

National Aeronautics and Space Administration



LAGNIAPPE

John C. Stennis Space Center

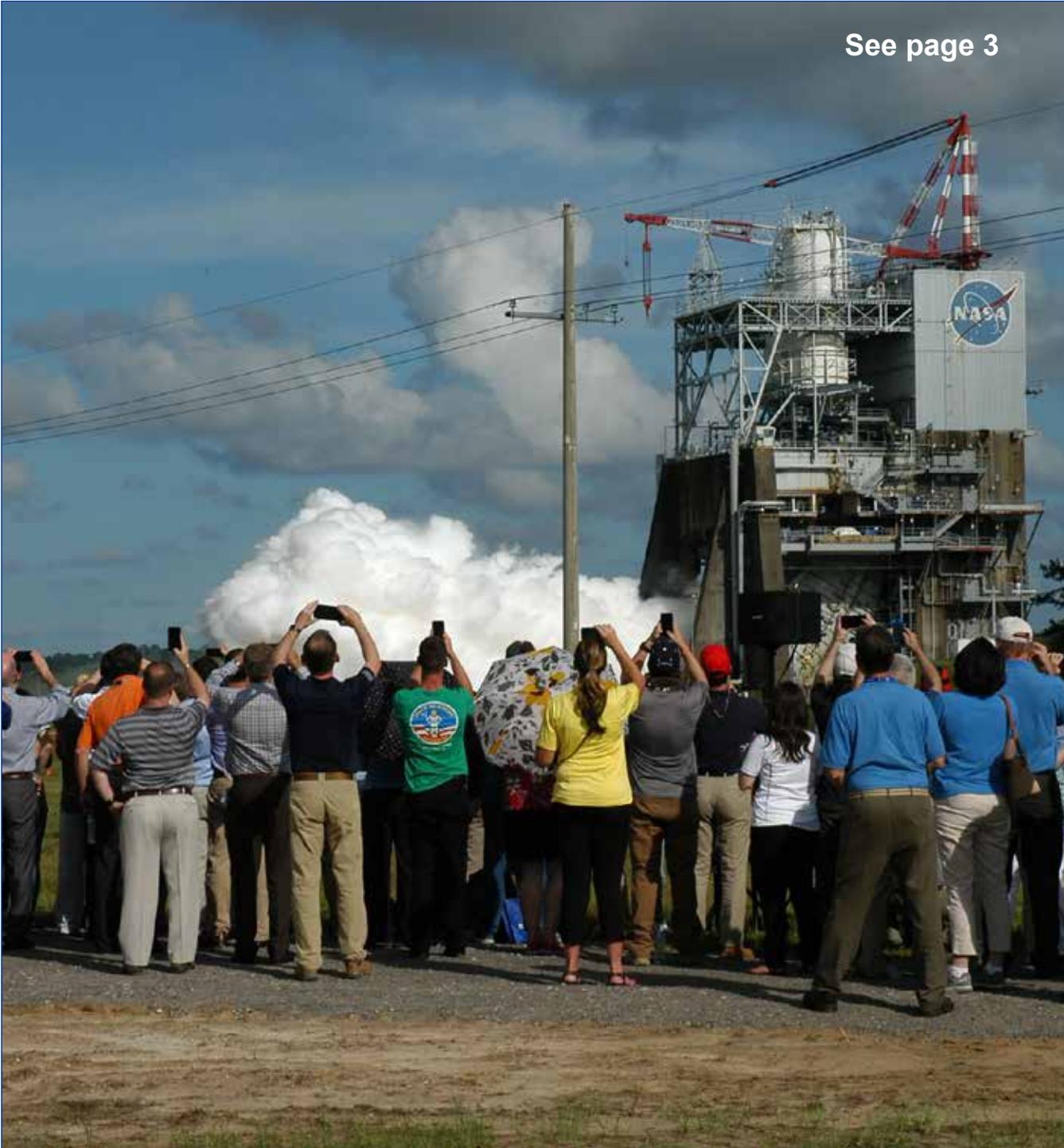
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NASA continues progress on journey to Mars

See page 3



Goodness! I hope you had a chance to view the RS-25 engine test last month. What a great day with more than 100 social and traditional media members, as well as a variety of NASA and community guests, on hand to see what Stennis Space Center does best – test the engines that power the nation’s space program.

The test was a good one, igniting right on schedule and firing for the planned 420 seconds. Many of the people had never viewed a test so up close and personal. You could tell from the looks on their faces that they were surprised by its sound and force. Not only were media folk taking photos and videos, but dozens of others were using cell phones to capture images and sound.

