



National Aeronautics and Space Administration



LAGNIAPPE

John C. Stennis Space Center

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Power up!

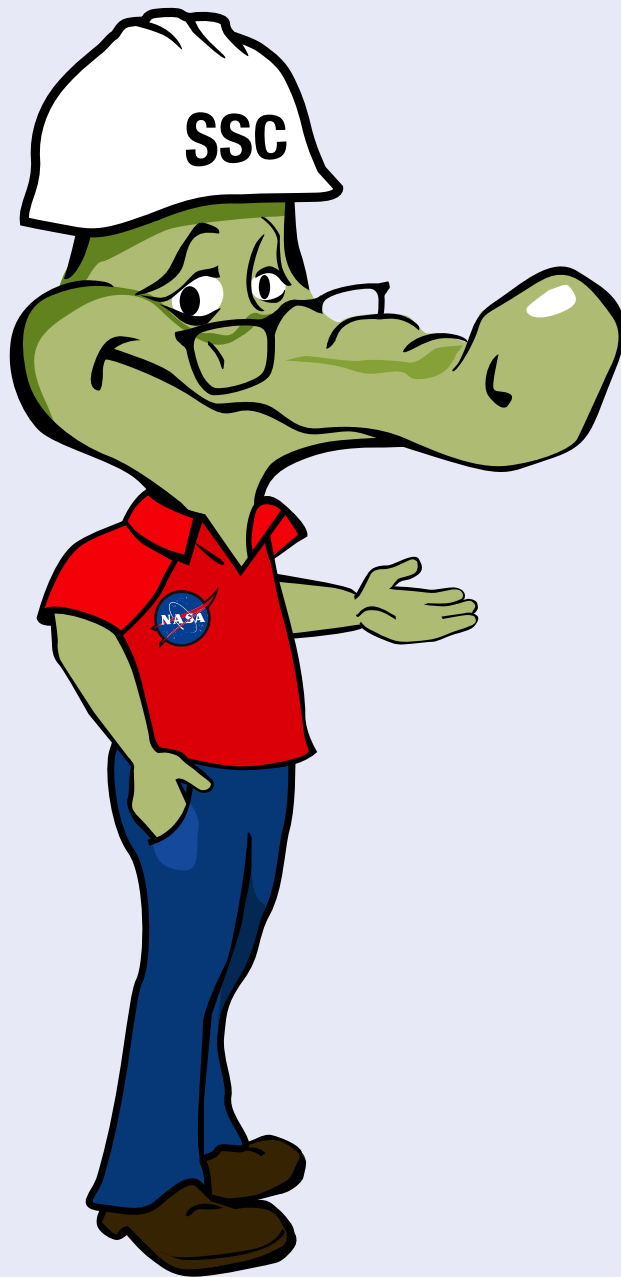
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'A banner year for testing'

Stennis director delivers annual community update

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When it comes to doing stunning things, it seems to me that Stennis surely is doing its part – every single day

An old friend came to town the other day, someone ol' Gator had not seen in more than 15 years. As you would expect, we spent a good amount of hours reminiscing (and lying) about the "good old days." We also commented on how much each of us had changed, although my friend certainly had aged much more than he thought I had. Ark!

It is a funny thing – we never see changes in the people we are around every day. They always seem to look the same. It is the folk we see only on occasion who seem so different. We just do not notice incremental changes. The Gator that I see in the mirror every morning certainly still looks young and roguish. Ark!

It is the same with a lot of things in life. Think about the work we do here at Stennis. A lot of folk here have seen numerous rocket engine tests. We regularly hear about the testing, research and tech transfer projects underway on site. We never stop to think about it.

I was reminded of that fact when some guests visited Stennis recently. None of them had ever been to the site as adults. They toured various locations, including the test complex and the Aerojet Rocketdyne Engine Assembly Facility, and learned about all kinds of ongoing work. They could not stop talking about how fascinating Stennis was and how nice it was to talk to people who were so passionate about what they do.

We forget that. We forget there is amazing work being accomplished here every day. We forget that we work alongside amazing people every day. It takes someone who is visiting for the first time to remind us how special this place really is.

Last week, NASA Administrator Jim Bridenstine answered questions before a congressional committee. At one point, he was asked what NASA was doing and could do to inspire the world regarding space exploration. "I would argue that the key thing we need to do as a nation is to do stunning things," he said. "We need to do things that capture the imagination of the American public and, in fact, capture the imagination of the world."

