Mississippi company that partnered with Stennis Space Center to create a state-of-the-art disaster information system was one of seven highlighted during the 2012 NASA Technology Day on Capitol Hill on March 28.

The "NASA Technology: Imagine. Innovate. Explore" event was held in the Rayburn House Office Building in Washington. NASA Administrator Charles Bolden and NASA Deputy Administrator Lori Garver attended, and guests had an opportunity to discuss traveling in space with astronauts Mike Massimino and Mike Good.

Exhibiting companies included NVision, which is based in Stennis Technology Park adjacent to Stennis Space Center. NVision teamed with NASA through the agency's Small Business Innovation Research Program to create the Real-time Emergency Action Coordination Tool (REACT). The innovative tool incorporates maps, reports, Internet-driven data and real-time sensor input into a geographical information system (GIS)-based display to provide comprehensive information during emergency and disaster situations.

REACT is designed to help decisionmakers before, during and after emergency situations. It has been adopted in all NASA centers and by various local communities and organizations around the country.

NVision and its REACT system also are featured in the NASA's 2011 *Spinoff* publication, which highlights agency technologies that benefit society. The publication notes that REACT has been used for emergency response to several Gulf Coast hurricanes and the 2010 Deepwater Horizon oil spill; by the National Center for Spectator Sports Safety and Security at the University of Southern Mississippi in Hattiesburg as a counterterrorism solution for large sports stadiums and venues; and by the U.S. Navy during large-scale military training exercises.

In the *Spinoff* article, NVision Chief Operating Officer Craig Harvey credits NASA for supporting development and growth of the REACT tool, which is expected to become a national standard within five years.

NASA Technology Day on Capitol Hill is sponsored annually by the agency's Office of the Chief Technologist to showcase technologies that are improving life for people on Earth, and to inform Congress and the public about the secondary benefits of NASA partnerships and technology. Roots of the event are found in the 1958 Space Act that created NASA, mandating that the agency transfer as much of its technology as possible for the benefit of the public.

The transfer, application and commercialization of NASA-funded technology occurs through knowledge sharing, technical assistance, intellectual property licensing, cooperative research and technology projects, and other forms of partnership.

Stennis Space Center employees Mike McKinion (left) and Luke Scianna, both with the Jacobs Facility Operating Services Contract Group, monitor the facility and surrounding area on a state-of-the-art Real-time Emergency Action Coordination Tool (REACT). The system was developed through a NASA partnership with NVision, a Mississippi company. The system incorporates maps, reports, Internet-driven data and real-time sensor input into a geographical information system (GIS)-based display to provide comprehensive information during emergency and disaster situations.The system has been adopted in all NASA centers and by various communities.

NASA partners to create forest tracking tool

The U.S. Department of Agriculture, in partnership with NASA Stennis Space Center, has released ForWarn, a satellite-based monitoring and assessment tool for tracking changes in forest vegetation across the country, and providing a strategic, national overview of potential forest disturbances and environmental threats.

The USDA Forest Service's Eastern Forest and Western Wildland Environmental Threat Assessment Centers unveiled ForWarn to help natural resource managers rapidly detect, identify and respond to unexpected changes in the nation's forests by using web-based tools. The satellite-based monitoring and assessment tool recognizes and tracks potential forest disturbances caused by insects, diseases, wildfires, extreme weather, or other natural or human-caused events. The tool complements and focuses efforts of existing forest monitoring programs and results in potential time and cost savings.

The prototype version of ForWarn has successfully operated since January 2010 and uses NASA Moderate Resolution Imaging Spectroradiometer (MODIS) satellite imagery to recognize and track changes in vegetation across the nation, providing a near-real-time view of potential forest disturbance and recovery. ForWarn uses a web-based map tool, the Forest Change Assessment Viewer, to provide an eight-day, coast-to-coast snapshot of the U.S. landscape, interpret images and create geographically relevant maps. The system lets users to explore and share recent and archived forest disturbance maps.

"ForWarn epitomizes the type of product envisioned when the Threat Assessment Centers were created," said Danny C. Lee, director of the Eastern Threat Center. "This tool literally puts space-age technology into the hands of forest resource professionals. It's a remarkable collaborative achievement."

