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LAGNIAPPE

John C. Stennis Space Center

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Stennis Space Center's 60th anniversary is finally here, and October is an excellent time of year in Mississippi, especially since the weather starts cooling off a bit. With that cooling down, many people break out of their summer seclusion and get outdoors. It is a great time to celebrate.

I look forward to good celebrations and, oh boy, have I been looking forward to this anniversary. Of course, an essential part of any celebration is the food. It makes my mouth water just thinking about it. Just the other day, I tried pan-seared salmon filet smothered in cajun seafood cream sauce. My friends talked me into trying it, and I will say it was worth it! Every reason to celebrate is a good reason in my opinion. Ark!

Anniversaries get me thinking, though, so I ponder a little about where I have been and what is happening now. I even ask myself where I see the future heading. I like to take some time to step back and take a look at the whole picture. I also think about what is important to me and make a special effort to keep what is important in focus.

Looking back, I remember the time I started as the Stennis mascot. Back then, I started working to improve morale. Workers stayed under pressure as they rushed around, getting their jobs done in the early construction days. So, I walked around with NASA Public Affairs Officer Mack Herring, just making people smile. Shortly afterward, I began writing commentaries for Lagniappe.

Stennis has grown and changed so much between then and now. Apollo testing began a legacy that has seen Saturn V stages, every space shuttle main engine, various commercial test articles, and, most recently, the new Space Launch System (SLS) pass through Stennis. The time flies when you are busy. I stroll down memory lane through those significant projects while looking at my old pictures. It fills me with pride thinking I played a small part in the fantastic space accomplishments of our great nation. It has been hard work, but it gives me a sense of satisfaction looking back.

It is an honor today to be part of the Stennis team. Witnessing the massive SLS core stage tested excites my imagination. I envision future colonies living and working on the Moon with an orbiting outpost cresting the lunar horizon. It seems like science fiction, but with the power of NASA, it could soon be a scientific fact. Our history reminds me that given a chance, our teams will help make dreams a reality. Look at how far we have come, and just imagine how far we have yet to go.

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NASA Readies for Future Artemis Moon Missions with Rocket Engine Test

NASA marked a significant milestone Sept. 30 in its plans for future missions to the Moon and, eventually, Mars with completion of an RS-25 single-engine Retrofit-2 test series at Stennis Space Center.

A full-duration hot fire of RS-25 developmental engine No. 0528 on the A-1 Test Stand at Stennis culminated a seven-test series to support development and production of new engines for the agency's Space Launch System (SLS) rocket on future missions.

"This successful test series for the Space Launch System RS-25 engine puts us one step closer to manufacturing the first new set of engines for future Artemis missions to the Moon," said Johnny Heflin, manager of the SLS liquid engines office at NASA's Marshall Space Flight Center in Huntsville, Alabama. "We are testing engine parts made with advanced manufacturing techniques that can reduce the cost of each engine by more than 30 percent yet still maintain the RS-25 engine's reliability and high performance."

During the Sept. 30 hot fire, operators fired RS-25 developmental engine No. 0528, used for each of the seven tests in the series, for more than eight minutes (500 seconds), the same time required during an actual launch.

The test series provided valuable information to Aerojet Rocketdyne, lead contractor for the SLS engines, as it produces engines for use after the Artemis IV mission to the Moon. Operators collected hot fire data to demonstrate and verify various engine capabilities, and to evaluate new engine components manufactured with cutting-edge and cost-saving technologies and reduce operational risk.

Tested components included a 3D-printed pogo accumulator to dampen pressure oscillations that can cause flight instability and a main combustion chamber fabricated using a hot isostatic pressure (HIP) bonding technique. These components are significant early milestones in NASA's and Aerojet Rocketdyne's effort to maximize state-of-the-art manufacturing methods to significantly reduce the cost and time needed to build new RS-25 engines.