It made me think about everything that goes on here. I may be just an ol' (and getting older) Gator, but when it comes to doing stunning things, it seems to me that Stennis surely is doing its part – every single day.

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NASA marks RS-25 milestone with high-power test

NASA marked yet another milestone in preparations for the first mission of its new Space Launch System (SLS) rocket Feb. 28, conducting an RS-25 engine test at its highest power level for an extended period of time. The 500-second RS-25 test was conducted on the A-1 Test Stand at Stennis Space Center. For the fourth time, NASA powered the engine to 113 percent of its original thrust design, this time for more than 430 seconds, about four times longer than any previous hot fire at that thrust level. The hot fire concluded a series of nine tests that began last August, using RS-25 developmental engine No. 0525. As with previous tests in the series, the Feb. 28 hot fire featured an RS-25 flight engine controller that will be used on an SLS mission. The controller is a key component of engine modifications made to help power SLS, being built as the world's most-powerful rocket to carry humans deeper into space than ever, to such destinations as the Moon and, ultimately, Mars. The controller acts as the "brain" to help control engine operation and to facilitate communication between the engine and SLS rocket. NASA is modifying the RS-25 engines (former space shuttle main engines) to operate at 111 percent of original thrust design to help launch SLS on its missions. Four RS-25 engines, firing simultaneously, will produce 2 million pounds of combined thrust during SLS launch and ascent. Testing at 113 percent at Stennis – especially for the extended duration – demonstrates a margin of safety for operating the engine at the needed power level. In addition to the flight controller, the Feb. 28 test also featured a pair of innovative engine components – a 3D-printed pogo accumulator to dampen pressure oscillations that can cause flight instability and a main combustion chamber fabricated using a hot isostatic pressure (HIP) bonding technique. These components are early milestones in NASA's and Aerojet Rocketdyne's endeavor to maximize state-of-the-art manufacturing methods to significantly reduce the cost and time needed to build new RS-25 engines. With the end-of-February hot fire, the developmental engine will be removed from the test stand to prepare for installation of RS-25 flight engine No. 2062, scheduled for acceptance testing in early April. Each RS-25 test marks progress towards launch of SLS and the Orion capsule. Following a test flight of the capsule, SLS will carry astronauts aboard Orion on a return to deep space. In addition to testing RS-25 engines, NASA plans to test the fully assembled SLS core stage for the first mission on the B-2 Test Stand at Stennis, firing up all four engines at once. RS-25 tests at Stennis are conducted by a combined team of NASA, Aerojet Rocketdyne and Syncom Space Services operators. Aerojet Rocketdyne is the RS-25 prime contractor. Syncom Space Services is the prime contractor for Stennis facilities and operations.



