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Stennis Team Lifts SLS Core Stage to Success

See page 5

When I find myself by a warm body of water, it is only natural that I lounge around. I love soaking up the sunshine, sipping on a sweet Shirley Temple – Nana's secret recipe, of course. Shh! It is too good to share.

I usually try to keep my thoughts casual during this time, focusing on that movie I watched last week or that song I keep humming. But when I find myself thinking about the last year and a half, my thoughts tend to be a little deeper.

Thinking about the year 2020, it is hard not to get lost in the chaos. With a year defined by the world-wide COVID-19 pandemic, it is hard to imagine that anything could get crazier than that, but it did – does anyone remember those big, scary hornets?

I was personally hoping to catch one as a nice little snack – Ark!

Anyway, when my mind gets overwhelmed, I try to remember the good things that my time in quarantine gave me – all the yummy food I got to eat, the time I got to spend with Nana Gator, and the shows I got to catch up on.

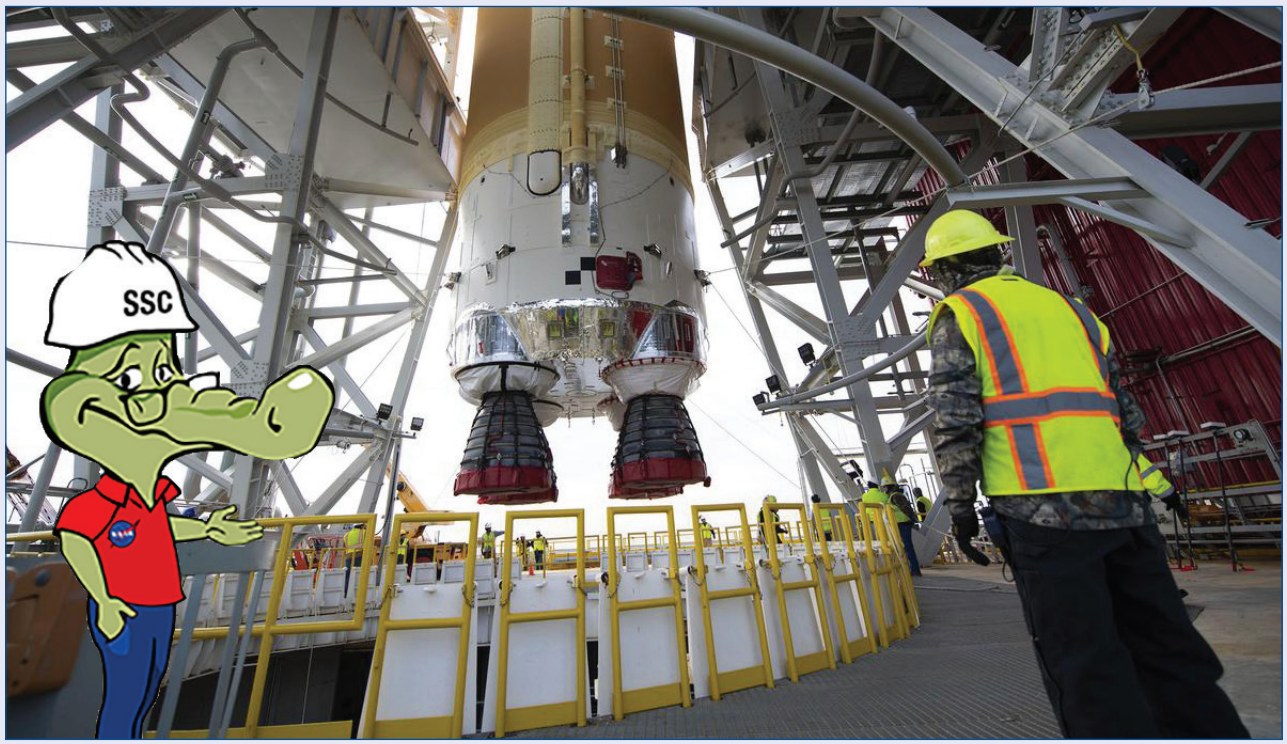
My personal favorite memory of 2020, you ask? The time I got to stand in the B-2 Test Stand at Stennis Space Center, watching my friends make history.

In early 2020, the core stage of the Space Launch System (SLS) was shipped on site, where it was lifted by two cranes and put into the testing facility. The process took a good part of two whole days.

Can you imagine? Seeing the size of that giant piece of machinery, suspended over 200 feet above the ground, was jaw-dropping. It made me feel like an ant.

Looking at the size of the shiny SLS core stage made me realize how small the world is in which we live. For me, the heavy-lift article is a moment of brightness when the world felt dark, a shining reminder that the bad will not always be bad. All you have to do is take a step back and appreciate the small things, but when the big things come, appreciate them more.

If you do not have a good memory from the last year, that is okay. Do not worry; your moment will come soon. But while you wait, feel free to turn to page 5 and relive my moment with me. Maybe the light will shine a little on you, too.