A lot of people were amazed at the billowing steam exhaust generated by the test, turning away from the A-1 Test Stand to point fingers and cameras into the sky as the manmade cloud climbed higher and higher.

The best part came when the sound and fury ended. Everybody cheered and applauded, both acknowledging and celebrating what they had witnessed. It sounded a bit like opening day for SEC football. Ark!

Actually, that is not a bad comparison. When it comes to watching football, viewing it on television obviously offers a more complete picture of what is happening. There is replay, slow motion, commentary, diagrams, etc. – all of which can help us understand and follow the game more fully and closely.

Even so, every weekend this time of year, hundreds of thousands of us spend hard-earned money and time to pack stadiums and domes so we can watch our favorite teams the same way those folks last month watched the RS-25 test – up close and personal.

We do it for the same reason, too, not to follow a game more closely but to experience its power and force firsthand. Think about it – millions of people around the world watch full-scale rocket engines fire every time a spacecraft launches. Relatively few have had a chance to view the same thing firsthand. It is an experience we never should take for granted, no matter how many times we enjoy it.

Just like so many other things here at Stennis, it is something special, sort of like returning an opening kickoff for a touchdown. And the crowd goes wild!



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FULFILLING NASA'S EXPLORATION MISSION



NASA conducts RS-25 engine test

NASA engineers successfully conducted a development test of the RS-25 rocket engine Aug. 18 at Stennis Space Center. The RS-25 will help power the core stage of the agency's new Space Launch System (SLS) rocket for the journey to Mars. A variety of NASA officials and contractor representatives, as well as social and traditional media members, gathered to watch the 420-second test of RS-25 engine No. 0528. NASA is developing the SLS to send humans further into deep space than they have ever traveled, including on the journey to Mars. Prior to the test at Stennis, NASA hosted social and traditional media at its nearby Michoud Assembly Facility in New Orleans on Wednesday afternoon and Thursday morning, providing exhibits, tours and briefings on progress in the journey to Mars. More than 130 media members participated in the event. With the RS-25 test at Stennis, participants viewed evidence of the agency's progress first-hand. The new SLS rocket will be powered at launch by four RS-25 engines like the one tested, firing in conjunction with a pair of solid rocket boosters. All RS-25 developmental and flight engine tests will be conducted on the A-1 Test Stand at Stennis. The tests are critical to ensure the RS-25 engines will perform as needed. RS-25 engines previously were used as space shuttle main engines, powering 135 missions to low-Earth orbit from 1981 to 2011. Although extensively tested for those flights, the engines now must fire at higher performance levels to power the SLS. The development tests at Stennis are providing key data on engine performance. The tests also are collecting data on the performance of a new engine controller unit, which controls internal engine functions during operation and enables proper communication between the SLS and the engine. During the test, the engine was run through a range of conditions and operating parameters. For instance, operators used an extended low-flow chill down process for the engine prior to the test and also experimented with a high-pressure start process. A special engine controller wiring configuration was tested, and the engine was fired at ranges of 80 to 111 percent power during the test. Test data on engine and controller performance was provided by the facility team at twice the normal rate. The test was conducted by a team of NASA, Aerojet Rocketdyne and Syncom Space Services personnel. Aerojet Rocketdyne is NASA's prime contractor for developing and building RS-25 engines. Syncom Space Services is the agency's prime contractor for maintenance of Stennis facilities and operations. This latest test marks the third in a six-test developmental series. NASA tested RS-25 engine No. 2059 in March for use as a flight engine on the second integrated test flight of SLS with the agency's Orion spacecraft, known as Exploration Mission-2, which will carry a crew aboard the space capsule for the first time. The latest developmental series of tests began with a July 14 firing, followed by a July 29 test. Future tests are scheduled for this fall and also will focus on gathering performance data on the engine and its new controller. NASA also continues to prepare for testing the SLS core stage that will fly on the rocket's first test flight in 2018. Plans call for installing the stage onto the modified B-2 Test Stand at Stennis and firing its four RS-25 engines simultaneously, just as during an actual launch.

FULFILLING NASA'S EXPLORATION MISSION



Various guests were on hand Aug. 18 to witness the RS-25 rocket engine test at Stennis Space Center, including traditional and social media members, contractor representatives, NASA leaders and community representatives. Stennis Director Rick Gilbrech (top left photo) welcomed the visitors and discussed the test with media. Astronaut Barry "Butch" Wilmore (top center photo) viewed the test with members of the Aerojet Rocketdyne team. RS-25 Test Project Manager Ronnie Rigney (bottom left photo) discussed aspects of the test with guests and media. U.S. Rep. Steven Palazzo of Mississippi (bottom center photo), a member of the House Committee on Science, Space and Technology, also spoke with area media following the successful test.