NASA, Stennis leaders deliver annual update to community leaders

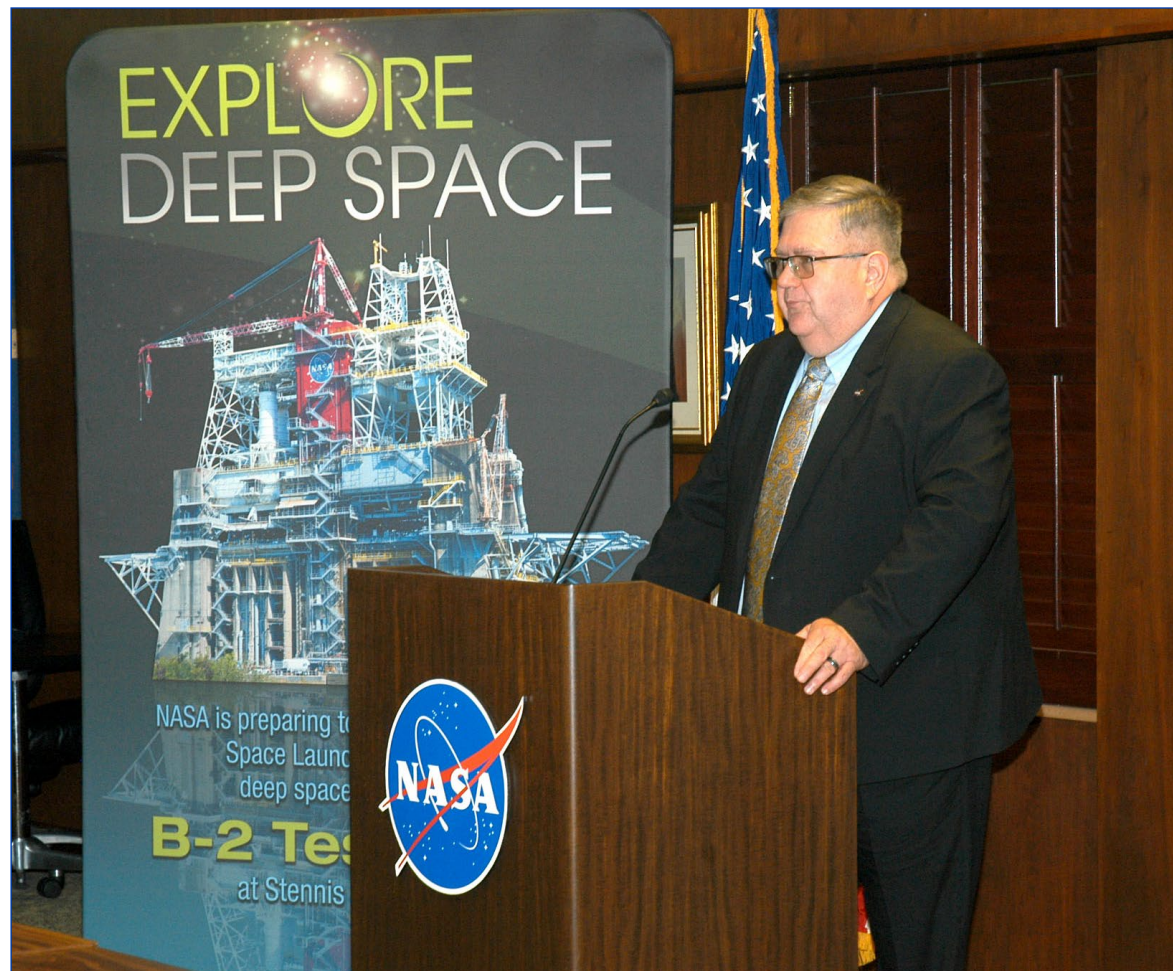
Stennis Space Center Director Rick Gilbrech (right photo) and other leaders delivered an update of ongoing work to Gulf Coast community leaders during an annual breakfast briefing hosted by Partners for Stennis and Michoud Assembly Facility. Gilbrech told gathered leaders and guests that the fiscal year 2018 was a “banner year for testing” at Stennis. He also reported on testing work underway in support of NASA’s new Space Launch System rocket, being built to carry astronauts farther into space than ever, to such destinations as the moon and, ultimately, Mars. Joining Gilbrech in reporting to leaders were Paul McConaughey (far right photo), deputy director of Marshall Space Flight Center, which oversees operations at Michoud Assembly Facility; and Rear Adm. John Okon (bottom left photo), commander of the Naval Meteorology and Oceanography Command at Stennis. Mike McDaniel, general manager of Aerojet Rocketdyne at Stennis and chair of Partners for Stennis and Michoud presided over the gathering, which featured a question-and-answer session with both guests and area media.



U.S. Senate committee representatives visit Stennis

Stennis Space Center Deputy Director Randy Galloway (far left, back row) stands with representatives from the Senate Commerce, Science and Transportation Committee at the B-2 Test Stand at Stennis Space Center during the group’s visit to the site March 19. The U.S. Coast Guard Senate Liaison Office hosted the committee representatives for the visit, which featured a center overview briefing, tour of B-2 and A-1 test stands and a stop at the E Test Complex.

Moon to Mars – NASA/Stennis host fiscal year 2020 budget announcement



NASA centers across the agency hosted media members and employees for Moon to Mars budget rollout activities March 11. At Stennis Space Center, employees gathered to watch a live broadcast of NASA Administrator Jim Bridenstine (above photo), then hear from Stennis Director Rick Gilbrech (top right photo). During his remarks, Bridenstine praised the president’s fiscal year 2020 NASA budget as one of the “strongest on record.” The budget reflects an increase of almost 6 percent from the previous year’s request. Coming at a time of constrained federal resources, Bridenstine said the budget represents a huge vote of confidence in NASA and its work to return humans to the Moon within the next decade. In his comments, Gilbrech noted that next year’s budget for Stennis also reflects an increase and will help fund capital projects at the center. In addition to the employee gathering, traditional and social media members visited Stennis to view the Bridenstine broadcast (top center and bottom right photos) and hear remarks by Stennis Deputy Director Randy Galloway (bottom center photo). Following a brief question-and-answer session with Galloway, media members participated in a site tour. The group received briefings about ongoing work at the A-1 Test Stand, which is testing RS-25 engines for NASA’s new Space Launch System (SLS) rocket, and the B-2 Test Stand, which will test SLS rocket stages. The media members also visited the Aerojet Rocketdyne Engine Assembly Facility, where RS-25 engines are assembled and maintained, and the NASA Shared Services Center, where consolidated activities for all NASA centers are conducted.