The Eastern and Western Threat Centers, NASA Stennis Space Center's Applied Science & Technology Project Office, and other federal and university partners developed ForWarn in response to the Healthy Forests Restoration Act of 2003. The act specifies development of a comprehensive National Early Warning System to detect potential catastrophic environmental threats to forests.

> *"This effort is precisely the Applied Sciences Program's mission – to move NASA science to operational users for real socio-economic benefit."*
> Joe Spruce

"We are excited to unveil ForWarn and the Forest Change Assessment Viewer, intuitive products that use advanced technology to provide a current look at forest changes and help focus on-the-ground response efforts," said William Hargrove, Eastern Threat Center lead ForWarn researcher. "Our goal is to help natural resource managers, scientists and other decisionmakers better identify, understand and react to environmental disturbances. We will continue to refine and update these tools that will help guide activities and resources in impacted areas."

Joe Spruce, lead scientist on this project at Stennis Space Center, said ForWarn provides the Forest Service and its partners "vital broad-scale information on the location and extent of regionally evident forest disturbances, helping resource managers conduct more detailed aerial and field surveys."

He continued, "This effort is precisely the Applied Sciences Program's mission – to move NASA science to operational users for real socio-economic benefit."

The Eastern and Western Threat Centers currently are offering webinars on ForWarn and additional decision support tools.

1966 – Stennis conducts 1st rocket engine test

Note: For more than 50 years, NASA's John C. Stennis Space Center has played a pivotal role in the success of the nation's space program. This month's issue of Lagniappe highlights an event in the history of the south Mississippi rocket engine test center.

Just after 7:30 in the morning 48 years ago on April 23, 1966, a voice was heard counting down, "5, 4, 3, 2, 1 … Ignition!"

Suddenly, a loud sound – described by some as a "crack" – broke the morning silence. An explosion of bright color lit up the sky.

Engineers at the then-Mississippi Test Facility, now Stennis Space Center, conduct their first rocket engine test on April 23, 1966.

The space age had arrived in a most unlikely place – at the Mississippi Test Facility in the lowlands of southern Mississippi, near the banks of the meandering Pearl River in Hancock County.

The Saturn V first-stage booster was fired for the first time at the facility now known as Stennis Space Center. The noise and blast shattered a bank window in the nearby town of Picayune. That history-making milestone in rocket testing was an indication that the Misissippi site was prepared to fulfill its mission:

The mission of the Mississippi Test Facility is the static testing of rocket engines and stages used in our nation's manned space exploration programs. This includes testing the S-IC and the S-II stages of the Saturn V Space Vehicle in the Apollo Program. Rocket engine repair and modification will also be conducted at MTF.

Mississippi Test Facility is a division of the National Aeronautics and Space Administration's George C. Marshall Space Flight Center. The 13,424-acre test site is located in Hancock County, Mississippi, 45 miles northeast of New Orleans. An acoustic buffer zone of 128,526 leased acres in southwest Mississippi and neighboring Louisiana surrounds the site.

Stages manufactured in New Orleans and on the West Coast will be transported via the Pearl River and the site canal system to the test stands. After extensive tests, stages will be refurbished and barged to Cape Kennedy for mating with the third stage (S-IVB) and the spacecraft.

Built for NASA by North American Aviation Inc., the Saturn V booster burned for 15 seconds during its initial test. It was the world's largest hydrogen-fueled stage under production. It stood 81 and one-half feet tall and measured 33 feet in diameter, and its five engines generated 1 million pounds of thrust.

The hard work of MTF employees paid off on Oct. 11, 1968, when three astronauts on NASA's Apollo 7 mission made the first manned orbital flight aboard a craft whose engines had been tested at the south Mississippi site.

Less than a year later, astronaut Neil Armstrong became the first human to set foot on the moon on July 20, 1969. Six more moon missions would be conducted before the Apollo Program ended in the 1970s.