NASA 'reaches out' to flooded Louisiana neighbors

The NASA Office of Education at Stennis Space Center hosted Astro Camp activities at the Baton Rouge River Center on Aug. 31 for students displaced by recent Louisiana flooding. Astronauts Jeanette Epps and Victor Glover, along with officials from the Louisiana Governor's office, also participated in the outreach event. Prolonged August rains caused catastrophic flooding in 20 Louisiana parishes, displacing hundreds of families and businesses.

NASA in the News

NASA selects technology proposals

NASA has selected 21 research and technology proposals from American small businesses and research institutions that will enable NASA's future missions into the solar system and beyond while benefiting America's technology-driven economy here on Earth. These include two projects tied to Stennis Space Center. The Phase II selectees of NASA's Small Business Technology Transfer (STTR) program are permitted to enter negotiations for possible contract awards worth a combined total of approximately \$15.8 million. The program selected 21 innovative technology and projects from 41 U.S. firms and research institutions in 20 different states. The two selected proposals being monitored by Stennis Space are:

- "Extreme Environment Ceramic Energy Harvesting/Sensors," developed by Solid State Ceramics Inc. in Williamsport, Pennsylvania, and Pennsylvania State University in University Park, Pennsylvania. The project seeks to use ceramics to capture waste and excess vibratory energy, like that created during the firing of rocket engines and thrusters, and convert it

into another form of energy that the spacecraft can use for its operation. If successful, ceramics could be used in construction of future spacecraft. If successful, ceramic and related technologies that also have the capacity to capture energy and convert it to usable power for the mission could be used in construction of future spacecraft.

- "Integrated Monitoring AWAREness Environment (IM-AWARE)," developed by American GNC Corporation in Simi Valley, California, and Louisiana Tech University in Ruston, Louisiana. This project pursues a breakthrough in the sensing, remote and wireless monitoring technology used to capture test-fire data, information and knowledge at propulsion ground test facilities, such as Stennis.

For more information about NASA's SBIR and STTR Programs, and a list of selected proposals, visit: http://sbir.nasa.gov/prg_selection/node/56313.

For more information about NASA's investment in space technology, visit: <http://www.nasa.gov/spacetech>.

Access all NASA news releases online at: <http://go.usa.gov/3f3KW>.

Stakeholders visit Stennis

NASA supporters and stakeholders from three states stand at the B-2 Test Stand at Stennis Space Center during their onsite visit Aug. 18. The community leaders from Alabama, Louisiana and Mississippi participated in the one-day Journey to Mars event hosted at Michoud Assembly Facility and Stennis Space Center on Aug. 18. At Michoud, group members learned about NASA's progress towards a mission to Mars. At Stennis, the group was briefed on work to prepare the B-2 stand to test the core stage of NASA's new Space Launch System and had a chance to view a developmental test of the RS-25 engine that will help power the new deep-space craft.



Stennis collects items of need during Feds Feed Families drive

Cabrina Bell, management and program analyst in the NASA Office of Human Capital at Stennis Space Center, stands with a small portion of the food and need items collected onsite during the annual Feds Feed Families campaign. Overall, the Stennis effort collected 8,946 pounds of items to help meet the needs of flooded families in the Baton Rouge area. Notable participants included the NASA Office of the Director (highest per capita donations with 98 pounds per person) and the NASA Engineering and Test Directorate (highest total donations with 1,995 pounds).

Engineer showcases technology

Howard Conyers (left), a NASA structural dynamist at Stennis Space Center, briefs a group of traditional and social media members Aug. 18 on the High Dynamic Range Stereo X (HiDyRS-X), a revolutionary high-speed, high dynamic range camera developed onsite. The camera offers a dramatic new way to film and study rocket engine plumes. HiDyRS-X records multiple, slow-motion video exposures at once, combining them into a high dynamic range video. HiDyRS-X has been hailed as a game-changing technology expected to revolutionize propulsion video analysis.



Women have a long history of NASA support

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 Lagniappe provides a glimpse into the history of NASA and the south Mississippi rocket engine test center.

In July 1958, President Eisenhower signed the National Aeronautics and Space act. A result of that signature was the National Aeronautic and Space Administration (NASA).