Mae Jemison – 1st African-American woman in space

Mae Jemison is an engineer, physician and former NASA astronaut. In this image, she looks out the aft flight deck ports on space shuttle Endeavour's STS-47 mission in 1998. She was the first African American woman in space. Jemison was selected for the astronaut program in June 1987. On her first flight, she was the science mission specialist on STS-47 Spacelab-J. The mission, which was a cooperative one between the U.S. and Japan, included 44 life science and materials processing experiments. Jemison was a co-investigator on the bone cell research experiment flown on the mission. In completing her first space flight, Jemison logged 190 hours, 30 minutes, 23 seconds in space. Jemison's space achievements are celebrated as part of the Women's History Month, commemorating and encouraging the study, observance and celebration of the vital role of women in American history.

NASA in the News

Success: 1st commercial crew flight test

NASA passed a major milestone March 8 in its goal to restore America's human spaceflight capability when SpaceX's Crew Dragon returned to Earth after a five-day mission docked to the International Space Station. About six hours after departing the space station, Crew Dragon splashed down at 7:45 a.m. CST about 230 miles off the coast of Cape Canaveral, Florida. "Today's successful re-entry and recovery of the Crew Dragon capsule after its first mission to the International Space Station marked another important milestone in the future of human spaceflight, ..." NASA Administrator Jim Bridenstine said. "Our Commercial Crew Program is one step closer to launching American astronauts on American rockets from American soil. I am proud of the great work that has been done to get us to this point." Demonstration Mission-1 (Demo-1) was an uncrewed flight test designed to demonstrate a new commercial capability developed under NASA's Commercial Crew Program. For more information about NASA's Commercial Crew program, visit: <https://www.nasa.gov/commercialcrew2>.

NASA book shares beauty of Earth

Swirling white clouds, deep blue oceans and multicolored landscapes bring to life the pages of NASA's new 168-page book "Earth," a collection of dramatic images captured by Earth-observing satellites. The book is available in hardcover and ebook, and online. From a lava field in Iceland to the icy Patagonian landscape, the 69 images in "Earth" present the home planet's atmosphere, water, land, and ice and snow with short explanations of the science behind each image. "The spectacular images in this book remind us of the majestic beauty of our world," said Lawrence Friedl, program director for the Applied Sciences Program in NASA's Science Mission Directorate, Earth Science Division in Washington. "Earth" can be purchased in hardcover from the U.S. Government Publishing Office at: <https://bookstore.gpo.gov/products/earth-book>. A free ebook version of "Earth" can be downloaded at: <https://go.usa.gov/xEs5R>. An interactive online version is at: <https://go.usa.gov/xEs5n>. For more information about NASA's Earth science programs, visit online at: <https://www.nasa.gov/earth>.

Close call system promotes safety at Stennis

Note: The following is part of a regular focus on safety and health at Stennis Space Center. It was written by Karen Patton with the Stennis Safety and Mission Assurance Directorate.

Stennis Space Center personnel are encouraged to submit any hazard they observe to prevent a possible injury or illness to their supervisor, facility manager or the Stennis Close Call Reporting System (CCRS), the site's official hazard reporting system.

Hazards can be reported to the CCRS hotline using:

- 228-688-SAFE (7233)
- A paper form located in appendix of CCRS work instruction, SCWI-8715-0006, Stennis Close Call Reporting System
- Electronically using the link at the top of the Stennis internal safety and mission assurance website located at: <https://osma.ssc.nasa.gov/>

Reports can be made anonymously.

On Oct. 31, 2018, a hazard was found in the parking lot of Building 1103 and submitted through the CCRS. It was reported that a recycle dumpster located at an intersection was obstructing drivers' view as they entered and exited the parking area in front of the building.

The concern was drivers may pull into oncoming traffic.

A CCRS investigator contacted the contractor responsible for dumpster placement and reported the concern. After a review of the area, it was decided to move the dumpster to another location. The dumpster was relocated and the close call case closed on Nov. 13, 2018.

