National Aeronautics and Space Administration

LAGNIAPPE

John C. Stennis Space Center

Volume 17 Issue 12 www.nasa.gov/centers/stennis December 2021

Top NASA Officials Visit Stennis

SEE PAGE 3

The year is almost over, and colored lights brightly illuminate the businesses, homes, light poles, and yards sporadically along roadways. It is quite a sight for employees of Stennis commuting toward their homes in the early-darkening evenings. Here at Stennis, the lights on the test stands shine brightly through the darkness as if they were also decorated for the holidays. It just so happens that they shine all year long as hardworking folks scurry about making deep space flight possible.

After Thanksgiving, Mama Gator and I started gathering firewood in preparation for the coldest winter days. We like to stay inside by the fireplace and watch NASA TV when it gets frigid outside. Also, keeping me warm is my traditional secret blend eggnog.

As I sip my eggnog, I think back on the passing year at Stennis Space Center. Stennis started the year with excitement. The giant B-2 Test Stand held the first-ever core stage of NASA's new Space Launch System. The excitement of waiting for the hot fire test and seeing that colossal rocket test was almost unbearable. I remember imagining the power of four RS-25 engines firing simultaneously while the rocket was held in place by the stand, unable to take off and fly.

Experiencing the hot fire events sent a wave of adrenaline through the crowd. The wave of force from the noise and the ground shaking underfoot set Stennis's 2021 on its path with a roaring start. I raise my glass in salute to the memory of being a witness of that moment.

This past year started with its proverbial wheels spinning and has kept its momentum. Stennis partners took leaps toward their individual goals with demonstrations of modern manufacturing techniques. At the same time, Stennis technicians tested the validity of new cutting-edge rocket science developments. As a result, the test area has been buzzing with active rocket engine testing. Another long sip in salute to NASA's commercial partners and the successes they have had this year.

Beyond the test stand, I hear the excitement about automating technology for deep space spacecraft and equipment, children participating in ASTRO CAMP, employees working in their dream jobs, fascinating new technologies, and workers making a difference at a distance.

Well, my glass is empty now. I think I might need another if I am going to keep reminiscing. Ark! "Happy Holidays" from me and Mama Gator.

Lagniappe is published monthly by the Office of Communications at NASA's John C. Stennis Space Center.
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Top NASA Leaders Nelson and Melroy Visit Stennis Space Center

Stennis Space Center Director Rick Gilbrech (r) joins NASA Administrator Bill Nelson (l) and NASA Deputy Administrator Pam Melroy (center) in viewing a scaled model of the B-2 Test Stand on display in the Roy S. Estess Building at Stennis. Nelson and Melroy visited the south Mississippi site Dec. 7.

Administrator Bill Nelson and Deputy Administrator Pam Melroy visited Stennis Space Center on Dec. 7, meeting with Stennis Director Rick Gilbrech and other site leaders, and also touring various center facilities.

The leaders toured the Fred Haise Test Stand, B-2 Test Stand, and E Test Complex, as well as the Aerojet Rocketdyne Engine Assembly Facility, where they were joined by area media for an interview session.

Nelson and Melroy both praised Stennis as a "national treasure," noting the key role the center is playing in the agency's Artemis plans to return humans, including the first woman and first person of color to the Moon in preparation for eventual missions to Mars.

Stennis is testing RS-25 engines that will help power NASA's Space Launch System (SLS) rocket on deep space missions. Earlier this year, the site also tested the first SLS core stage prior to its upcoming Artemis I launch.

"This is an exciting point in our nation's space history, and a lot of it is happening right here (at Stennis)," Nelson said as he and Melroy visited with media in front of an RS-25 engine at the Aerojet Rocketdyne facility. "Come February, engines like this are going to roar to life, … and we're going back to the Moon."

In addition to promoting the U.S. space program, Nelson and Melroy highlighted benefits that both NASA and Stennis would receive under President Biden's Build Back Better Act, including major improvements to modernize center infrastructure, and funding NASA secured in the recently-passed funding law that will help Stennis repair damage caused by Hurricane Ida.

To close the day, the leaders participated in a ceremony commemorating the March 2020 designation of the A-1 Test Stand at Stennis as the Fred Haise Test Stand. The designation honors Haise, a Biloxi, Mississippi, native, who served as the lunar module pilot on the famed Apollo 13 mission in 1970 and has been a steadfast supporter of NASA, Stennis, and the American space program.

During the ceremony, Nelson and others praised Haise as a true American hero. "As long as humans dream of the stars, as long as this nation reaches beyond its bounds, as long as astronauts dare to go, they will dream and reach and go in the shadow of pioneers like Fred W. Haise," Gilbrech noted.

The visit marked Nelson's first trip to Stennis since he became NASA administrator in late April.

NASA Deputy Administrator Pam Melroy stands in front of an RS-25 engine that helped power all three of her space shuttle missions (STS-92 in 2000, STS-112 in 2002, and STS-120 in 2007). The former space shuttle main engine has been upgraded and is scheduled to fly again on the Artemis III mission that will carry astronauts, including the first woman, to the Moon aboard NASA's Space Launch System.

Stennis Announces Senior Leadership Changes

NASA's Stennis Space Center has announced a senior leadership change with selection of longtime employee Rodney McKellip as the new associate director.

McKellip, a native of Picayune, Mississippi, and resident of Slidell, Louisiana, has been serving as director of the Stennis Center Operations Directorate. In his new role, he succeeds Mary Byrd, who was selected as Stennis associate director a year ago, becoming the first woman to hold one of the three NASA front office posts on site. Byrd recently announced her plan to retire, with both leadership changes effective by the end of the year.

Rodney McKellip

Mary Byrd

"Over her entire tenure, Mary made notable contributions to ensure the success of both NASA and Stennis," Center Director Rick Gilbrech said. "In all of her roles, Mary has served as a mentor and role model."

McKellip has served in multiple management positions during his 22-year NASA career at Stennis, all with progressively greater responsibility and accountability. He has provided support to four mission directorates at Stennis and achieved federal Senior Executive Service status earlier this year in assuming leadership of the Center Operations Directorate.

Created in 1979, the Senior Executive Service classification is designed for federal employees who use well-developed executive skills to administer programs at the highest levels of the government. The leadership program requires candidates to demonstrate skills in five key areas – leading change, leading people, results driven, business acumen, and building coalitions.

"Rodney has provided outstanding leadership and strategic planning for a comprehensive and integrated program of institutional services for the center," Gilbrech said. "He has provided key direction for the operation and maintenance of Stennis' test support facilities and has been instrumental in establishing and managing site host-tenant and facility use agreements with on-site government, university, and commercial tenants."

NASA Official Addresses Stennis Workers at All Hands

Jim Free, NASA's associate administrator of Exploration Systems Development, addressed staff and answered questions in an all hands meeting at Stennis Space Center Nov. 18. The all hands took place in the StenoSphere auditorium, after Free and a party of Stennis officials toured the B Test Stand. The B Test Stand is where NASA's Space Launch System (SLS) core stage tested March 18. The core stage Green Run event was the most powerful stage test to take place on the historic stand since the Apollo era Saturn V testing, generating 1.6 million pounds of thrust at sea level. NASA's new SLS and the Orion spacecraft are the vehicles that will power the next man, the first woman, and the first person of color to the lunar surface.

NASA's MOON to MARS MISSION

Artemis RS-25 Rocket Engines 'Fire Up' with New Components

NASA conducts a full-duration (500 seconds) hot fire test of RS-25 developmental engine No. 0525 on the Fred Haise Test Stand at Stennis Space Center on Dec. 15. The hot fire marked the first in a new series of tests to collect performance data for production of RS-25 engines to help power NASA's Space Launch System rocket on future deep space missions.

NASA conducted a successful full-duration test Dec. 15, to begin a new series of testing for state-of-the-art RS-25 engines to help power the agency's Space Launch System (SLS), America's new deep space rocket, on future missions to the Moon and Mars.

The first hot fire of the new series was conducted for a full-duration 500 seconds on the Fred Haise Test Stand (former A-1 Test Stand) at Stennis Space Center.