The Sept. 30 test was delayed from its original date due to impacts from Hurricane Ida, which struck the Gulf Coast region on Aug. 29. The storm initially impacted propellant deliveries to the center, necessitating a delay as suppliers recovered full capabilities.

"I am proud to see how the test team and our propellant suppliers overcame the impacts of Hurricane Ida to get us back to testing the RS-25," Stennis RS-25 Project Manager Chip Ellis said. "With each test we learn more and more about the RS-25 engine and how it operates. And it is exciting to know that what we are doing contributes to the safety of the astronauts that will fly on SLS."

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.

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.

Previous RS-25 testing at Stennis began Jan. 9, 2015, and concluded April 4, 2019. During this period, NASA completed acceptance testing of former space shuttle main engines that will help power the first four SLS missions, conducted developmental and flightworthiness testing for all 16 new controllers (plus one spare) to be used on the heritage RS-25 engines, and demonstrated the ability of RS-25 engines to perform at the higher power level required to launch the super-heavy SLS rocket.

The first hot fire of the most current series was conducted on Jan. 28, 2021. Over the course of the seven-part test series, which coincided with Green Run testing of the SLS core stage at Stennis, developmental engine No. 0528 underwent 3,650 seconds of hot fire. The schedule included six full-duration, hot fire tests of more than eight minutes (500 seconds) and one hot fire of just under 11 minutes (650 seconds). A full-duration test refers to the time the engine must fire during an actual launch in order to power SLS towards orbit. Longer duration hot fires are conducted to test the limits of engine performance.

The Retrofit-2 test series followed major maintenance and upgrade projects on the A-1 Test Stand, including installation of a new NASA-designed-and-manufactured thrust vector control system on the structure that allows operators to "gimbal" test RS-25 engines, moving them on a tight circular axis. Gimbaling is a critical capability that ensures SLS can maintain a proper flight trajectory.

Operators are scheduled to begin a follow-up Retrofit-3 test series, using RS-25 developmental engine No. 0525, on the A-1 Test Stand later this fall. The new series will continue to collect data for new engine production.

NASA is building SLS as the world's most powerful rocket. With Artemis, NASA will land the first woman and the first person of color on the lunar surface and establish long-term exploration at the Moon in preparation for human missions to Mars. 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.

RS-25 tests at Stennis are conducted by a combined team of NASA, Aerojet Rocketdyne and Syncom Space Services.

NASA Announces Reorganization

NASA Administrator Bill Nelson announced Sept. 21 the agency is creating two new mission directorates that will best position the agency for the next 20 years.

The move separates the agency's current Human Exploration and Operations Mission Directorate into the new Exploration Systems Development Mission Directorate (ESDMD) and Space Operations Mission Directorate.

NASA is making the changes because of increasing space operations in low-Earth orbit and development programs well underway for deep space exploration, including Artemis missions.

Both mission directorates are engineering the future of NASA's Moon to Mars exploration approach from different ends of the spaceflight continuum.

"NASA has long set the vision for space exploration, not only for our nation, but also for the world. This reorganization positions NASA and the United States for success as we venture farther out into the cosmos than ever before, all while supporting the continued commercialization of space and research on the International Space Station," said Nelson. "This also will allow the United States to maintain its leadership in space for decades to come."

Jim Free will return to the agency as associate administrator of ESDMD. The new directorate will define and manage systems development for programs critical to Artemis and plan the Moon to Mars exploration approach in an integrated manner.

"I'm excited to be back at NASA. Working hand-in-hand with our colleagues in Space Operations, we will focus on ensuring the success of Artemis missions in the near term while charting a clearly defined path for human exploration of Mars as our horizon goal," said Free.

Kathy Lueders will serve as associate administrator of the agency's new Space Operations Mission Directorate. This directorate will focus on launch and space operations, including the International Space Station, the commercialization of low-Earth orbit, and eventually, sustaining operations on and around the Moon.