The United States was on its way to space, and a woman by the name of Eilene Galloway was instrumental in the creation of NASA, researching and writing space legislation and the beginning of the fields of space law and international space law. She may have been the first woman to help NASA and the United States reach its goal of putting a man on the moon and exploring space, but she was definitely not the only woman.

Many women worked behind the scenes at NASA to accomplish the task of reaching space. People always tend to hear about the women who became astronauts. The first woman in space was Russian cosmonaut Valentina Tereshkova, who entered orbit in 1963. America did not send a woman into space until 20 years later. Sally Ride was the first American woman in space, on the STS-7 flight of space shuttle Challenger in 1983.

Women like Eilene Galloway were always in the shadow of their male counterparts. In the 1950s and 1960s, women were the “calculators” who did the complex math that

lead to the trajectories of the orbits around the earth.

Katherine Johnson was one of these women. She is an African American woman who worked for NASA as a mathematician for more than 30 years. Her calculations enabled Apollo 11 to reach the moon. Margaret Hamilton was a programmer, and Thora Halstead is a space biologist that worked alongside Katherine Johnson.

These women worked in the background to help the United States win the space race in the 1960s. Many more worked alongside them, and even more were lost to history, along with their accomplishments, because of their work being in the background and because they were women.

In 1967, NASA established the Federal Women's Program to promote equal opportunity for women in federal government positions and to recruit woman who are technically trained. Stennis Space Center embraced that program and launched programs like Science Engineering Career Days for high school girls, showing the different career paths women can take and how to accomplish those goals. These programs encouraged girls and women to take non-traditional career paths.

In 2016 women are going into science and engineering careers, but encouragement is still needed. Women are an important part of the space program, and as NASA and the nation make their way to Mars and beyond, they need scientifically minded women and men to lead the way.



NASA research mathematician Katherine Johnson is shown at her desk at Langley Research Center. Johnson was one of many African-American women hired to work as “computers” in the early years of space travel. She

worked at Langley from 1953 until her retirement in 1986, making critical technical contributions. She represents countless women who worked behind the scenes to ensure the success of NASA through the years.

Office of Diversity and Equal Opportunity

Title IX has made a real difference for U.S. women

This article was taken from The Torch publication.

No one is flying home from Rio with more medals than the U.S. women. The full American squad, both men and women, won the most medals overall, 121, as has often been the case in the Summer Games. But first in London four years ago, and again in Rio, the U.S. women captured over half of those medals. The U.S. women took 61, the men had 55, and there were five in mixed events, including equestrian and mixed-doubles tennis.

How good were the American women? They won 27 of the 46 American golds. If the U.S. were divided into two countries, one male and the other female, those 27 golds for the women would tie them with Britain for most of any country and put them one ahead of China.

This trend became clear in London, where American women won 58 medals of all colors, compared with 45 for U.S. men, the first time the women outpaced their male counterparts.

As was noted before the Rio games, American women were not always such a powerhouse. At the 1972 Olympics in Munich, American women won 23 medals compared with 71 for the U.S. men. They did not win a single medal in gymnastics and had no golds in track and field.

But that same year, the U.S. Congress passed Title IX, barring sex discrimination in education programs that receive federal funding. This has helped revolutionize women's sports at both the high school and college levels.

American women are now dominant in many sports, including gymnastics, swimming, basketball, rowing, water polo and soccer. Americans took gold in all of those sports, except soccer, where they were upset by Sweden. The U.S. had the largest overall team in Rio with 554 members, and the women (291) outnumbered the men (263) for the second straight Olympiad.

Other factors have helped American women at the Olympics over the past few decades. Additional sports for women are added with regularity, including rugby in Rio. Top U.S. gymnasts emerge from the countless private gyms around the country, not through schools. And the former juggernauts from Eastern Europe, like the Soviet Union and East Germany, either do not exist or are not what they used to be during their Communist eras.

Still, American athletes in Rio turned in extraordinary performances by any measure. Consider:

- Simone Biles won four golds and a bronze, making her the most decorated U.S. gymnast ever in a single Olympics.
- Sprinter Allyson Felix took two golds in relays and a silver in the 400 meters. That boosted her to six career golds, the most in track by any woman from any country, and nine medals overall in her four Olympics.
- Katie Ledecky hauled in four golds and a silver as she smashed the world record in the 400-meter and 800-meter freestyles along the way. At just 19, she could be even better in Tokyo in 2020.