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NASA's MOON to MARS MISSION

NASA Continues RS-25 Testing with Sixth Installment at Stennis Space Center

NASA conducted its sixth RS-25 single-engine hot fire Aug. 5 on the A-1 Test Stand at Stennis Space Center, a continuation of its seven-part test series to support development and production of engines for the agency's Space Launch System (SLS) rocket on future missions to the Moon. Operators fired the engine for more than eight minutes (500 seconds), the same amount of time RS-25 engines need to fire for launch of the SLS rocket. Four RS-25 engines, with a pair of solid rocket boosters, will help power SLS at launch. NASA already has tested engines for the rocket's first four Artemis missions to the Moon, allowing operators to turn their focus towards collecting data to demonstrate and verify various engine capabilities for future engines. Along with providing performance data to Aerojet Rocketdyne, lead contractor for the SLS engines, the Aug. 5 test enabled the team to evaluate new engine components manufactured with cutting-edge and cost-saving technologies, eliminate operating risks, and enhance engine production. In addition to operating the engine at 109% of its original power level for extended periods during the hot fire, NASA verified new manufacturing processes while evaluating the performance of the engine's low-pressure fuel turbopump. The pump significantly boosts the pressure of liquid hydrogen delivered to the high-pressure fuel turbopump to help prevent cavitating, the forming of "bubbles" or "voids", which can collapse or cause shock waves that may damage machinery. NASA is building SLS as the world's most powerful rocket to send the agency's Orion spacecraft to the Moon. With Artemis, NASA will land the first woman and the first person of color on the lunar surface and establish long-term exploration on the Moon in preparation for human missions to Mars. SLS and Orion, along with the commercial human landing system and the Gateway outpost in orbit around the Moon, are NASA's backbone for deep space exploration. SLS is the only rocket that can send Orion, astronauts, and supplies to the Moon in a single mission. An integrated team conducts RS-25 tests at Stennis Space Center, including NASA, Aerojet Rocketdyne, and Syncom Space Services, the prime contractor of Stennis facilities and operations.

A dramatic triplet of galaxies takes center stage in this image from the NASA/ESA Hubble Space Telescope, which captures a three-way gravitational tug-of-war between interacting galaxies. This system – known as Arp 195 – is featured in the Atlas of Peculiar Galaxies, a list which showcases some of the weirder and more wonderful galaxies in the universe. Observing time with Hubble is extremely valuable, so astronomers do not want to waste a second. The schedule for Hubble observations is calculated using a computer algorithm which allows the spacecraft to occasionally gather bonus snapshots of data between longer observations. This image of the clashing triplet of galaxies in Arp 195 is one such snapshot. Extra observations such as these do more than provide spectacular images – they also help to identify promising targets to follow up with using telescopes such as the upcoming NASA/European Space Agnecy/Canadian Space Agency James Webb Space Telescope.

NASA in the News

Mars Helicopter Awarded Laureate

The "little helicopter that could" has garnered attention, fans, and numerous accolades, with the latest coming from Aviation Week Network in the form of a 2021 Laureate Award. The Laureate Awards honor "extraordinary achievements in aerospace." When the 4-pound (1.8 kilogram) rotorcraft hovered on Mars for 39.1 seconds on April 19, 2021, it was the first instance of powered, controlled flight on another planet – a true Wright brothers moment. Since then, Ingenuity has chalked up 11 flights, with a total distance of just over 1 mile (2.2 kilometers), reaching an altitude record of 40 feet (12 meters) in its 10th sortie. Ingenuity hitched a ride to the Red Planet on Perseverance, which landed on Feb. 18, 2021. It was designed as a technology demonstration and carries no science payloads on board. Its mission was to prove that humanity can fly powered vehicles on Mars. The helicopter is paving the way for possible future missions. The Laureate award will be presented at a ceremony in October in McLean, Virginia.

Hubble Finds Evidence of Water Vapor

For the first time, astronomers have uncovered evidence of water vapor in the atmosphere of Jupiter's moon, Ganymede. This water vapor forms when ice from the moon's surface sublimates – that is, turns from solid to gas. Previous research has offered circumstantial evidence that Ganymede, the largest moon in the solar system, contains more water than all of Earth's oceans. However, temperatures there are so cold that water on the surface is frozen solid. Ganymede's ocean would reside roughly 100 miles below the crust; therefore, the water vapor would not represent the evaporation of this ocean. Astronomers re-examined Hubble observations from the last two decades to find this evidence of water vapor. This finding adds anticipation to the European Space Agency's upcoming mission for JUpiter ICy moons Explorer (JUICE). To see a full list of the Aviation Week Networks 64th Annual Laureate Awards winners, click here. For more information about the water vapor evidence discovered on Jupiter's Moon, click here.

Stennis Team Succeeds in Heavy-Lifting Work for SLS Core Stage Testing

This summer, Olympic weightlifters broke records pursuing gold medals in Japan. But in early 2020, another historic heavy lift took place on the other side of the world for a prize to advance human space exploration.

A specialized team of professionals at NASA's Stennis Space Center near Bay St. Louis, Mississippi, defied gravity to lift the core stage of the Space Launch System (SLS) – all 188,000-pounds – to gently position it on the historic B-2 Test Stand, which has tested engines since the Apollo Program.

NASA is building SLS as the world's most powerful rocket to return humans into deep space, to the Moon, and, eventually, Mars. Through the Artemis program, NASA will send the first woman and person of color to the Moon by 2024.

In January 2020, after the SLS core stage was installed on the B-2 stand, NASA began a series of critical tests called Green Run. The term "Green Run" refers to the testing of new hardware for the first time and in the same way it must operate on a mission. The goals of the tests were to ensure astronaut safety, to increase probability of a successful Moon landing, and to discover and address any stage or systems issues. For the final test of the series, operators fired all four RS-25 engines simultaneously, just as during an actual launch, to generate a combined 1.6 million pounds of thrust.

The testing built on early work of the heavy-lift team. Like any good team before a big event, the lift team practiced to ensure its efforts were successful. The preparation began the summer of 2019 as the team practiced on the core stage pathfinder, a full-scale shape, size, and weight replica of the actual flight unit.

The pathfinder was built to allow NASA teams – including the Stennis heavy-lift crew – to practice handling techniques and procedures needed for the actual core stage. For the Stennis team, this included a detailed rehearsal to practice lift procedures and crane location before the official core stage arrived.

The core stage pathfinder arrived at Stennis in early May 2019. Once it was rolled out on the tarmac, crews practiced small lift procedures and installed equipment needed to perform a full lift and installation. The actual lift-and-installation procedure took place through the night and early morning hours Aug. 23-24, when weather conditions were most optimal.

Once lifted, the pathfinder was carefully positioned into place on the stand, settling on so-called "yellow boxes," spherical bearings used to anchor the core stage in position on the stand. At one point, a procedural miscalculation resulted in a broken pathfinder aft strut. Once repaired, the lift team implemented more hands-on training in handling procedures to prevent the same mistake from occurring during lift of the core stage.