The upcoming test schedule is divided into three phases:

- An initial series of five tests scheduled into next spring will use development engine No. 0525 to gather performance data on a variety of new engine components manufactured with state-of-the-art fabrication techniques, like hot isostatic pressure bonding and selective laser melting, to reduce both the cost and time to build new engines.

- A second phase of 12 tests will begin next summer with a certification engine produced with all new parts in Aerojet Rocketdyne's factory in DeSoto, California. It is identical to new engines being manufactured for flights after Artemis IV.

- A third phase of 12 tests will follow the certification series and will be conducted with the development engine, which will have many of the same parts as the certification engine and also will be used to certify the new engines for flight.

"These new engines will have the same high performance as the upgraded engines from the shuttle era used for early Artemis missions, but with anticipated manufacturing cost savings of more than 30% over engines from the shuttle program," said Johnny Heflin, the SLS liquid engines manager at Marshall Space Flight Center in Huntsville, Alabama. "These tests ensure the new engines are ready to power a generation of SLS flights."

Four RS-25 engines, along with a pair of solid rocket boosters, will help power SLS at launch. Firing simultaneously, the engines will generate a combined 1.6 million pounds of thrust at liftoff and 2 million pounds during ascent. NASA already has completed testing of engines for the first four Artemis missions as part of the agency's plan to return humans, including the first woman and first person of color, to the Moon in preparation for eventual missions to Mars.

This latest round of testing is part of an ongoing program to develop new RS-25 engines and components for future Artemis deep space missions. During each phase, engineers are introducing newly fabricated components on developmental engines. The components tested in this series include newly fabricated turbopumps, ducting, harnesses, and valves. Also included will be a previously tested pogo accumulator. Manufactured with selective laser melting, the pogo accumulator dampens propellant pressure oscillations during vehicle ascent.

"Our team has worked hard over the past several years to update the designs of several key RS-25 components and fabricate them using advanced manufacturing techniques in order to streamline the production process and significantly reduce cost," said Jeff Zotti, Aerojet Rocketdyne's RS-25 program director for Aerojet Rocketdyne, lead contractor for SLS engines. "The Retrofit-3 test series will allow our engineers to validate the performance of these new components."

Test data will help Aerojet Rocketdyne ensure RS-25 engines meet NASA's mission guidelines for human missions to the Moon and Mars. To ensure quality performance, operators will compare data for the modern engine components manufactured using new techniques against prior data from components developed using older manufacturing methods.

"It is exciting to be starting this next test series that gets us closer to newly-manufactured RS-25 engines," said Chip Ellis, Stennis RS-25 test project manager. "These new production RS-25s will power SLS to further exploration for years to come."

The previous round of RS-25 testing concluded with removal of RS-25 developmental engine No. 0528 from the Fred Haise Test Stand on Oct. 25. During that series, operators collected data from a series of seven hot fire tests conducted Jan. 28 to Sept. 30 and confirmed that all primary test objectives were successfully achieved.

NASA is building SLS as the world's most powerful rocket. SLS and the Orion spacecraft, along with the commercial human landing system and the Gateway in orbit around the Moon, are NASA's backbone for deep space exploration. The agency is working towards the launch of the Artemis I uncrewed flight test in upcoming months, which will pave the way for future missions with astronauts.

NASA's MOON to MARS MISSION

Stennis Technician Team Completes RS-25 Nozzle Remove-and-Replace Training Procedure

An integrated team representing Aerojet Rocketdyne, support contractor Syncom Space Services (S3), and Stennis Space Center recently experienced a different kind of R&R. On Oct. 13, the team members successfully performed an uncommon remove-and-replace (R&R) procedure on an RS-25 engine's nozzle while the engine was installed on the Fred Haise Test Stand.

In fact, the event marked the first nozzle removal and replacement performed on an installed RS-25 engine since the space shuttle main engine testing era at Stennis, the nation's largest propulsion test site located near Bay St. Louis, Mississippi. Space shuttle testing at Stennis ran from May 19, 1975, to July 29, 2009. The last flight of the Space Shuttle Program, STS-135, occurred July 8-21, 2011.

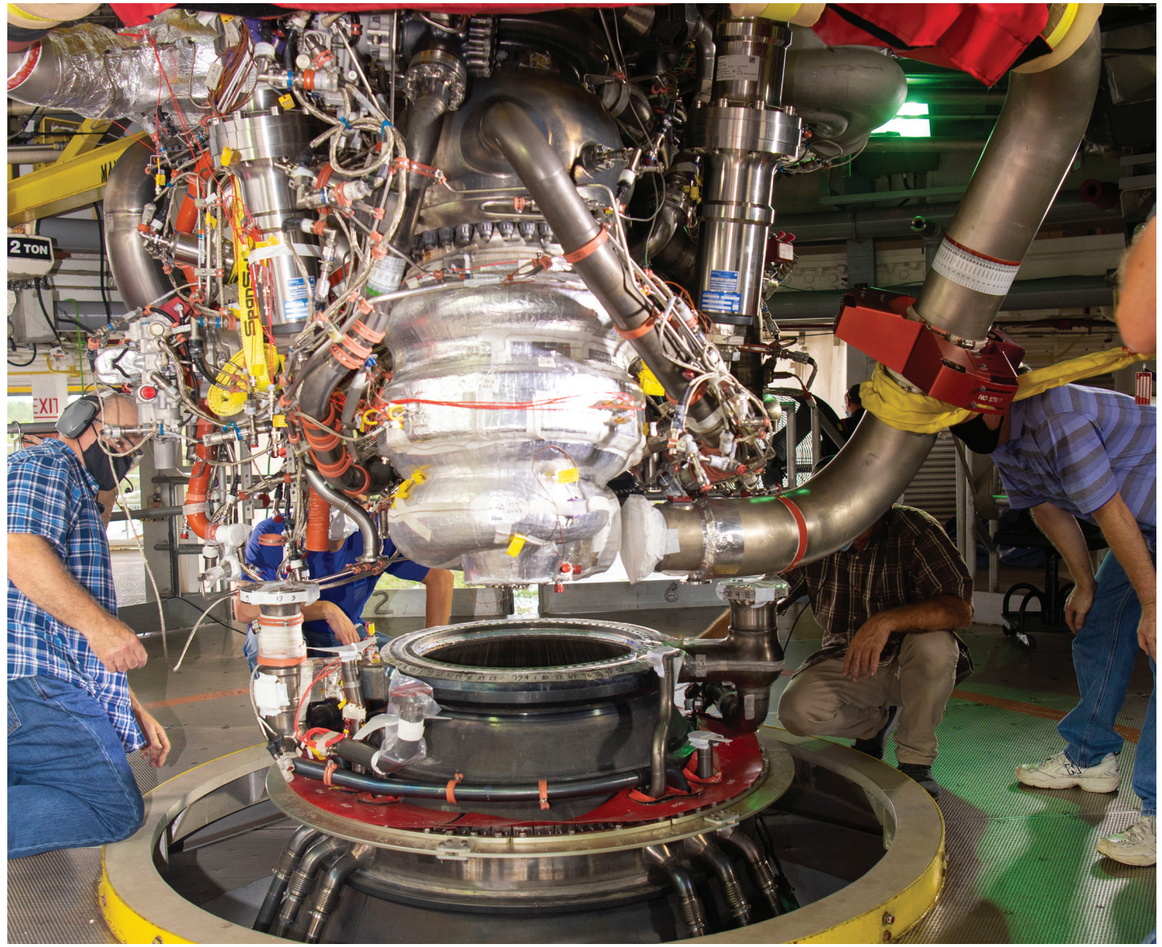
The R&R procedure involves completely removing the nozzle – the bell-shaped component bolted to the powerhead that directs and accelerates 6,000-degree exhaust to generate powerful thrust – and reattaching another nozzle, while the turbopumps, combustion chamber, fuel ducts, and other parts remain secured in place.