Stennis program celebrates Women's History Month

Stennis Space Center employees observed Women's History Month during a March 23 program, emphasizing the 2012 theme of "Women's Education – Women's Empowerment." Sally-Ann Roberts (center), co-anchor of the Eyewitness Morning News program on WWL-TV in New Orleans for more than 25 years, spoke during the program, which was sponsored by the Stennis Diversity Council and the Environmental Protection Agency. Group representatives shown with Roberts are (l to r): Jo Ann Larson (NASA), Bill Fisher (Naval Meteorology and Oceanography Command), Millie Lucco (EPA Gulf of Mexico Program), Lakeshia Robertson (EPA Gulf of Mexico Program), Shanda Bennett (EPA Gulf of Mexico Program) and Cecy Lewis (Patriot Technologies).

Office of Diversity and Equal Opportunity

New resources highlight equal opportunity

The Office of Diversity and Equal Opportunity (ODEO) is pleased to announce two new resources for NASA employees to learn more about diversity and equal opportunity.

e-Learning Institute

Our e-Learning Institute, with course offerings, is now available in SATERN. The ODEO e-Learning Institute is designed to provide the NASA family with real-time education and awareness opportunities on various aspects of equal opportunity and diversity and inclusion at NASA. ODEO has developed a host of user-friendly materials and information that will allow all NASA employees to add to their SATERN learning history with valuable credits in diversity and equal opportunity.

Currently, the institute is comprised of three e-learning modules, which enable employees to explore equal opportunity and conflict management topics anywhere, at any time. The modules are:

- **The Alternative Dispute Resolution (ADR) e-Learning Tool.** This course explains and illustrates the benefits of utilizing ADR to resolve equal employment opportunity matters, both at the informal and formal stages of the equal employment opportunity process. The course provides informational materials in a variety of formats, including a video depiction of ADR in action. NASA managers, supervisors and employees will find this information invaluable in negotiating the often difficult terrain of the equal employment opportunity complaints process.

- **The Anti-Harassment e-Learning Tool.** This course shows NASA managers, supervisors and employees how the agency's anti-harassment policy and procedures can help quickly address and resolve harassing conduct when it occurs. The course explains in a clear and concise manner how to raise and respond to allegations of harassing conduct in the workplace. Participants will gain valuable insights into the process through informational materials, including videos depicting how an allegation of harassment can arise and be resolved through the agency's process.

- **The Conflict Management Program: Basic Conflict Management Refresher e-Learning Tool.** This course is a follow-on to the conflict management classroom training. It reviews the core sources of workplace conflict, common issues underlying workplace conflict, and emotional responses to conflict. Five conflict management styles are identified, and the role effective communication skills play in diffusing and positively addressing conflict is presented. Informational materials include a video portrayal of various conflict management styles and communication skills in action.

ODEO Information Resource Guide

In early 2012, ODEO will launch its Information Resource Guide, a companion to the e-Learning Institute's course offerings. The resource guide is designed to be a one-stop-shopping tool for helping managers and employees better understand general diversity and equal opportunity concepts; learn more about NASA's efforts to become a model agency for equal employment opportunity; address specific topics, such as special emphasis programs or equal employment opportunity complaints processing; or simply survey the valuable information provided.

The guide will be frequently updated to reflect the ever-evolving state of diversity and equal opportunity, including new legislation, regulations, executive orders, and relevant NASA policy and procedures. In the areas of diversity and inclusion, ODEO will continue to provide updates in collaboration with the Offices of Human Capital, Education, Small Business Programs, and other stakeholders.

Observe Earth Day April 24

"Everyone really is a winner in this challenge. All students involved win by learning more about science and establishing an educational foundation that will serve them well throughout their careers and lives."

Katie Wallace

NASA announces Spaced Out Sports winners

Three school student teams in the fifth through eighth grades have been selected as the winners of NASA's second annual Spaced Out Sports challenge. The students designed science-based games that will be played by astronauts aboard the International Space Station (ISS).

The games illustrate and apply Newton's laws of motion by showing the differences between Earth's gravity and the microgravity environment of the space station.

The challenge is part of a broader agency education effort to engage students in science, technology, engineering and mathematics (STEM) activities.

To design their game, students use up to five items from a two-page list of objects aboard the ISS. The list includes such items as socks, exercise putty, bungees, cotton swabs, tape, rubber bands, zipper-top bags, chocolate-covered candies and drink bags.