With the pathfinder replica, the team also discovered a need for cable management. Several cables extended down from the Hydra Set Precision Load Positioner, a device that allows the team to raise and lower the stage in micro increments, and the master link device used to control the test article while it is in the air. To remedy the issue, the team attached an arm to the "spider" – a yellow lifting cap that allows the B-2 Test Stand derrick crane to attach to the forward end of the test article. This addition allowed the team to secure the cables away from the rocket's body, preventing them from damaging the core stage's thermal protection system.

"The pathfinder really laid the path for the core stage installation and removal to be more successful," said Casey Wheeler, the NASA lifting device and equipment manager at Stennis. "It helped us run through processes that you would have not been able to run through completely without actually having a complete mock-up. The practice helped people become more familiar with the procedures and gain confidence with what exactly they were supposed to be doing whenever the multi-billion-dollar test article actually arrived."

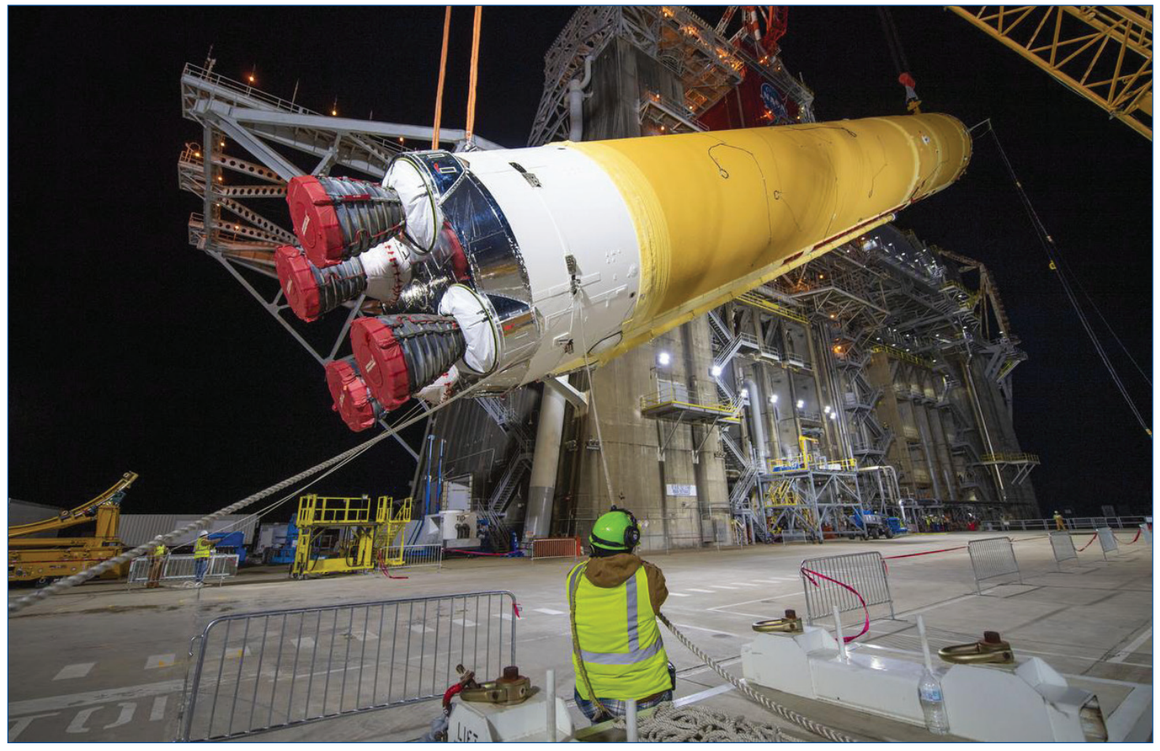
With the pathfinder's removal on Aug. 29, 2019, the lift team prepared for the actual core stage. On Jan. 12, 2020, the SLS stage, 212 feet tall with a diameter of 27.6 feet, arrived on site and was rolled onto the B-2 Test Stand tarmac. The subsequent two-day lift and installation process Jan. 21-22 required over 150 personnel, as well as specialized lifting devices and equipment.

As practiced with the pathfinder, the lift process began by attaching a cable from the derrick crane on top of the B-2 Test Stand to the spider device on the forward section, or front end, of the core stage. Ground tail crane cables were attached to the aft end, or back end. Once both cranes were attached properly, the stage was lifted off the ground support equipment to hover horizontally above the ground. The derrick crane then lifted the forward section towards the sky as the ground tail crane assisted in guiding the aft end, allowing it to stay steady at its elevation just above the ground as the core stage was "broken over" into a vertical position.

One of the biggest risks during this delicate procedure was wind speed – a factor beyond the team's control. Both installation and removal processes took up to 24 hours and required optimal wind conditions. As a result, the operations were performed at the night when wind conditions were most favorable.

During the initial lifting process, the core stage is horizontal and closer to the ground, allowing for a maximum of five mph sustained winds and 10 mph wind gusts. Any higher wind speeds risked significant damage to the ground equipment.

Continued on Page 6



Continued from Page 5

Once vertical and lifted skyward, the core stage had to be swung into place and positioned into the narrow test slot on the B-2 Test Stand. During this stage of operations, suspended over 200 feet above ground, the core stage could only handle a maximum of 10 mph sustained winds and 15 mph gusts. This threshold was established to prevent any unwanted movement that could result in damage to the crane, stand, or test article itself. The team had to wait for favorable wind conditions to move forward.

When wind speeds were deemed appropriate, the core stage was slowly placed into the stand, where there was less than a few inches space between the testing article and the supporting test stand framework. The Hydra Set and master link devices helped provide 360-degree movement as the test article was lowered into place with a precision of 0.0001 inches. This guaranteed the test article's center of gravity, which is not centrally located, was appropriately positioned in the test stand.

While the pathfinder replica helped the team practice lifting and installation processes, it could not predict the effects of Mississippi weather on the actual core stage. Soon after the stage was installed and Green Run tests begun, work was temporarily halted due to the COVID-19 pandemic. Once testing work resumed with safety and health restrictions in place, the test team endured a summer of record-breaking tropical storm activity.