The mid-October removal and replacement served as a practice run to ensure the blended team had the proper procedures and tools in place to complete the action, so the same RS-25 nozzle was removed and replaced on the test stand's engine deck.

With the success of the rehearsal using development engine No. 0528, the same procedure now will occur at least once again in the spring of 2022 during a series of engine certification tests. Multiple RS-25 nozzle R&Rs also are slated for 2023 and 2024. The spring series will involve multiple hot fires of an RS-25 certification engine to verify the safety and reliability of new and different components, some of which have been created using 3-D printing, a cutting-edge additive manufacturing technique.

The new nozzle that needs to undergo testing will be available after the certification series begins, so the R&R procedure will allow the team to remove the conventional nozzle that will be used early in the series and install its replacement. Successful certification testing is a critical milestone to producing a new generation of RS-25 engines that will be used in later Artemis missions.

Because the RS-25 nozzle is a highly complex assembly, it normally takes several weeks to fully connect it to a test stand, and the engine is installed and removed as one complete unit. Vehicle transport of an RS-25 engine between Aerojet Rocketdyne's on-site Engine Assembly Facility and the Fred Haise Test Stand is a meticulous process, as is lifting and lowering the engine by crane during installation and removal.



Technicians on the engine deck of the Fred Haise Test Stand at Stennis prepare to use an vertical engine installer (VEI) to support, detach, and lower the nozzle from RS-25 development engine No. 0528 (bottom left). Once lowered the technicians examine the detached nozzle (top) and ensure all is in place (bottom right) during an RS-25 rocket engine nozzle remove-and-replace procedure Oct. 13.

Typically, if a nozzle needs to be replaced, the engine must be removed from the test stand in order to complete the procedure. As a unique procedure, then, nozzle R&R can produce major benefits.

"The ability to remove and replace a nozzle at the test stand can provide both cost and schedule gains for the RS-25 project," said Matthew Scardino, rocket engine test operations manager at Aerojet Rocketdyne. "As many as four to six weeks can be cut from the typical test schedule if the engine does not need to be removed from the test stand to replace the nozzle at the Engine Assembly Facility and then reinstalled at the test stand."

Although nozzle R&Rs are a part of Stennis' rich history of propulsion testing, the new RS-25 test project powering Artemis missions to the Moon required some modifications to the test stand infrastructure. For example, the current RS-25 project required a modification of the vertical engine installer (VEI), a hydraulic lift table, with a newly designed tabletop and platform for safety of personnel and ease of use.

The VEI slides on rails to the edge of the engine deck when an RS-25 engine is incoming or outgoing, and it then slides to and from the area beneath a new thrust frame adapter, a strong cross-shaped metal beam structure to which the engine is bolted for testing. To fit the new adapter, the engine interface was rotated 90 degrees to accommodate the new structure. Meanwhile, the thrust frame adapter itself is affixed to a thrust measurement system that measures upward and lateral force as the engine "gimbals," or purposefully redirects its aim, during a hot fire test.

While the RS-25 nozzle R&R does not necessarily require a larger crew than the same procedure did for a space shuttle main engine, the team took advantage of the opportunity to train additional personnel on the operation, especially newer hires who were not involved in, or on-site during, the space shuttle main engine test era.

The uniqueness of the R&R procedure makes it a valuable learning opportunity for identifying process improvements and information gathering. As a standard practice, Aerojet Rocketdyne conducts after-action reviews to identify opportunities for improvement and capture lessons learned for corrective action prior to the next execution of the task.

"The nozzle R&R was executed flawlessly by a combined NASA/S3 and Aerojet Rocketdyne team working collaboratively together," Scardino said. "The lessons learned and opportunities for improvement we captured will provide tremendous value to our processes. The demonstration also enabled us to increase our skill-base through the hands-on training made available through the activity."

A SpaceX Falcon 9 rocket launches with NASA's Imaging X-ray Polarimetry Explorer, or IXPE, spacecraft onboard from Launch Complex 39A on Dec. 9, at NASA's Kennedy Space Center in Florida. The IXPE spacecraft is the first satellite dedicated to measuring the polarization of X-rays from a variety of cosmic sources, such as black holes and neutron stars. Launch occurred at 12 a.m. CST. Image Credit: NASA/Joel Kowsky

NASA in the News

Next-Generation Asteroid Impact Monitoring System Goes Online

NASA astronomers have developed a next-generation impact monitoring algorithm called Sentry-II to better evaluate NEA impact probabilities. The new system improves the capabilities of NASA's Jet Propulsion Laboratory in Southern California for Near Earth Object Studies to assess the impact risk of asteroids that can come close to our planet. To date, nearly 28,000 near-Earth asteroids (NEAs) have been found by survey telescopes that continually scan the night sky, adding new discoveries at a rate of about 3,000 per year. But as larger and more advanced survey telescopes turbocharge the search over the next few years, a rapid uptick in discoveries is expected. Sentry-II went online anticipation of this increase. Asteroids are extremely predictable celestial bodies that obey the laws of physics and follow knowable orbital paths around the Sun. So, astronomers use sophisticated impact monitoring software to automatically calculate impact risk. For more click here.

Laser Communications Tech, Science Experiment Safely in Space

NASA's Laser Communications Relay Demonstration (LCRD) lifted off at 4:19 a.m. CST on Dec. 7. The LCRD launched aboard the Space Test Program Satellite-6 on a United Launch Alliance Atlas V rocket from Cape Canaveral Space Force Station in Florida. LCRD will demonstrate NASA's first two-way laser relay communications system, sending and receiving data over invisible infrared lasers, which can enable data rates 10 to 100 times greater than radio frequency systems traditionally used by spacecraft. LCRD will send and receive data at a rate of 1.2 gigabits per second from geosynchronous orbit to Earth. At that speed, one can download a movie in under a minute. Laser communications systems are smaller, lighter, and use less power than radio frequency systems. These advantages, combined with laser communications' higher bandwidth, can advance robotic and human exploration across the solar system. For more click here.

Stennis Space Center's Year of Perseverance

Public interest in the word "perseverance" peaked around the Mars rover landing this year bearing that name. Due to the interest, Cambridge Dictionary selected "perseverance" as the 2021 word of the year. Joining in the year's theme, "perseverance" can describe this year's workforce efforts at Stennis Space Center.

The perseverance of the Stennis workforce has enabled the Space Launch System (SLS) to progress toward its maiden launch, site teams to move forward in propulsion test activities, commercial partners to reach new testing milestones, an autonomous systems team to move forward in its cutting-edge work, and ASTROCAMP to reach beyond the traditional, all amid the worldwide COVID-19 pandemic.

Throughout 2021, the workforce routines at Stennis continued to involve less traffic at work sites while still maintaining the infrastructure and staff to provide continued support for the ongoing government and commercial projects. In addition, many Stennis workers supported ongoing work from their homes, in a diligent effort to keep projects and programs moving forward. Getting the job done, staying connected, and reaching out virtually required determination and patience, but Stennis persevered.

Stennis spent 2021 at the forefront of public interest. The world watched as NASA's new SLS rocket prepared for its maiden voyage. The 2021 conclusion of the SLS core stage Green Run test series on Stennis's B-2 Test Stand gave the world a chance to view the power of America's new deep space rocket.

The SLS is destined to be the backbone of NASA's Artemis. Prior to its initial launch, the first SLS core stage underwent a series of Green Run tests of its systems, including a final hot fire of the stage's four RS-25 engines, just as during an actual flight.

The first attempt to conduct the final Green Run test Jan. 16 experienced an early automatic shutdown. NASA conducted a second full-duration, 500-second hot fire test March 18, to gather additional information to ensure and development of future core stage rockets. The SLS core stage then was transported by barge to Kennedy Space Center to undergo the stacking process and other launch preparations.

2021 also was a year of testing innovation at Stennis. NASA continued testing RS-25 engines to help power SLS at Stennis in 2021. Stennis operators conducted a series of seven hot fire tests to collect valuable performance data as Aerojet Rocketdyne works to develop RS-25 engines for future Artemis missions to the Moon and eventual missions to Mars.