Students at Pierremont Elementary MOSAICS Academy in Manchester, Mo., earned the top prize with their game "Starfield." In this activity, astronauts will travel through a course to gather "power stars" and throw them through a "black hole target."

Second-place honors went to students at East Brook Middle School in Paramus, N.J., for their "Outstanding Obstacles" game. It calls on astronauts to race through obstacles including "hair band shooting" and "ring toss."

The third-place winners are students at Tyngsborough Middle School in Tyngsborough, Mass., for their "Learning Takes You Around the World" game, in which astronauts will propel through rings, collecting slips of paper.

"Congratulations to the 2012 Spaced Out Sports winners," said Leland Melvin, associate administrator for education at NASA Headquarters in Washington and a two-time shuttle astronaut. "By combining solid STEM skills with imagination and teamwork, these students have demonstrated that they have what it takes to be our next generation of engineers and designers."

The Spaced Out Sports challenge is a NASA Teaching from Space activity and was first offered in 2010. Using an accompanying curriculum, teachers lead students through a study of Newton's laws, highlighted by hands-on activities and video podcasts featuring NASA scientists and engineers explaining how the laws are used in the space program.

"The three top games were selected but everyone really is a winner in this challenge," said Katie Wallace, director of NASA's Stennis Space Center Office of Education near Bay St. Louis, Miss., where the challenge and accompanying curriculum were developed. "All students involved win by learning more about science and establishing an educational foundation that will serve them well throughout their careers and lives."

For information about Teaching from Space, visit: www.nasa.gov/education/tfs. For details about NASA's Science and Sports curriculum and related resources, visit: http://education.ssc.nasa.gov/spacedoutsports. For information about NASA education programs, visit: www.nasa.gov/education.

Stennis DEVELOP student project aids marine debris education, research efforts

The NASA DEVELOP team at Stennis Space Center has been acknowledged for its contributions to help monitor and communicate the problem of marine debris in the Gulf of Mexico.

The work by the 2011 spring and summer DEVELOP team was described as "extremely helpful" by Nancy Wallace, director of the National Oceanic and Atmospheric Administration's Marine Debris Program. "The result of the project is a very important message to share," Wallace added in a letter of acknowledgement.

The student marine debris project also won first place in the *Earthzine* online virtual poster contest and has received attention at various conferences. "It is the success of projects such as this that motivates students to communicate the impact that NASA Earth science has on real world issues," said Brandie Mitchell, student director for the Stennis DEVELOP Program.

For the project, students partnered with NOAA and the Padre Island National Seashore, a unit of the National Park Service in Texas.

Padre Island was chosen as the study area because it is a 68-mile-long barrier island beach in southeastern Texas and is the longest undeveloped beach in the world. The pristine beach can accumulate up to one ton of marine debris per linear mile.

The goal of the project was to use satellite data on surface circulation in the Gulf of Mexico to help monitor marine debris dispersal and regulate marine debris practices. DEVELOP students provided research products that are being used in ongoing education and research efforts.

Each year, Padre Island National Seashore educates more than 10,000 middle school and high school students on marine debris, marine pollution, and their effects on sensitive Gulf of Mexico environments.

Maps provided by the DEVELOP team helped communicate effects of the marine debris problem in the Gulf of Mexico to students, educators and local community groups.

On the national and international level, NOAA's Marine Debris Program works to research the impacts of marine debris, as well as to prevent and reduce those impacts. Stennis DEVELOP students provided the program with methodology to monitor marine debris trajectories and to predict particle paths using altimeter data. Maps of debris particle paths, geostrophic currents and wind data help researchers make accurate predictions of potential debris trajectories.

Results from the DEVELOP project also has served as a conduit for the Marine Debris Program to reach out to the Texas Adopt-A-Beach Program and the Gulf of Mexico Foundation to discuss the marine debris issues in Texas and across the Gulf of Mexico region. The Marine Debris Program is now in contact with government representatives in Mexico as well in an effort to broaden stakeholder commitment for addressing debris challenges.

The DEVELOP team at Stennis focuses on using NASA satellite data to extend Earth science research to policymakers, various agencies, nonprofit organizations and local communities. DEVELOP students continuously seek creative ways to demonstrate the diversity of NASA satellite data to shed light on environmental issues.