Hail & Farewell

NASA bids farewell to the following:

Alec Banks	Management Support Assistant	Office of Procurement
Wendy Bateman	Attorney-Adviser	Office of the Chief Counsel
Meredith Blasingame	Attorney-Adviser	Office of the Chief Counsel
Connie Shuler	Secretary	Engineering and Test Directorate
Robert Vickers	Student Trainee (Legal)	Office of the Chief Counsel

NASA welcomes the following:

Kourtney Hollingsworth	Program Specialist	Office of Diversity and Equal Opportunity
Ryan Seals	AST, Mechanical Experimental Equipment	Engineering and Test Directorate
Michael Vallan	Attorney-Adviser	Office of the Chief Counsel
Charles Wilder	AST, Mechanical Experimental Equipment	Engineering and Test Directorate

Stennis hosts annual Health and Safety Day activities

Stennis Space Center sponsored annual Health and Safety Day activities for onsite employees Aug. 16. During the daylong event, Stennis employees had a chance to hear from Terrence Wilcutt (top left photo), a four-time space shuttle astronaut and NASA's chief of Safety and Mission Assurance. In addition to speaking with Health and Safety Day participants, Wilcutt also presented "Yes-If" awards to four Stennis employees (top right photo). The "Yes-If" Award is presented to NASA and contract employees who demonstrate a "Yes-If" philosophy instead of a "No-Because" approach in their work for the space agency. Participants in the award ceremony included Wilcutt (l to r), recipient Ruth Hextall, recipient Donna Dubuisson, recipient Don "Smitty" Smith, recipient Christina Zeringue and Stennis Director Rick Gilbrech. The day's activities included vendors highlighting various aspects of safety and health, as well as visits and demonstrations by emergency crews. Exhibits included information on topics ranging from ear protection to the dangers of electricity and provided opportunities for employees to learn and gather health-related information.





Faces of Stennis

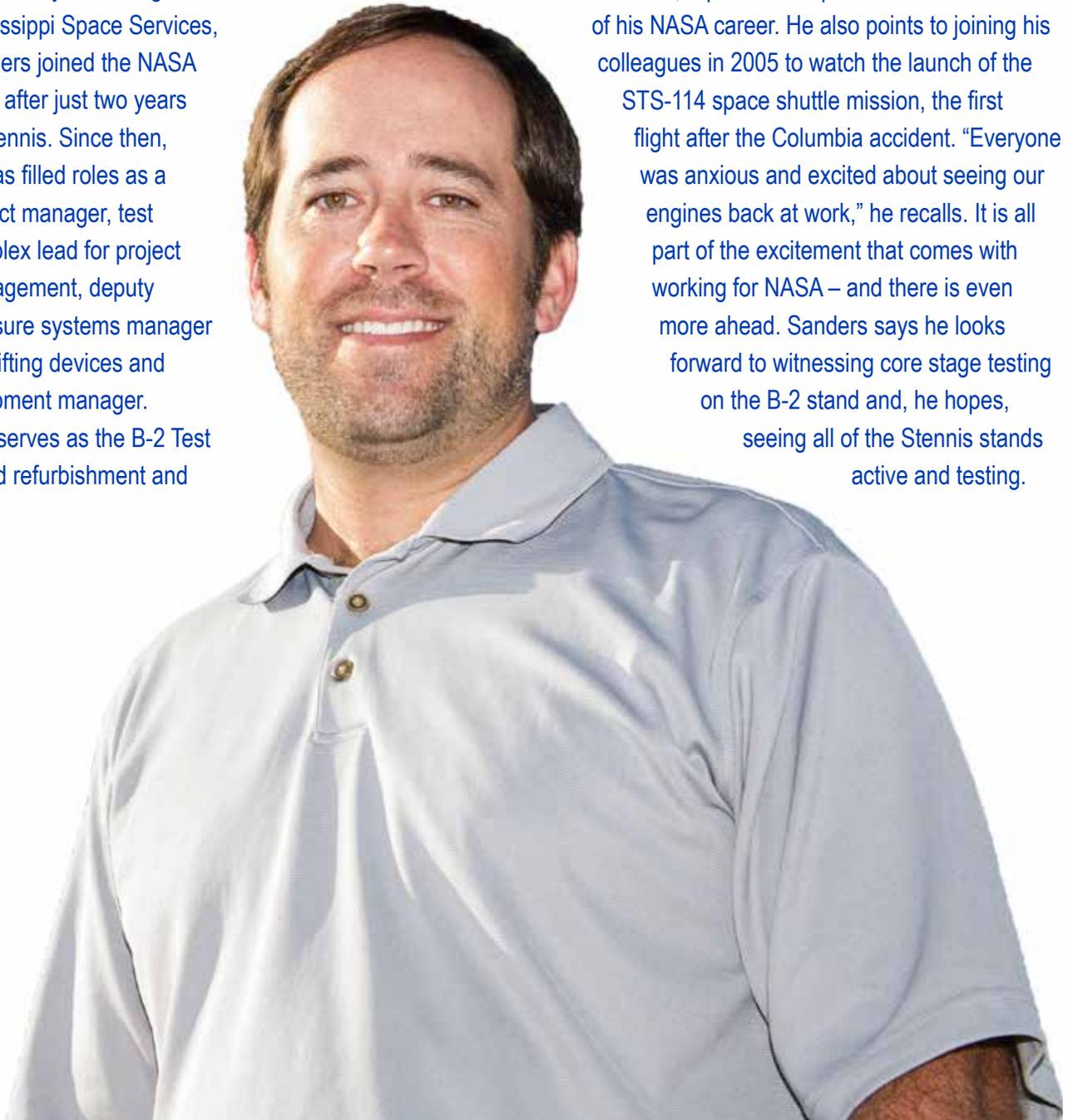
Each month, Lagniappe will feature employees at Stennis Space Center whose work enables the center to fulfill its mission as the nation's largest rocket engine test center. This month's employees are highlighted on the following two pages.