The 2021 series particularly focused on testing engine components developed by such innovative processes as 3D printing, hot isostatic pressure bonding, as well as modern electronics. The new manufacturing techniques are designed to reduce cost and time to build new engines.

Elsewhere in the Stennis test complex, operators conducted multiple tests on advanced diffuser designs to help test rocket engines at simulated high altitudes, helping to ensure the engines will fire and operate on deep space missions as needed. The experimental testing helped demonstrate the effectiveness of a previously untested diffuser design and a new innovative design developed two years ago by Stennis engineers.

NASA's government and commercial partners also reached many milestones at Stennis throughout 2021. Launcher, Virgin Orbit, Relativity Space, and Aerojet Rocketdyne made significant strides toward their own space-project goals while utilizing Stennis infrastructure. In addition, other agencies throughout Stennis's multi-agency federal city continued work toward their own individual goals, space-related or not, supported by the unique interagency cooperation and resources at Stennis.

The Autonomous Systems Laboratory (ASL) team at Stennis continued to make significant contributions in development of critical systems that could be used on future missions to the Moon and, eventually, Mars. The ASL is working to design, test, and deploy technologies that automate critical components of space vehicles. Autonomous systems are a critical need as humans travel to deep space beyond easy and immediate communication with Earth.

In 2021, the Stennis ASL team won one of 10 coveted awards for a two-year project designed to enable new capabilities for deep space human exploration. The aim of the project is to fill high-priority capability gaps, such as the need for new technologies or engineering developments, on deep space missions like Artemis and to introduce new technologies into spaceflight programs involving human exploration.

For its part, the Stennis team will seek to validate its NASA Platform for Autonomous Systems on a satellite mission set to launch next fall. The ASL work is part of the overall efforts of the Stennis Office of Technology Development to promote NASA innovations and technologies that will benefit space exploration as well as everyday human life.

On a separate note, the ASTROCAMP team, seated at Stennis, made the best of the virtual environment throughout 2021. The team reached out to non-traditional audiences, collaborated with partners outside the United States, and continued providing services via virtual sessions amid COVID-19 travel restrictions.

Despite pandemic restrictions, Stennis teams also continued efforts to inspire young people to pursue science, technology, engineering, and mathematics (STEM) studies and careers, to engage the public in support of ongoing NASA missions and work, and to focus on, and promote, diversity and equal opportunity.

The center also launched a new Strategic Business Development Office in 2021 to promote the center's federal city model, which now numbers some 40 resident agencies, and attract new companies on site. A key selling point for such work is the commitment of the Stennis workforce. Stennis employees report high levels of work engagement.

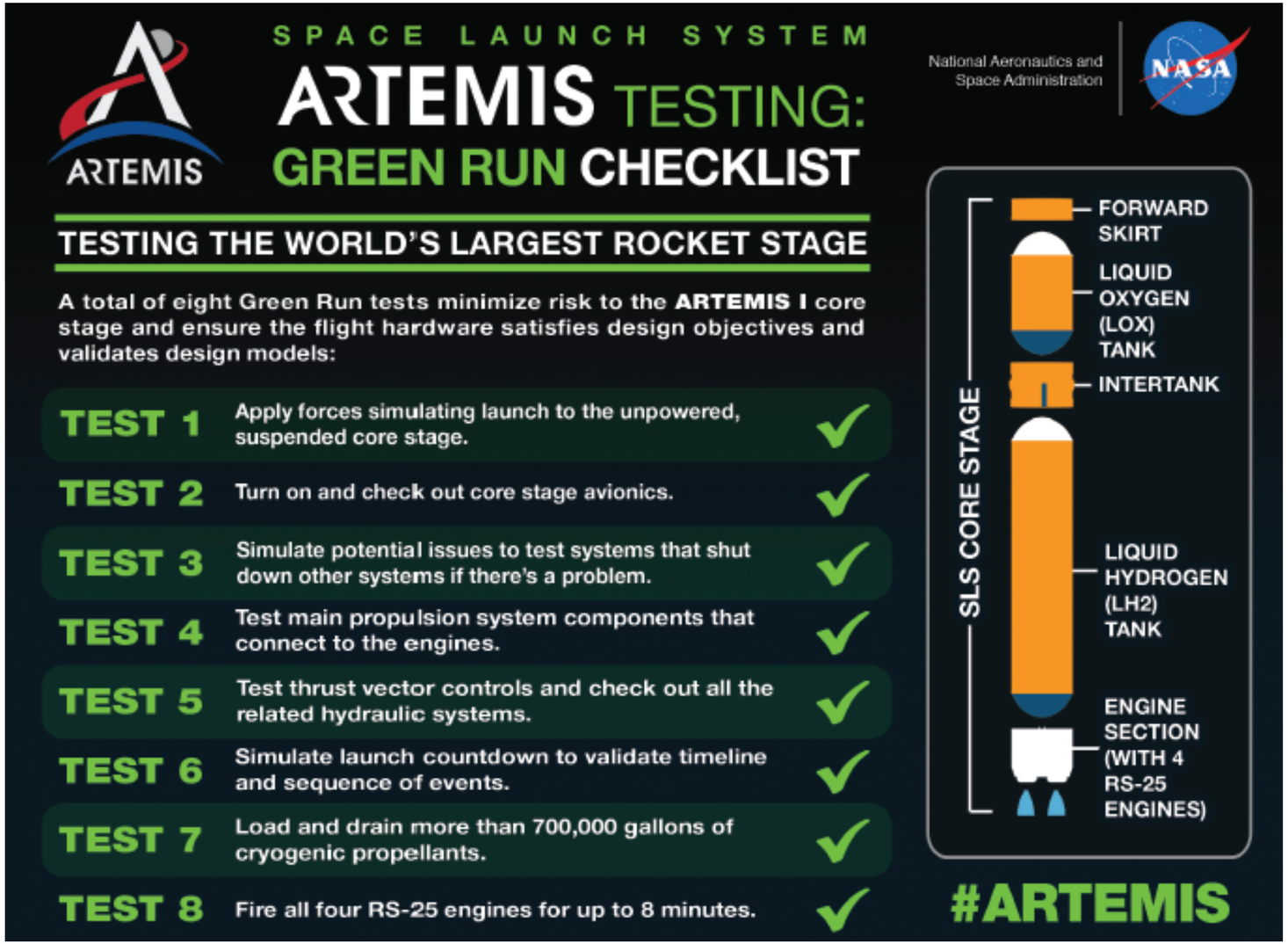
In the annual Federal Employee Viewpoint Survey, the site recorded an employee engagement rate of 86.8%, compared to a 72.4% rate across the government. Employees also reported high levels of satisfaction with their work experience, which reflects their views about their job, work units, and pay, as well as if they would recommend their organization as a good place to work.

Indicative of their high levels of work engagement and satisfaction, 95% or more of Stennis employees report the people they work with cooperate to get the job done, employees are protected from health and safety hazards on the job, supervisors support the need to balance work and other life issues, supervisors support employee development, and supervisors treat employee with respect.

The accomplishments of Stennis in 2021, in the midst of an ongoing COVID-19 pandemic and the impact of a Category 4 hurricane, bear testament to the ongoing commitment of the workforce, which looks forward to a future of commercial partnerships, government cooperation, and technological development that, helps make space travel more available.

Looking back on the past year, one easily could view NASA's naming of its Perseverance rover as downright inspired.