Though securely installed on the stand, the core stage was left vulnerable to the elements for an extended time. This caused several pieces of critical lifting equipment to be exposed to the elements and to unexpected levels of precipitation, humidity, and fog common to the Gulf Coast. Moisture intrusion into the Hydra Set and the master link devices caused complications, forcing the team to troubleshoot to ensure the mission was not jeopardized.

In addition to waterproofing the original Hydra Set, an extra device was transported from Marshall Space Flight Center in Huntsville, Alabama, to Stennis to prevent any lack of coverage. A third device also was present on site and available for spare parts as needed. Both allowed for seamless repairs of any unforeseen complications but ultimately were not needed or used.

Green Run testing of the SLS core stage proceeded throughout 2020 and into early 2021. An initial hot fire test of the four RS-25 engines on Jan. 16, 2021, experienced an early shutdown, which led to a second attempt a couple of months later.

On March 18, operators fired the stage engines for a more than 8 minutes, the same amount of time needed during an actual launch, marking a successful end to Green Run testing.

Following refurbishment work, the spotlight fell once again on the Stennis heavy-lift team as it prepared to remove the core stage from the stand for transport to Kennedy Space Center, Florida and preparation for the Artemis I mission.

Once again, weather proved the key concern. Daily "Go/No Go" meetings, at 6 a.m. and 6 p.m., were essential in deciding the team's plan of action. In each meeting, participants would receive a full weather report, including wind patterns and predictions, from the National Weather Service and discuss possible paths forward.

The meetings were essential because once the removal process began, there was little room for flexibility that would allow the team to revert to a safe position. Instead, the team would be forced to continue until there was no longer a load on the crane. The longer the load was suspended, the more possibility there was for mechanical failure or inclement weather to arise.

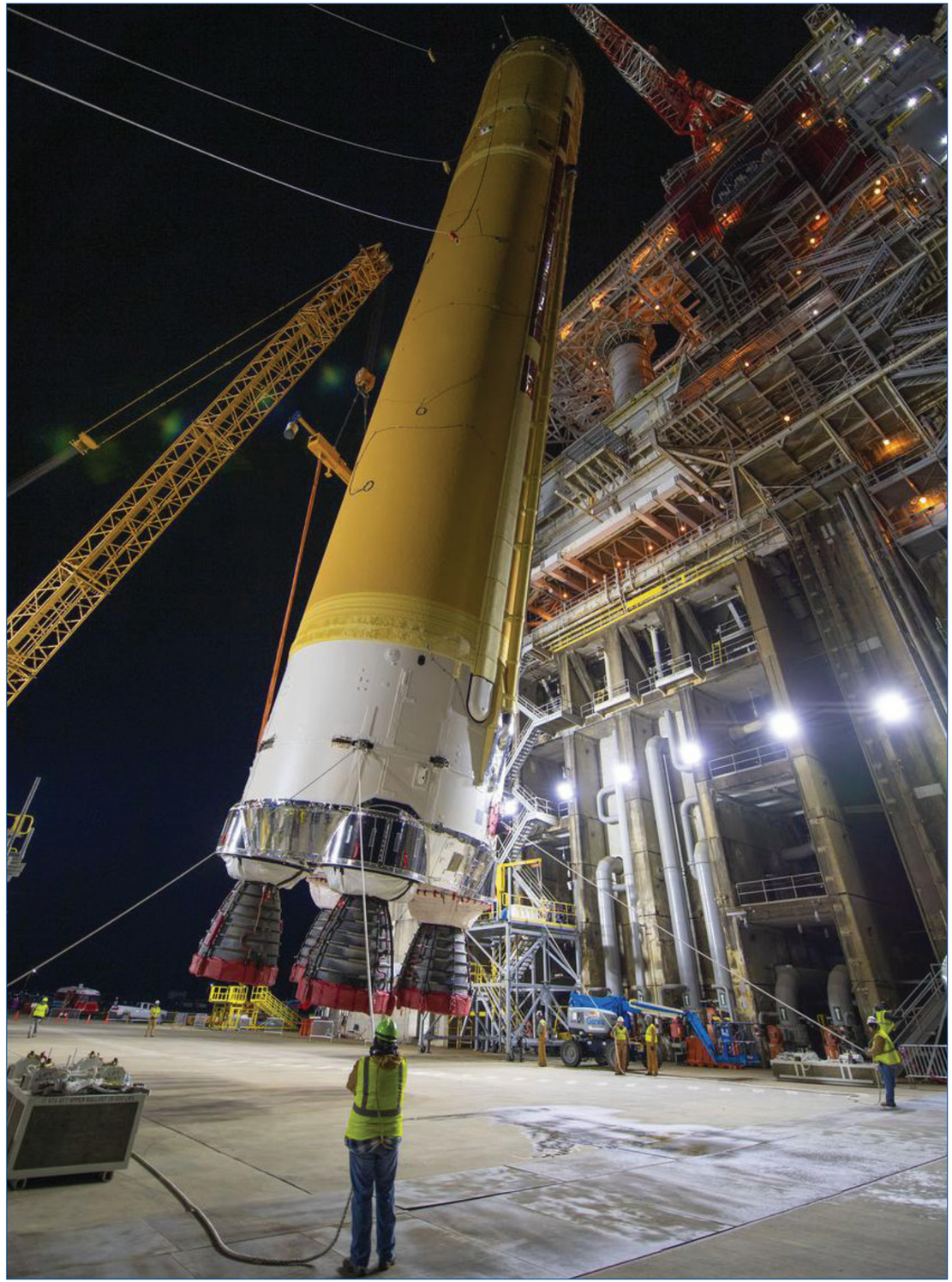
The twice-a-day weather reports allowed the team to identify upcoming windows of opportunity and keep the test article safe.