Claude ‘Brennan’ Sanders

Brennan Sanders first trip to Stennis Space Center in 2004 is a memorable one. He grew up in Gulfport, but he had not visited the center until he was recommended by a family friend to interview for a job onsite. During the interview, he toured the A-1 Test Stand and saw his first space shuttle main engine – and he got the job. Twelve years later, Sanders relishes the opportunity to work with the talented and diverse team at Stennis, all focused on a common goal. Initially employed as a pressure systems engineer with Mississippi Space Services, Sanders joined the NASA team after just two years at Stennis. Since then, he has filled roles as a project manager, test complex lead for project management, deputy pressure systems manager and lifting devices and equipment manager. Sanders now serves as the B-2 Test Stand refurbishment and

build-out project construction manager and as test complex design and construction lead. In the B-2 role, he is the senior construction representative on the project to prepare the stand for testing the core stage of NASA's new Space Launch System (SLS) vehicle, ensuring the entire scope of construction work is performed and all quality requirements are met. His work on the B-2 project and in construction of the A-3 Test Stand, two of the largest and most complex projects at Stennis since the 1960s, represent the proudest achievements of his NASA career. He also points to joining his colleagues in 2005 to watch the launch of the STS-114 space shuttle mission, the first flight after the Columbia accident. “Everyone was anxious and excited about seeing our engines back at work,” he recalls. It is all part of the excitement that comes with working for NASA – and there is even more ahead. Sanders says he looks forward to witnessing core stage testing on the B-2 stand and, he hopes, seeing all of the Stennis stands active and testing.



Sheena 'Kristin' Weyenberg

Working at Stennis Space Center is a “family affair” for Kristin Weyenberg. Several of her family members are employed on site and one of her earliest space memories is visiting Stennis as a child and thinking how nice it would be to follow in her father’s footsteps and work there. Years later, she got the chance to do just that, working as a summer student intern for Lockheed Martin before joining the company that fall as an engineering tech. After 11 years providing scheduling support with Lockheed, Weyenberg joined Pratt & Whitney Rocketdyne (now Aerojet Rocketdyne) as a senior scheduler supporting the space shuttle main engine test project. After being promoted to senior financial analyst, she supported the RS-68 and RS-25 engine test projects as well. Eight years later, Weyenberg joined Manufacturing Technical Solutions at Stennis as senior

scheduler. She also supports the NASA Engineering and Test Directorate as a resource analyst, particularly providing analysis and budget support to the Space Launch System (SLS) core stage testing work on the B-2 Test Stand. Weyenberg is proud of her work at Stennis, especially when she watches an RS-68 or RS-25 engine test, knowing she played a part in making those possible. “Stennis has a great atmosphere in making everyone feel part of the team, and with that comes a feeling of accomplishment in the work we are providing to the space program,” she says. Looking ahead, Weyenberg is excited about continuing as a member of the team, particularly in testing the core stage for the SLS vehicle that will carry human deeper into space than ever before. It is part of what she calls the “new future” of NASA – and she looks forward to sharing it with all of her Stennis family.