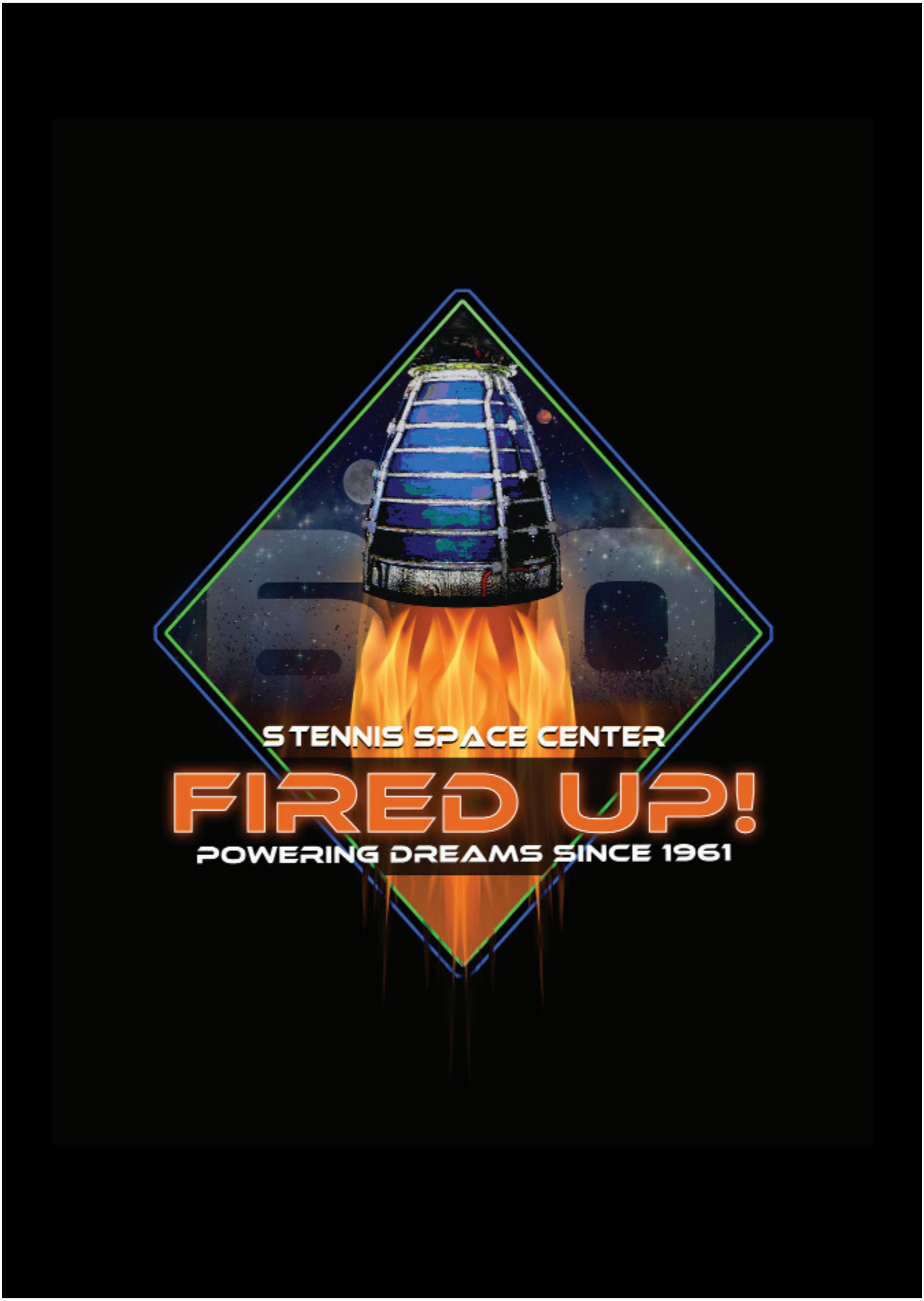
(Top photo) Stennis Space Center Director Rick Gilbrech (l) and Marshall Space Flight Center Director Jody Singer exchange a socially distanced high-five to celebrate the successful hot fire of the first flight core stage of NASA's Space Launch System (SLS) rocket on the B-2 Test Stand at Stennis Space Center on March 18. (Bottom photo) An on-stand camera offers a close-up view of the four RS-25 engines, which produce a combined 1.6 million pounds of thrust, during the Green Run hot fire test.



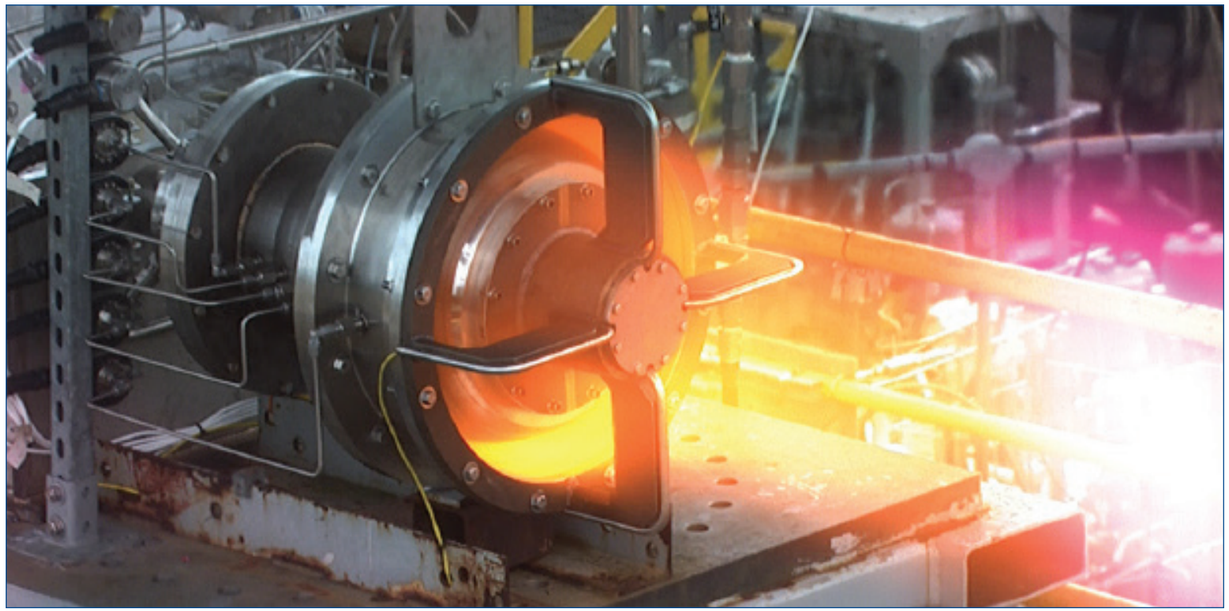
(Above photo) Crews at NASA's Stennis Space Center worked April 19-20 to remove the first flight core stage of the agency's Space Launch System (SLS) rocket from the B-2 Test Stand in preparation for its transport to Kennedy Space Center in Florida, following completion of the Green Run series of tests of its design and systems. The core stage was then oriented horizontally (bottom left photo) and loaded for departure from Stennis Space Center on April 21-22 (bottom center photo).

(Top photo) The Space Launch System (SLS) core stage hangs from the B Test Stand as the Sun rises April 20. (Bettom photo) The Pegasus barge transports the SLS through the canal at Stennis Space Center as it begins the next stage of its voyage to Kennedy Space Center in Florida.

(Top left photo) Imari Wellington, of Slidell, Louisiana, participates in a hands-on learning experience at the INFINITY Science Center grand reopening event May 29, using a variety of building blocks, tubes, and cardstock graphics to design her very own space craft to explore the solar system. (Top center photo) A young girl, watched by her mother, participates in the tie-dye booth at the INFINITY Science Center during the facility's grand reopening, following its closure due to the COVID-19 pandemic Dec. 2020. (Top right photo) A small tree lies uprooted in front of the Roy S. Estess Building at Stennis Space Center in the wake of recent Hurricane Ida. The eye of the Category 4 hurricane made landfall 90 miles south/southwest of Stennis Space Center at Port Fourchon, Louisiana, on Aug. 29. (Bottom left photo) Stennis employees wait in an extended line to refuel on-site due to Hurricane Ida-related shortages at area service stations. (Bottom right photo) NASA conducts a full-duration RS-25 hot fire test on the A-1 Test Stand at Stennis Space Center on Sept. 30. The hot fire of more than 8 minutes marked the final test of a Retrofit-2 series.