"You are not going to get perfect conditions one hundred percent of the time; in fact, they usually do not work out in your favor to be honest," Wheeler said. "If something could work against you, it typically would at the most inconvenient time. You have to go into it with the mind-set of 'Hey, we might be stuck here waiting for a window for the next couple weeks, but it is what it is. There is nothing that you can do about that.' All you can do is try to stay as involved, informed, and coordinated as best you can, so that everybody stays on the same page. You do not want to lose any momentum. Your marching army is ready to go whenever the right opportunity presents itself."

The patience, preparation, and training paid off. More than one year after the core stage was installed and following a number of weather holds, the removal process began on April 19 and continued into the following day. In this case, the operation was performed in a reverse fashion. While in the vertical position, the core stage was removed from the test stand framework and lowered back over into a horizontal position to settle on the ground support equipment.

Following some prep work, the stage was loaded onto NASA's Pegasus barge and transported to Kennedy in preparation for launch. This was not only a moment of excitement for the team but of relief as well. The long hours and extensive problem solving resulted in mission success, leaving heavy-lift team members with an overwhelming sense of accomplishment.

"We achieved something that was incredibly difficult," Wheeler said. "There was a real sense of pride."



The first flight core stage for NASA's Space Launch System (SLS) rocket arrived at Stennis Space Center on Jan. 12, 2020, setting the stage for a Green Run test series prior to launch of its maiden Artemis I test flight. Within hours of arrival, the stage was rolled off the barge onto the B-2 Test Stand tarmac. (top photo, page 5. On Jan. 21-22, crews lifted and installed the core stage in the B-2 stand (bottom photo, page 5; page 6 photo; left and top right photos, page 7). Operations required crews to lift the massive core stage from a horizontal position into a vertical orientation, a procedure known as "break over," before raising, positioning, and securing it on the stand. Once fully tested, the core stage was removed from the B-2 Test Stand on April 19-20 for transport to Kennedy Space Center to join the other SLS rocket stages and components (center and bottom right photos, page 7). It will be used to launch the Artemis 1 test mission to the Moon, the first in a series of Artemis program flights that will return humans, including the first woman and person of color, to the Moon.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Lead Mechanical Test Operations Engineer Makes Her Space Dreams a Reality at Stennis Space Center

Standing in her grandparents' backyard in the small town of Cocoa Beach, Florida, 13-year-old Nyla Trumbach watched NASA's space shuttle launch from Kennedy Space Center on nearby Merritt Island.

"Not only could I hear it, but I could 'feel' it," Trumbach said, adding it was something she would never forget.

After a teacher encouraged her to study engineering and her grandfather, who worked in the space industry for most of his life, suggested applying for a job at Stennis Space Center, Trumbach was able to hear that rumble again. However, this time she was the one in control.

In 2005, Trumbach, a native and resident of Poplarville, Mississippi, began her career at nearby Stennis as a systems engineer and project manager for High Performance Solutions, a Navy contractor. She maintained facility systems for the Naval Oceanographic Office, the Naval Small Craft Instruction and Technical Training School, and Special Boat Team-22. After Hurricane Katrina, a Category 5 hurricane, destroyed parts of south Mississippi in August 2005, she and her team kept power flowing to critical Navy systems with generators.

Two years later, Trumbach was hired by Pratt and Whitney Rocketdyne, now Aerojet Rocketdyne, as a mechanical test engineer. In this role, she supported the space shuttle main engine testing on the A-2 Test Stand and RS-68 test operations on the B-2 Test Stand.

In 2011, Trumbach became a mechanical test operation engineer with Lockheed Martin at Stennis. During this time, she supported refurbishment of the A-1 Test Stand for J-2X powerpack testing. She subsequently broke barriers to become the first female engineer at Stennis to conduct a J-2X powerpack2 test. At the time, the J-2X was being developed for use as a next-generation engine.

The powerpack was a system of components installed on the top portion of the J-2X engine, including the gas generator, oxygen and fuel turbopumps, and related ducts and valves. As designed, the powerpack would feed propellants into the thrust chamber system to produce engine thrust. In 2010, Trumbach ran her powerpack test for an incredible 1,261 seconds – one of the longest Stennis hot fires on record.

The experience was life changing, Trumbach said.

"I had been a mother for about a year and a half and had been struggling with my work life balance," she noted. "Running that test let me prove to myself and others that I could continue to grow in my career and still feel like I was doing my best as a mother. That was a huge milestone in my career."

In 2012, when hired by NASA as a mechanical test operations engineer, Trumbach carried that confidence with her to support testing of RS-25 engines for use on the new Space Launch System (SLS) rocket that will return humans to the Moon as a part of the Artemis program. By 2018, she had been promoted to the lead mechanical test operations engineer.

Poplarville native and resident, Nyla Trumbach, a NASA lead mechanical test operations engineer, broke barriers as the first female to conduct a J-2X powerpack2 engine test at Stennis Space Center. The testing, as well as her work with RS-25 engines, has contributed to the advancement of NASA's space exploration mission.

When Green Run testing of the SLS core stage began in January 2020, Trumbach had the opportunity to serve as one of the two liquid hydrogen transfer engineers. During Green Run, operators tested all core stage systems to demonstrate they were ready for flight, culminating with a hot fire of the unit's four RS-25 engines just as during an actual launch.

The experience allowed Trumbach and her team to attempt things never done previously. Hot fire of the large SLS stage required 537,000 gallons of liquid hydrogen, pushing the facility systems to its limits. Three liquid hydrogen barges were filled to 113% capacity, higher than their typical 111%.

To ensure the core stage was not only full of liquid hydrogen but there was also some left over in case of unforeseen events, two of the three barges had to be completely emptied – not typical operations for the propellant barges. However, Trumbach and her team were able to overcome the challenges and see their hard work pay off in real time.

"Being involved in SLS core stage Green Run testing was an honor and a privilege," Trumbach said. "Standing in my grandparents' backyard, I never thought I would get the chance to see or participate in something like that. It was very exciting, but overwhelming when those engines lit up and finally went full duration. Tears came to my eyes."