This hazard reported through CCRS may have prevented an injury. Seemingly small hazards can have big consequences, and it is important to correct them.

As a Stennis employee, if you see a hazard that has the potential to cause injury or property damage, notify your supervisor and report it to CCRS. Employee involvement in identifying and reporting hazards is one way all employees can support a strong safety culture.



A "before" photo (left) shows a recycle receptacle that is blocking the view of motorists as they enter and exit the parking lot in front of Building 1103



at Stennis Space Center. An "after" photo (right) shows the same location after the receptacle was relocated in response to a close call submission.

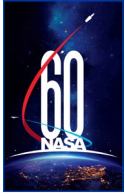


An engaged safety culture keeps Stennis Space Center rocketing forward!

To contribute to this page, contact:

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1972 – Stennis multiagency dream becomes reality



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 the south Mississippi rocket engine test center.

Jackson Balch had a crazy dream for the then-Mississippi Test Facility (MTF). He wanted a “scientific utopia” created at south Mississippi rocket engine test site.

In 1972, his multiagency dream finally came to life. He had tried for years to establish state and federal agencies at the facility in order for agencies to work together on projects that would benefit not only each other, but the scientific community as a whole.

A few federal and state agencies began to move to MTF and brought together their resources and staff. The following year, 16 federal and state agencies and universities had moved to the facility and were able to work together on various projects using data, sensors, computers, and instruments that they would not have had access to by themselves.

By 1975, the U.S. Navy had moved in, and something quietly was happening at the A-1 Test Stand. The then-renamed National Space and Technology Laboratories (NSTL) had been selected by NASA as the testing site for space shuttle main engines.

On May 19, 1975, a management team was testing and investigating the system that would be used to test the shuttle engines. No ignition happened that day. However, the tests the team conducted May 19 helped pave the way for the full ignition test that would be conducted just a month later.



A 1979 photo shows the test of a space shuttle main engine at the then-National Space and Technology Laboratories, now Stennis Space Center.

Rise of the Rockets video features Stennis Space Center

A new *Nova* episode by the Public Broadcasting System focuses on the development of new space rockets and features testing work conducted at Stennis Space Center.

Rise of the Rockets is Episode 5 in Season 46 of the long-running *Nova* program. It highlights new technologies that are making rockets cheaper and more powerful than ever.

The PBS program notes that as companies like SpaceX and Virgin Galactic make space more accessi-

ble and NASA returns to crewed spaceflight, a new era of space exploration may be on the horizon. It highlights the RS-25 engine that will help power NASA's new Space Launch System.

The program shows scenes from the Aerojet Rocketdyne Engine Assembly Facility at Stennis, as well as an RS-25 engine test on the A-1 Test Stand.

Rise of the Rockets originally aired on PBS stations nationwide on Feb. 13. It may be viewed online at: <https://www.pbs.org/video/rise-of-the-rockets-l6f1cj>.

Office of Diversity and Equal Opportunity

Women's History Month: Discover Her Story

The Smithsonian launched the American Women's History Initiative – Because Of Her Story – in 2018. The initiative is one of the country's most ambitious undertakings – to research, collect, document, display and share the compelling story of women, which is inclusive of all persons who identify as female or who have a history of being designated female even though they identify differently.

The curators and educators hired through the American Women's History Initiative will seek to fill in the gaps in the national narrative, shedding light on untold women's stories. This initiative will amplify women's voices to honor the past, inform the present and inspire the future.

The stories told deepen our understanding of women's contributions to America and the world, showing how far women have advanced and how we, as a country, value equality and the contributions of all citizens.

In America's most defining moments – times that shaped constitutional rights, yielded scientific breakthroughs, created the symbols of our nation – a diversity of women's stories has not been widely told. The American Women's History Initiative illuminates women's pivotal roles in building and sustaining this country and will expand what we know of our shared history.

One of the inspiring untold stories comes from Muriel Siebert, a financier.

"I arrived in New York with \$500, a used Studebaker and a dream," Siebert said. "As a financial analyst, I earned 60 percent of what men were paid. I asked a client where I could go to find equal pay. He said, 'You won't. Buy a seat.