STENNIS SPACE CENTER
FIRED UP!
POWERING DREAMS SINCE 1961

(Top left photo) Launcher's 3D-printed Engine-2 (E-2) rocket engine completes a 5-second hot fire Aug. 20 of its latest thrust chamber assembly (Credit: Launcher / John Kraus Photography). (Right photo) The arrival of two trusses marks the first of several large elements needed to prepare the B-2 Test Stand for Green Run testing of the Exploration Upper Stage unit being built for use on future Space Launch System missions. (Bottom left photo) The spike diffuser is a new design developed and tested at Stennis on the E-3 Test Stand.

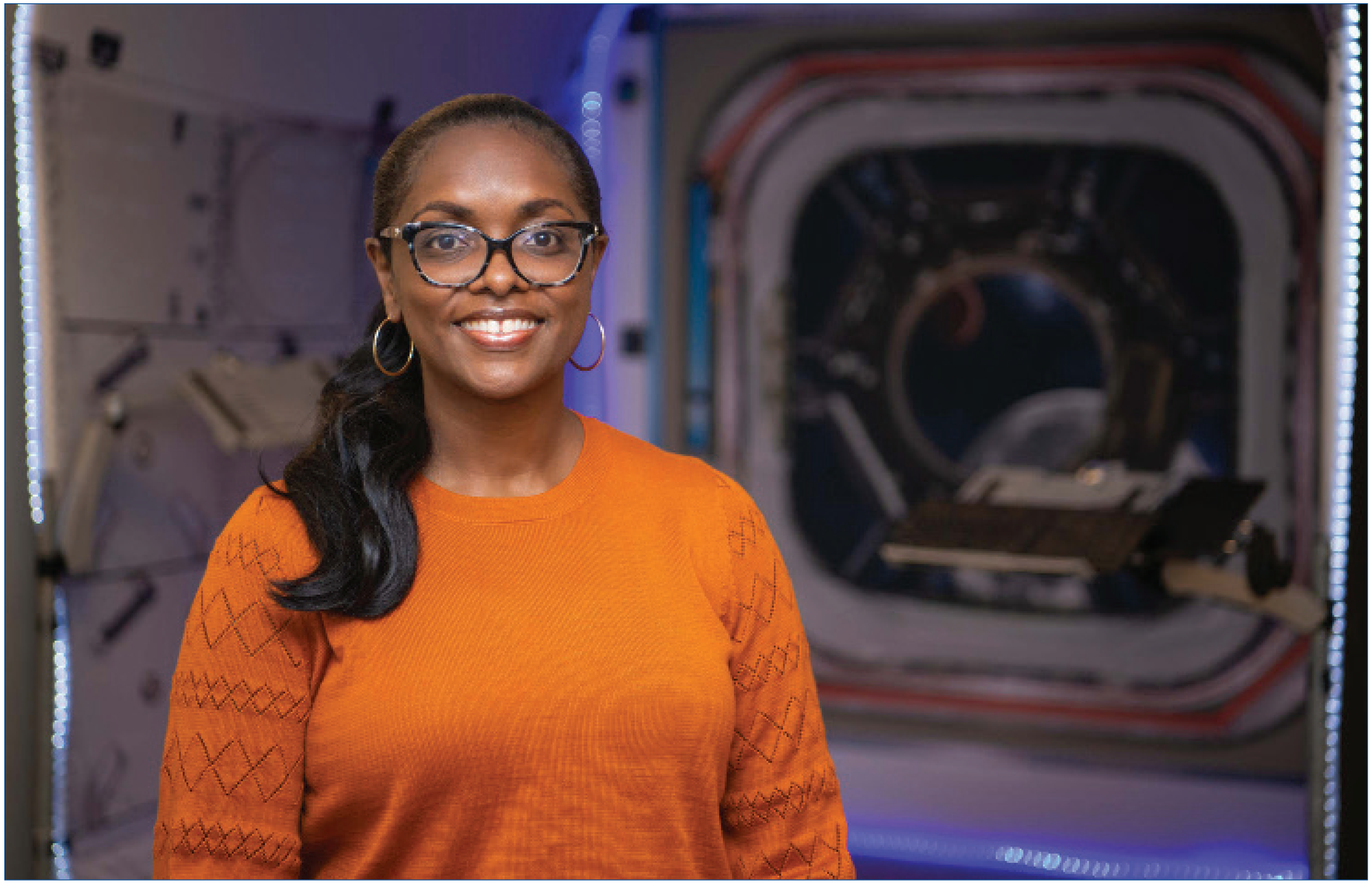


NASA Engineer Makes Space Dreams a Reality at Stennis

Dawn Davis, chief of the Office of Technology Development, helps make dreams of "reaching for the stars" come true through her work at Stennis Space Center. After 25 years with NASA, Davis is invested in the ongoing effort of extending humanity beyond Earth's orbit to the Moon and, eventually, Mars.

Davis remembered always being in awe of the space shuttle flights and humans living and working in Earth orbit. "I was inspired by the groundbreaking astronauts Guion Bluford Jr. and Sally Ride," she said. Guion Bluford Jr. and Sally Ride are trailblazers of NASA, the first African-American and first American woman to fly to space, respectively.

The awe and inspiration fostered a leader in Davis, supporting Artemis for the next generation of space explorers. Artemis will send the next man, the first woman, and the first person of color to the Moon, beginning an effort to establish a sustainable human presence on the lunar surface. For Davis, autonomous systems will be key to that effort.



Dawn Davis looks to trailblazing astronauts Guion Bluford Jr. and Sally Ride as inspiration for her work as chief of the NASA Office of Technology Development at Stennis Space Center*.

In her current role, Davis directly contributes to Artemis today and has invested over eight years of her career to that effort. "My office is currently playing a critical role in developing enabling technologies, tools, and processes to support the Artemis missions, specifically autonomous systems that will be crucial for lunar and deep space missions," Davis said. "Prior to joining the Office of Technology Development, I led the electrical design team for the Space Launch System (SLS) core stage test program. That team was responsible for the design, development, and integration of the electrical systems on the B-2 Test Stand."

Still living in New Orleans, where she grew up, Davis worked her way up NASA's leadership ladder at Stennis. First coming to work on-site in an internship with Lockheed Martin, Davis has served in many NASA positions, including project engineer, electrical engineer, lead electrical engineer, chief of the Electrical Design Branch, and currently chief of the Office of Technology Development.

Davis said she is proud of her path at Stennis. "The best thing about working at Stennis is the opportunity to support the nation's space program," she said. "When we return to the moon, I can proudly say that I was a part of getting us there."

Davis earned quite a bit of recognition throughout her career. Her awards include NASA Exceptional Achievement Award; NASA Silver Achievement Group Award, Operational Readiness of B-2 and SLS Core Stage Lift; NASA Group Achievement Award, B-2 Activation Team; NASA Group Achievement Award, B-2/SLS Green Run Core Facility Construction Team; Installation Management Honor Award; and Women of Color STEM Professional Achievement Award.

As Davis developed her expertise, NASA's presence at Stennis changed. "The culture at Stennis has evolved to be more diverse," she said. "When I first started at Stennis, it was rare that you saw a person of color or a female in a position of leadership, but that has changed. I think this has helped to attract and maintain a more diverse workforce."

As she looks to the future, Davis said she is excited about the opportunity Stennis has to carve out a new role in the area of autonomous systems. In addition, by continuing to grow capabilities and partnerships, Stennis will be able to contribute to a broader array of NASA missions, she said.

Stennis News

Stennis Virtually Presents in 2021 STEM-a-Thon

Stennis Range Safety Manager Karma Snyder (above photo) presented as a panelist in the 2021 STEM-a-Thonon Nov. 18, for "Women@NASA: Making History Every Day." Snyder was one of five women from across the agency who discussed her career, how she got to NASA, and how to handle work/life balance. The same day, Stennis Visitors Relations Specialist Nicholas Middleton (right photo) presented "The Inside Scoop: Living and Working in Space" for the nationwide STEM-a-Thon virtual audience. Viewers received information on astronaut food items, exercise, and sleeping arrangements, as well as the types of projects conducted in spaceflight. Left of Middleton are three scale models of the most powerful launch vehicles in history, Saturn V (l), Space Transport System, and Space Launch System (r).