Despite exceling in a typically male-dominated field, Trumbach does not let the pressure get to her. In fact, she said it hardly ever crosses her mind and that she is happy to have a career doing something she loves. Trumbach chooses to embrace the differences between her and her colleagues. She views her team as a family compiled of unique, valued individuals working together through both good and the bad to accomplish one major goal – advancement in human space exploration.

"Testing rocket engines can be dangerous and stressful," Trumbach said. "It is very important for us to be able to trust one another. Being a close-knit group of people helps keep lines of honest communications open. It also makes it fun!"

For the last 16 years, Trumbach has smashed through glass ceilings and made her space dreams a reality. Looking forward, she is excited to see the first successful launch of SLS and subsequent launches that will land the first woman and first person of color on the lunar surface.

"I would tell young girls interested in this field to not place boundaries on themselves because they are female," Trumbach said. "Work hard and focus on being your best."

When asked about her biggest accomplishment, however, she will speak of the growth she found within herself, both spiritually and as a mother, in the last 10 years. With the support of her parents, husband, and NASA, Trumbach has been able to balance work and life, and even homeschool her children. In her spare time, she enjoys walking her pet poodle, participating in outdoor activities with her family, including camping and kayaking, taking care of her plants, or tending to her family's Nigerian dwarf goats and bantam chickens.

Virgin Orbit Expands Its Horizon with Stennis

When Virgin Orbit, a satellite-launch company based in California, sought to expand their horizons, it was only natural for them to think about NASA's largest rocket engine test site – Stennis Space Center.

With an established, positive reputation, specialized infrastructure equipped to test high-power rocket engines, and a 55-year track record in propulsion testing, Stennis Space Center offered a unique set of benefits, including test stands that can simulate an entire rocket engine, which allows their partners to test single components rather than shipping an entire engine on site.

In November 2020, through a Space Act Agreement that enables NASA to enter partnerships with organizations, Virgin Orbit secured a partnership with Stennis to reimburse the center for any testing costs. As a result, they were given the opportunity to utilize Stennis' experience and expertise, allowing them to avoid building their own testing facilities while gaining valuable hands-on experience.

Virgin Orbit, a satellite-launch company, partnered with Stennis Space Center to successfully test their Thrust Chamber Assembly, running a hot fire test campaign for a total of 974.391 seconds.

The Virgin Orbit's test campaign had team members focused on the 75,000-pound force Thrust Chamber Assembly (TCA), which consists of an injector, combustion chamber, and nozzle. The TCA is not an entire engine. Instead, it is where the propellants are mixed, combusted, and exhausted. The objective is to test different propellant injector configurations to determine which configuration will maximize performance and efficiency. Most of the main engine can be simulated with the test stand itself.

"With excellent support from the NASA SSC team, Virgin Orbit successfully completed the test campaign and collected invaluable data on key injector parameters and their effects on engine performance," said Vishal Doshi, a senior propulsion design engineer at Virgin Orbit.

This testing took place on the E-1 Test Stand, Cell 1, configured for the new test in the beginning of 2021. The hot fire series began March 30 and lasted until the final testing day July 20.

"Commercial projects are fast-paced, help us learn new things, and give us an opportunity to help with the commercialization of space," said Paul Rydeen, NASA project manager at Stennis.

Originally, there were 30 tests scheduled involving 10 different injector configurations at a minimum of three tests each. However, the project was later expanded to 14 injector configurations and many more tests.

When the Virgin Orbit team became familiar with the testing process, they were able to establish a rhythm that led them to success, allowing them to accomplish as many as four tests per day. Each of these tests would typically last a total duration of 12.1 seconds. With a total of 87 hot fire tests performed over the testing period, the total test time combined equals 974.391 seconds.

"Virgin Orbit has been working with the Stennis test team since late 2020 on a variety of complex engine related activities," said Tom Alexiou, program manager for Virgin Orbit's evolved launch vehicle. "Their support of us has been exemplary in all facets of the program. We continue to maintain an excellent working relationship and look forward to our latest N3.2 engine development testing program that will take us into 2022."

The testing at Stennis directly contributed to the design changes appearing on the Newton 3 engine – a first stage engine that uses Rocket Propellent-1 and liquid oxygen as propellants. A typical run time for this stage is three minutes with a max speed of 8,000 miles-per-hour. Virgin Orbit uses Newton 3 to propel the LauncherOne rocket, a two-stage, orbital, air-launched vehicle carried to the upper atmosphere and released over the Pacific Ocean. This rocket holds the title of the first orbital class, air-launched, liquid-fueled rocket to successfully reach space.

Stennis News

Space Flight Awareness Team Award

The Space Launch System (SLS) Core Stage Green Run team that completed a series of critical tests of the stage and its sophisticated systems were recognized with a NASA Space Flight Awareness Award (SFA) during a virtual ceremony July 26. The team was recognized for its technical expertise and personal dedication to the Green Run campaign, a series of eight tests to demonstrate the SLS stage is ready for flight on the Artemis I mission. The citation noted the team – comprised of NASA, Boeing, and Aerojet Rocketdyne personnel – made significant positive contributions to the mission success of the upcoming Artemis I flight.

NASA Stennis recipients were: Angelica Baker, Byron Bordelon, Cory Beckemeyer, John (Briou) Bourgeois, David Carver, Elizabeth Calantoni, Jack Conley, Jasper Cook, Bradley Denmark, Dawn Davis, Alex Elliot, Andrew Graves, Daniel Goad, Jared Gro-ver, Juan (Pablo) Gomez, Robert Goluba, Andrew Hen-ken, Gage Hass, John Honor, Michael Holmes, Scott Jensen, Curtis Lockwood, Hooper (Dwayne) Lavigne, Lester Langford, Kristopher Mobbs, Ryan McKibben, Tristan Mooney, Nicholas Nugent, David (Skip) Roberts, Ryan Roberts, Marc Shoemaker, Richard Smith, Robert Simmers, Ryan Seals, Chad Tournillon, Nyla Trumbach, Burnley (BT) Wigley, and Derek Zacher.