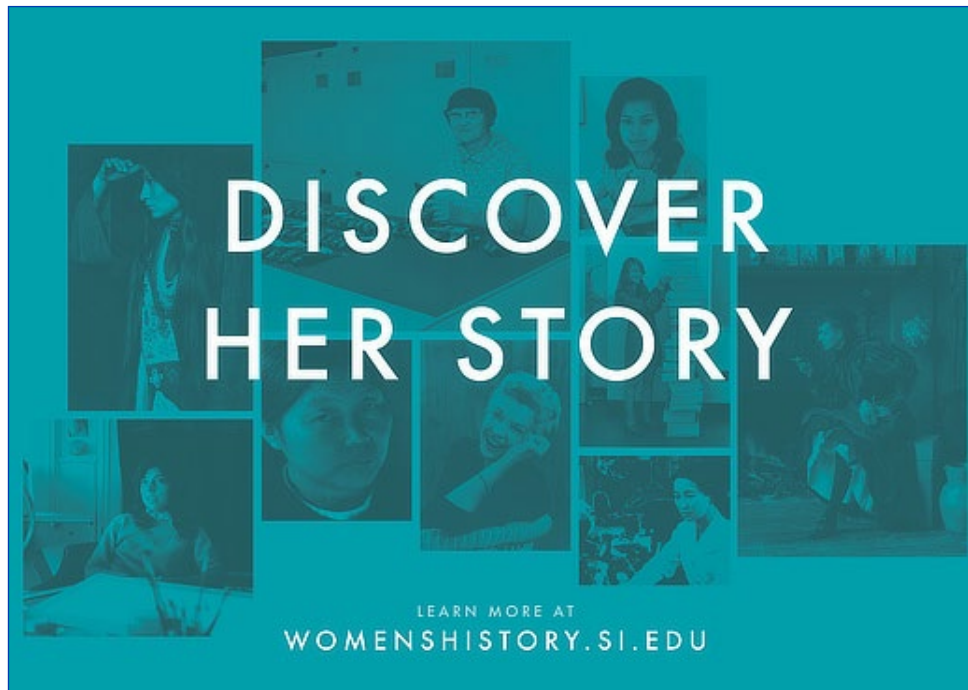
Work for yourself.' My application for a seat on the New York Stock Exchange turned Wall Street upside down. Never had a woman applied. I bought the seat. In 1967, I was the only woman among 1,365 men. Within six months, I had a legitimate office. You have to

have faith in yourself and believe 'I can do it.'"

Muriel Siebert's portrait is at the Smithsonian. It will be used to tell her story and other women's stories of challenging the rules.

Everyone is invited to join in this effort by sharing untold stories with the Women's History Initiative. Visit online on Instagram, Facebook or Twitter to share untold stories – #BecauseOfHerStory. Visit the website – www.womenshistory.si.edu – to review stories of women's achievement in art, history, science, business and culture.

Information in this article came from womenshistory.si.edu.



Hail & Farewell

NASA welcomes the following:

Brandon Ladner

AST, Flight Systems Test

Engineering and Test Directorate

Kevin Oramous

AST, Mechanical Experimental Equipment

Engineering and Test Directorate



Faces of Stennis

Each month, Lagniappe will feature an employee 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 employee is highlighted on the following page.



Derek Zacher



As a native of Beachwood, N.J., Derek Zacher grew up unfamiliar with Stennis Space Center. He also has no childhood experiences that drew him to space. In college, he recalls watching a night launch of space shuttle Discovery. “The sheer power felt was amazing,” Zacher recalls. By that time, Zacher was studying to become an engineer. A few years later, as an Orbital Sciences Corporation employee, he was sent to Stennis for initial testing of AJ26 rocket engines for the company’s Antares rocket on the E-1 Test Stand. After two-and-a-half-years, Orbital Sciences moved Zacher to NASA’s Wallops Flight Facility in Virginia. However, he had enjoyed his time at Stennis and soon sought a chance to return. He did so in 2013, as a NASA systems and integration engineer. Five years later, Zacher became a test operations engineer on site. Those duties involve performing test operations

on the A-1 Test Stand, including those for RS-25 and AR-22 engines. He also supports and performs facility maintenance, upgrade and construction projects. One of his proudest moments came last summer, when he and fellow A-1 team members performed 10 tests in 10 days on Aerojet Rocketdyne’s AR-22 engine, an unprecedented accomplishment. The test series not only demonstrated the skill and commitment of the team but affirmed for Zacher the best thing about the site. “The best part of working at Stennis is the people,” he says. “I have the privilege of working with great people who share a common drive to complete our mission in a safe and efficient manner.” Zacher now looks forward to the first launch of NASA’s Space Launch System rocket, powered by the RS-25 engines he is testing, and the initial assembly of the Lunar Orbital Gateway around the Moon.