NASA Honors Stennis Space Center Employee

To mark progress in NASA's Artemis program that will return humans, including the first woman and person of color, to the Moon, the space agency has been recognizing Space Heroes performing necessary and critical work. Overall, 27 Stennis Space Center employees have been cited for their Artemis-related efforts.

Jack Conley spent countless hours (including nights, weekends and holidays) in the Stennis B-2 Test Control Center supporting vehicle

preparations as the backup test conductor for the Space Launch System core stage Green Run project. During the wet dress rehearsals and hot fires of the core stage, Conley was entrusted with numerous critical operations, which he performed at an extremely high level, making him instrumental to the project's success.

Hail & Farewell

NASA welcomes the following:

Jennifer Stevenson	Management and Program Analyst	Office of the Chief Financial Officer

New Campaign Recognizes Stennis' Remote Workforce

Stennis Space Center recently announced launch of a "Making a Difference from a Distance" campaign to recognize the contributions of employees who are making a difference while working from remote locations. The campaign is expected to run through mid-December.

The campaign features employees who were nominated by either management or their colleagues and consists of employee profiles representing the offices and directorates at Stennis. On a weekly basis, featured employee profiles will be included in Orbiter and on Stennis social media accounts:

- Stennis' Facebook
- Stennis' Twitter
- Stennis Instagram

National Aeronautics and Space Administration

MAKING A DIFFERENCE FROM A DISTANCE

ALLECIA KIMBLE
END USER SERVICES SUBJECT MATTER EXPERT AND RECORDS/FORMS MANAGER
NASA OFFICE OF THE CHIEF INFORMATION OFFICER

The COVID-19 pandemic presented challenges to the NASA and Stennis Office of the Chief Information Officer teams in support of the agency's efforts not only to continue mandatory teleworking but to improve that experience. Allecia had the monumental challenge of coordinating a hands-on program, such as End User Services (EUS) in a remote environment. She was key in designing a remote computer refresh process that is now being piloted at other centers. Allecia also successfully established the NASA EUS and Technologies Contract/EUS Office Space Bar, a storefront for the EUS contractor to manage refreshes and repairs.

The "Making a Difference from a Distance" campaign features NASA and NASA contractor employees representing SSC who were nominated by either management or their colleagues highlighting the outstanding contributions employees are making in a virtual work setting.

National Aeronautics and Space Administration

MAKING A DIFFERENCE FROM A DISTANCE

BAYLEE BOURQUE
O365 APPLICATIONS SUPPORT PROJECT MANAGER
NASA OFFICE OF THE CHIEF INFORMATION OFFICER

During the pandemic, Baylee consistently rose to the challenge of unknown conditions in analyzing and devising solutions to particularly complex and challenging problems, as well as developing processes that established a precedent for future endeavors or a model for other employees to follow. This work began with devising a trusted and effective employee checkout method to assist the ever-growing digital footprint of Stennis employees. Checking out now encompasses much more than just the physical assets. Baylee is making a difference with the implementation of the O365 Power Platform at Stennis. With the connection of services and the implementation of Power Platform capabilities, the opportunities are endless.

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National Aeronautics and Space Administration

MAKING A DIFFERENCE FROM A DISTANCE

CASEY WHEELER
LIFTING DEVICE AND EQUIPMENT MANAGER
NASA CENTER OPERATIONS DIRECTORATE

Casey led more than $15 million in Stennis construction efforts, including the ongoing effort to replace a major portion of the High Pressure Industrial Water system that services the A Test Complex. He also serves as the lifting device and equipment manager and played a significant role in the removal of the Space Launch System (SLS) core stage and other critical hardware from the B-2 Test Stand in support of the Artemis program.

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National Aeronautics and Space Administration

MAKING A DIFFERENCE FROM A DISTANCE

CHARLES HALLAL
STENNIS DATA CENTER MANAGER AND STENNIS APPLICATIONS DEVELOPMENT MANAGER
NASA OFFICE OF THE CHIEF INFORMATION OFFICER

Developing contract requirements is a challenging role while on-site, but Charles and his team not only successfully developed the new Information Technology Services (ITS21) contract requirements while teleworking but evaluated proposals, selected an award recipient, and transitioned to the new contract. This involved some services migrating to mandatory Enterprise contracts. Success was measured by all transition activities remaining seamless to the customer and all services remaining available. Charles consistently demonstrated respect and trustworthiness in interactions with managers, customers, co-workers, and other stakeholders and is considered flexible, approachable, reliable, and consistent.

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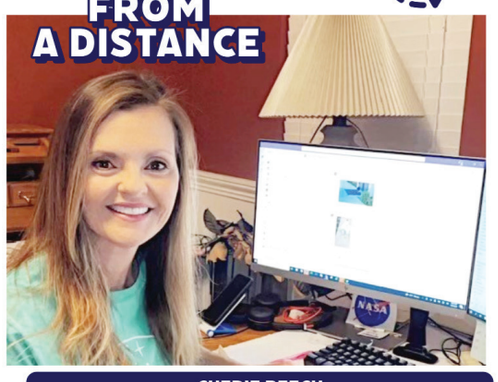
National Aeronautics and Space Administration

MAKING A DIFFERENCE FROM A DISTANCE



CHERIE BEECH
OUTREACH MANAGER AND INFORMATION TECHNOLOGY ASSET MANAGER
NASA OFFICE OF THE CHIEF INFORMATION OFFICER

Cherie continues to demonstrate outstanding effectiveness while working in diverse, cross-organizational, and uncertain environments. During the mandatory telework period, she rose above the challenge to publish Information Technology (IT) outreach material, providing the Stennis community with exceptional information to guide it through the uncertain times. At the beginning of the pandemic, Cherie quickly published the "Teleworking Helpful Links" and "Tech Tips for SSC Users" resources on the Stennis Intranet Portal. She continues not only to address critical issues but also to ensure everyone has up-to-date, reliable, and, most importantly, easy-to-read information on all the IT services the Office of the Chief Information Officer (OCIO) offers to our current remote workforce.

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National Aeronautics and Space Administration

MAKING A DIFFERENCE FROM A DISTANCE

DALE WOOLRIDGE
PROJECT MANAGER
NASA CENTER OPERATIONS DIRECTORATE

In conjunction with the Office of Procurement, Dale completed designs and assisted in awarding construction contracts for substantial repairs to the Stennis lock and bascule bridge, all while working primarily from his home office. Dale also has managed the construction of upgrades and repairs to the potable water system that provides safe drinking water for all site employees.

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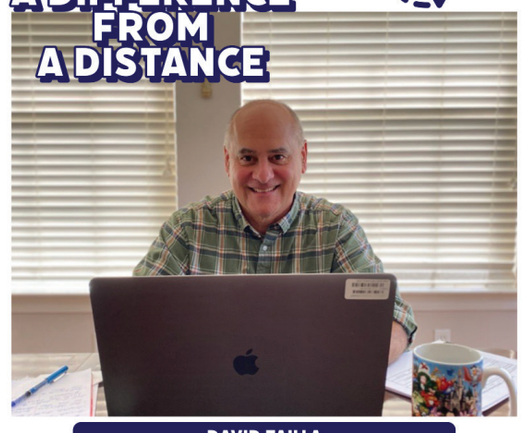
National Aeronautics and Space Administration

MAKING A DIFFERENCE FROM A DISTANCE



DAVID FAILLA
OPERATIONS MANAGER
NASA CENTER OPERATIONS DIRECTORATE

David has provided critical support to the Lab Services Contract to ensure that the operations and equipment of the calibration and testing laboratories were maintained to support propulsion testing at Stennis. He also has provided support to various test facility projects, such as upgrading the liquid hydrogen flare stack ignitors at the E-2 and E-3 Test Stands.