For more on SFA team awards, click here.

Peterson to lead NASA Subcommittee

Jason Peterson, range and aviation operations manager at Stennis Space Center, has been named to head the Integrated NASA Unmanned Aerial System (UAS) Subcommittee, established to improve agencywide communication and coordination of UAS information, promote integration between NASA and other agencies, improve customer interfaces, mitigate risk to mission, and optimize safety.

The subcommittee will provide policy and procedural recommendations on UAS operations to the Intercenter Aviation Operations Panel for consideration as agencywide policy. The subcommittee includes representatives from all 10 NASA centers. Meetings are held quarterly to discuss issues affecting UAS operations, from Federal Aviation Administraton-imposed regulations and aircrew requirements to sharing ideas on ways to make the overall UAS program better.

NASA Honors Stennis Employees

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's Human Exploration and Operations (HEO) Mission Directorate has been recognizing HErOes performing necessary and critical work.

Overall, 22 Stennis Space Center employees have been cited by the NASA directorate for their Artemis-related efforts.

NASA senior engineer Greg Carmouche was recognized July 23 for outstanding contributions to increase the capabilities and reliability of the technical systems at Stennis Space Center support facilities, better positioning the site to support the wet dress rehearsal and hot fire test of the Space Launch System (SLS) core stage.

Veronica Causey, a NASA SLS senior management and program analyst at Stennis Space Center, was recognized Aug. 6 for providing unwavering support to the SLS core stage team. Causey was cited for her proactive assessments of needs when a second Green Run hot fire was added, which helped ensure critical resources were available to enable all required activities.

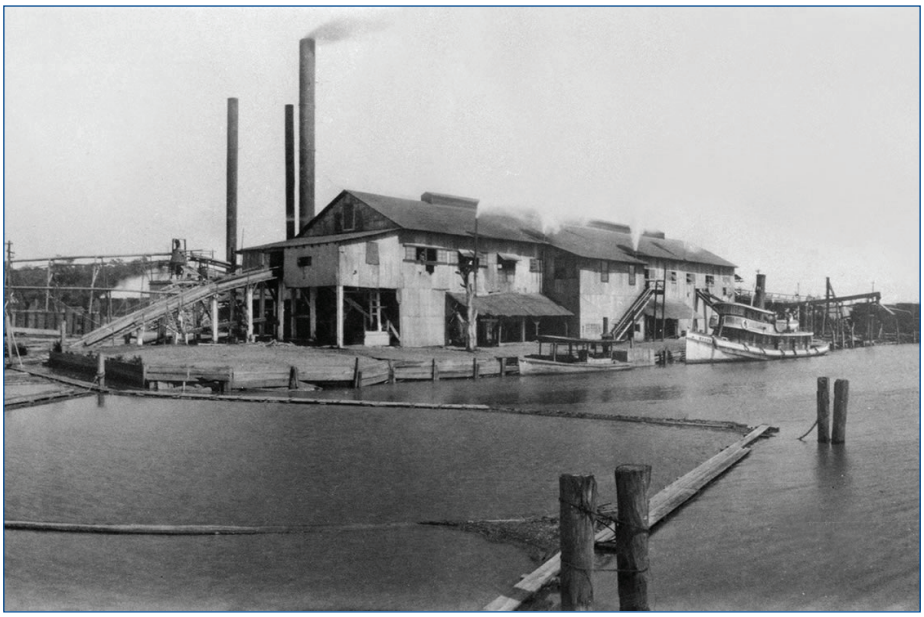
NASA electrical design engineer Jasper Cook was recognized Aug. 13 for outstanding contributions to the NASA Engineering and Test Directorate at Stennis space Center. His support was integral to the success of the activation of the B-2 Test Stand for the SLS core stage Green Run test series.

Maury Vander, NASA test operations chief at Stennis Space Center, was recognized Aug. 13 for knowledge, skills, and abilities that were critical to the SLS core stage Green Run team's success as they moved through the various test of the flight unit and its sophisticated systems and that will be critical to future wet dress and hot fire tests at the Mississippi center.

History of Stennis Site Dates Back to the 1700s

The history of the area where the Stennis Space Center currently sits can be traced back before Mississippi entered statehood in 1817. There were five towns located in what now is the acoustic buffer zone that surrounds Stennis: Napoleon, Logtown, Gainesville, Santa Rosa and Westonia.

The town of Napoleon began with 640 acres granted by the British Government to John Claudius Favre in 1767. By 1808, Favre had transferred the land to his son, Simon, who built the first house and store in what would become the small town of Napoleon. The town's claim to fame was a home named "Parade Rest" that was more than 3,000 square feet with thousands of azaleas and camellias decorating the landscape.



In its heyday, the H. Weston Lumber Co. sawmill in the South Mississippi community of Logtown along the Pearl River was said to be the largest sawmill in the nation.

At its peak, Logtown had 3,000 residents, most of whom worked for the lumber industry, which was very prevalent in the area. The earliest resident of what would eventually become bustling Logtown was Jean Baptiste Rousseve, who was given the land in 1788. The first log mill was built there in 1845, and the town grew until 1930. With the Great Depression and the railroad locating north of the town, only 250 residents were left by 1961.

Gainesville was the only town that lay in what is now known as the Stennis fee area. It began in 1810 with a land grant by Dr. Ambrose Gaines for more than 500 acres in what was then Spanish territory. Gaines laid out his plan for a new town, naming it Gaines Bluff. Gainesville grew due to the shipping and logging industries along the Pearl River. In 1883, the Southern Railroad Line between New Orleans and Meridian, Mississippi, bypassed the town by 10 miles. When NASA was looking to build the rocket test facility in 1961, Gainesville only had 35 families left.

Santa Rosa was one of the more distinctive towns in what is now the Stennis buffer zone. At its largest, it only had a handful of homes, but what it lacked in population, it made up for in character. In the town were several stores and churches, a post office, a one-room school house, and quite a few bars. These "dens of inequity" were closed and chased out of town many times, but the bars always reopened. There was quite a bit of illegal activity going on at the bars for the time, one being the sale of whiskey. Mississippi was a dry state at the time, and moonshiners populated the area surrounding Stennis until the mid-1960s.

The town of Westonia was named for the lumber tycoon Horatio Weston who founded the H. Weston Lumber Company. Westonia grew up around the timber industry and also housed a repair station for railroad flat cars and steam engines. It was a small town with churches, stores, one hotel, a small school, and a couple of wells used for the steam engines that traveled through the town. After 1930 and the Great Depression, the timber industry in the area shut down. By the 1960s, the town was almost nonexistent.

On Nov. 1, 1961, on the grounds of the Logtown elementary school, U.S. Sen. John Stennis of Mississippi gave a speech to 1,500 people from the surrounding area. The government planned to build a rocket testing center on their land. Stennis spoke about the project and what the government was asking the people to do.

"There is always the thorn before the rose; … you have got to make some sacrifices, but you will be taking part in greatness," he said. It was a "call to arms" in the space race against the Soviet Union.

Soon, because of the sacrifices of the families in the surrounding towns to allow construction of the rocket engine test site, it was widely said, "If you want to go to the Moon, you first have to go through Hancock County, Mississippi."

Office of Diversity and Equal Opportunity

What is Gender Equity and Why Does it Matter?

Women's Equality Day, celebrated every Aug. 26, commemorates the passage of women's suffrage in the United States and highlights the hurdles overcome by the heroic women who faced violence and discrimination to propel the women's movement forward. Women's Equality Day also celebrates the achievements of women's rights activists and provides a reminder of the unique daily struggles that women face today, such as gender inequality.

Research from Pipeline Equity, Inc. shows that when organizations make a choice for gender equity, they experience greater growth, larger revenue, and positive results for their multiple stakeholders.

Before an organization can make the crucial decision to close the gender equity gap, which impacts not only businesses on an individual level but also the global economy, it is important to understand what exactly gender equity is, as opposed to other terms often used in similar conversations, such as gender equality.

Gender equity is defined as the fair treatment of women and men according to their respective needs. This may include equal treatment, or it may include treatment that is different but considered equivalent in terms of rights, benefits, obligations, and opportunities. Gender equity ensures opportunities are not limited on the basis of gender. It corrects gender biases so that economic outcomes improve for everyone.

Gender equity and gender equality are related; however, they are not the same. Gender equality refers to the equal rights, responsibilities, and opportunities of women and men, and boys and girls. Gender equality does not mean that women and men will be treated the same; it means that women's and men's rights, responsibilities, and opportunities will not be based upon their gender. In short, if gender equality is the end, gender equity is the means.

Gender equity impacts the economic pie for all. A future of gender parity is one filled with abundant opportunity, such as:

- Increased economic opportunities for businesses globally.
- Solutions to a worsening labor shortage.
- Diverse representation among leadership.
- Further innovation in the tech and startup industries.

The World Economic Forum projects if the world continues along its current trajectory, it will take 217 years to reach gender equality globally and 165 years to reach gender equality in North America. That is five more generations.

The country cannot afford to wait for five more generations. Data from 2019 indicates that:

- Women are paid, on average, 80 cents on the dollar of their male colleagues (the number is worse for women of color).
- Of the top 2 percent of wage earners in the United States, women are paid 39 cents on the dollar of their male colleagues.
- 90 percent of women leave the workforce due to workplace issues unrelated to having a child.
- Half of the women in STEM fields will leave their roles due to hostile work environments.
- In a time when finding qualified labor is an issue, women hold the majority of higher education degrees but are leaving the workforce at a consistent rate.

Pipeline found, through its research across 4,161 companies in 29 countries, that for every 10 percent increase in gender equity, a company experiences a 1-2 percent increase in revenue. The benefits are economic and measurable in dollars and cents. They extend to a company's diversity, its potential new leadership, and its opportunities for innovation.

Gender equity takes men's and women's respective needs and meets them equitably, giving everyone opportunities, regardless of gender. Gender equality is the result of those opportunities being available.

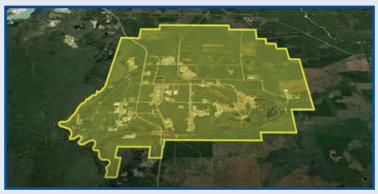
Gender equity is a quantifiable and data-driven economic opportunity. When people make gender equity a priority and choose to close the gender equity gap, they can realize the individual and global benefits that result.

Information in this article can be found at www.pipelineequity.com

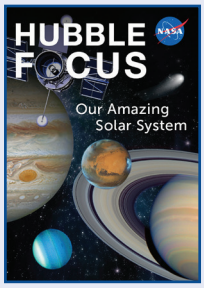
Online Resources

WATP-TV (Jackson) Series on Stennis Space Center

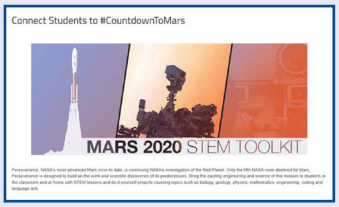
For part one, click here.
For part two, click here.
For part three, click here.
For part four, click here.



Stennis Virtual Tour



NASA E-Book Downloads



MARS 2020 STEM Toolkit

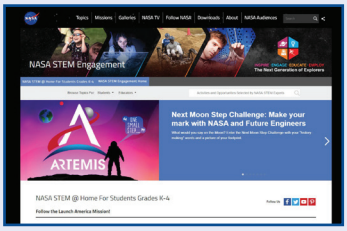
NASA at Home

Stennis Emergency Management

NASA Coronavirus Response

Stennis Fact Sheets

Stennis Artemis Resources page



NASA STEM@Home for Students

How to Draw Artemis

Hail & Farewell

NASA welcomes the following:

James Patrick Mitchell	AST, Experimental Facilities Techniques	Safety and Mission Assurance Directorate

NASA bids farewell to the following:

Lori Gibson	Management and Program Analyst	Office of the Chief Financial Officer