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National Aeronautics and Space Administration

MAKING A DIFFERENCE FROM A DISTANCE

JUSTIN LUCAS
MECHANICAL ENGINEER AND PROJECT MANAGER
NASA CENTER OPERATIONS DIRECTORATE

Justin successfully managed more than $25 million worth of projects while teleworking. He led his team to complete replacement of major portions of the high-pressure, cross-country gas lines that service all of Stennis' test facilities. Additionally, he led his team to install new air compressors and dryers at the High Pressure Gas Facility. In the E Test Complex, Justin led the upgrades of the electrical infrastructure for the deluge water system, a critical system that is used to protect the facility when required.

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National Aeronautics and Space Administration

MAKING A DIFFERENCE FROM A DISTANCE

KEVIN STIEDE
PROJECT MANAGER, FACILITY SERVICES BRANCH
NASA CENTER OPERATIONS DIRECTORATE

Kevin managed the project to upgrade Stennis' Energy Management and Control System, which monitors and controls systems such as air conditioning, heating, and temperature across the center. Implementation of this project mitigated a high-level center risk. He also provided invaluable logistical support to the Office of Communications for the guest operations viewings for the two hot fire tests of the Space Launch System (SLS) core stage in January and March 2021.

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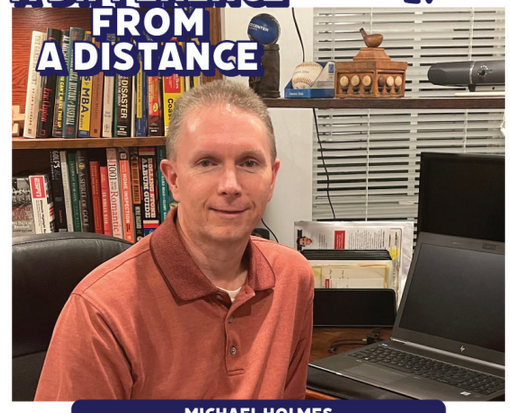
National Aeronautics and Space Administration

MAKING A DIFFERENCE FROM A DISTANCE



MICHAEL HOLMES
A TEST COMPLEX OPERATIONS AND MAINTENANCE MANAGER
NASA CENTER OPERATIONS DIRECTORATE

Michael has served on multiple agencywide teams, including the Computerized Maintenance Management System Assessment Team where he served as Stennis' voting member. He has not missed a beat in providing critical support to the RS-25 test project. Teleworking the majority of his time, Michael has successfully managed many facility refurbishment projects on the A-1 Test Stand and was a critical player in preparation for the continuation of the RS-25 engine test series that was conducted in the summer of 2021. Michael also provided support to the historic Space Launch System (SLS) Green Run test series.

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MAKING A DIFFERENCE FROM A DISTANCE

TEENIA PERRY
PROJECT MANAGER
NASA CENTER OPERATIONS DIRECTORATE

Teenia continues to manage the center's immediate and long-term repair needs resulting from Hurricane Zeta in 2020 and Hurricane Ida in 2021. She has managed this work, along with her normal responsibilities, while predominately working remotely.

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MAKING A DIFFERENCE FROM A DISTANCE

TROY FRISBIE
OPERATIONS MANAGER
NASA CENTER OPERATIONS DIRECTORATE

Troy coordinated several successful data calls for the Construction of Facilities (CoF) program and other programs during the mandatory teleworking environment. These data calls brought much needed funding to the center. He also was lead instructor for a CoF training that, for the first time, was conducted virtually. In addition, Troy serves on an agency team for rewriting of the NASA Policy Directive 8820, "Design and Construction of Facilities."

The "Making a Difference from a Distance" campaign features NASA and NASA contractor employees representing SSC who were nominated by either management or their colleagues highlighting the outstanding contributions employees are making in a virtual work setting.

New Era Begins as Stennis Becomes Independent in 1974

On Dec. 7, 1972, the final mission of NASA's Apollo Program launched. Even as the last mission of the Apollo Program, it had a few firsts: the first night launch of a U.S. human space flight, the first mission to be commanded by a person with no test pilot background, and the first mission not to have a test pilot on board. It was also the third and last time the Lunar Roving Vehicle, developed and managed by Marshall Space Flight Center, was used. Finally, it marked the final human transport launch of the Saturn V rocket, with which Stennis Space Center is very familiar.

In 1972, Stennis saw the end of an era. The new year of 1973 seemed grim for the few employees left at Stennis. After the Apollo Program ended, workforce sizes reduced as the facility faced tough times. However, an engine test project was on the horizon for the new space shuttles. The space shuttles were designed as reusable vehicles to carry humans to low-Earth orbit following the Apollo Program.

Stennis leadership jumped at the chance to test the engines that would power the shuttle fleet. As a result, a campaign to have shuttle engines manufactured at Michoud Assembly Facility in nearby New Orleans and tested at Stennis went into motion. One of the companies entering bids for the project was the Lockheed Propulsion Co. of California, which embraced the idea of using Michoud and Stennis to perform the work. Other companies putting in bids for the job were Thiokol Chemical Corp. of Brigham City, Utah; Aerojet Solid Propulsion Co. of Sacramento, California; and United Technology Center of Sunnyvale, California.

Apollo 17 launches on Dec. 7, 1972, on engines tested on Stennis Space Center.

With bids submitted, a delegation of elected officials, community leaders and business people from Louisiana and Mississippi began lobbying for the work in their respective states. Finally, in late 1973, the award was given to Thiokol Chemical Co. The announcement angered the local community around Michoud and Stennis. A few years earlier, Stennis had been named "the nation's foremost propulsion test site."

The announcement set off a series of events that would shape the future of Stennis: the protest of the solid rocket motor contract award to Thiokol; calls for "full utilization" of Mississippi's testing site by U.S. Sen. John C. Stennis, U.S. Rep. Trent Lott, and other Mississippi and Louisiana officials; and a campaign to establish the test site as an independent NASA installation no longer under the direction of Marshall Space Flight Center in Huntsville, Ala.

On June 14, 1974, Stennis became an independent installation of NASA, reporting to NASA Headquarters. Site Director Jackson Balch was quite pleased with the changes, saying, "It will be kind of nice to be a member of the club."

Just a year later, June 24, 1975, a brief but significant event occurred at the newly independent site, the first ignition test of a space shuttle main engine. It lasted just a second but marked Stennis's return to propulsion testing. Moreover, the test opened the door for testing projects to follow, including the current testing of engines that eventually will carry humans further into space than ever.

Online Resources

Administrator's Visit

WLOX Coverage

WXXV Coverage

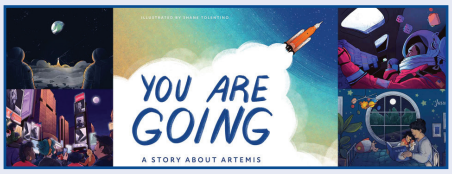
Stennis Emergency Management

NASA Coronavirus Response

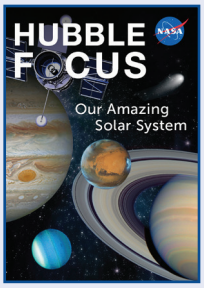
Stennis Fact Sheets

I Am Stennis Facebook Videos

First Woman Graphic Novel

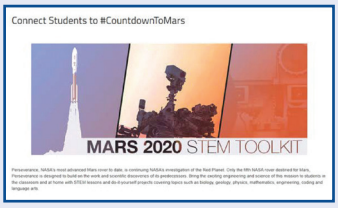


You are Going
Children's Book

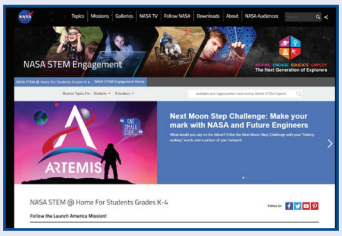


NASA E-Book Downloads

Stennis Artemis Resources page

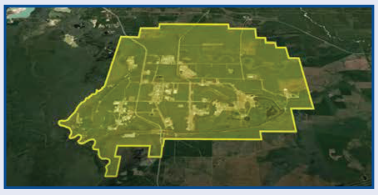


MARS 2020 STEM Toolkit



NASA STEM@Home for Students

NASA at Home



Stennis Virtual Tour