"The space station is the cornerstone of our human spaceflight efforts, and the commercial crew and cargo systems that support the microgravity laboratory are the building blocks to our continued success," said Lueders. "We'll work closely across mission directorates to achieve even greater successes to come, including expanding the low-Earth orbit economy, launching our state-of-the-art science missions, and getting ready for future operations at the Moon and Mars."

Creating two separate mission directorates will ensure these critical areas have focused oversight teams in place to support and execute for mission success. This approach with two areas focused on human spaceflight allows one mission directorate to operate in space while the other builds future space systems, so there is a constant cycle of development and operations to advance NASA's goals in space exploration.

"Kathy has demonstrated exceptional leadership and overseen tremendous progress in her role as the associate administrator for human spaceflight. And we're thrilled to welcome Jim back to the agency. Together, this dynamic duo will help forge the future of human exploration," said Nelson.

Over the next few months, NASA will implement these new mission directorates while remaining focused on safety of ongoing operations for commercial crew and upcoming Artemis missions.

There are no changes to NASA center roles and missions as a part of this reorganization. To view NASA Town Hall on Human Spaceflight click here.

Launcher Reaches Testing Milestone in Small Rocket Development at Stennis

When Launcher successfully completed a thrust chamber assembly hot fire at NASA's Stennis Space Center in late August, it was just the latest in a string of testing milestones for the small satellite launch company.

For the past two years, Launcher has partnered with Stennis near Bay St. Louis, Mississippi, to conduct testing for its 3D-printed Engine-2 (E-2) rocket engine. Launcher is developing the 22,000-pound-thrust engine in the midst of a new space race, which has rocket designers and engineers thinking small.

The Hawthorne, California, company is one such startup vying to lead in what is known as the "small satellite launcher class" of rockets. With information collected from its Stennis test campaign, the company is seeking to develop the world's most efficient rocket capable of delivering small satellites to orbit around Earth.

"The opportunity to work with a world-class team and facility at Stennis has allowed us to achieve major milestones in the development of E-2," Launcher Lead Engineer Andre Ivankovic said. "The Stennis team works hard to meet our testing needs, and the facility can provide us with large quantities of high-pressure gases and propellants, as well as a data acquisition system. These capabilities have been critical for us to achieve multiple test campaigns within the first year of becoming a commercial tenant."

The August milestone for Launcher followed a string of testing achievements in the E Test Complex at Stennis. In October 2020, Launcher conducted its first full-scale test fire of the Launcher E-2 engine injector and combustion chamber. In April 2021, the team successfully tested its E-2 liquid oxygen turbopump. The turbopump test series consisted of liquid nitrogen cold flow testing on April 21, with a total of seven tests for a combined 211.2 seconds (including a 120-second full duration test), and liquid oxygen cold flow testing on April 22, with a total of eight tests for a combined 162.6 seconds (including a 60-second full duration test). On Aug. 20, the company successfully completed a 5-second hot fire of its latest thrust chamber assembly.

The Launcher E-2 and the first testing campaigns at Stennis were funded, in part, through a U.S. Space Force Small Business Innovation Research (Phase II) award.

"As we scaled from 1,000-lbf thrust liquid rocket engine tests at our own test site to 22,000-lbf thrust engines, we partnered with NASA Stennis due to the surprisingly low cost and incredible facilities we could leverage," Launcher Founder and CEO Max Haot said. "At the start, we were wondering if the government organization would be able to work at our startup speed and with our culture. Since then, we have been shocked at how great and easy it has been to work with the NASA team – to the point we nicknamed Stennis E complex 'rocket engine testing paradise.'"

Launchers 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)

The Launcher team was attracted to Stennis due to its nearly 60 years of expertise and flexibility in testing both full-scale rocket engines and components, as well as its competitively priced lease agreement, highly secure facilities, easy accessibility, and a 125,000-acre acoustic buffer zone allowing 24/7 test operations without disruptions to nearby communities.

"There's sometimes a misperception that working with the government is expensive," said David "Skip" Roberts, a NASA senior project engineer overseeing the Launcher test partnership on the Stennis E-1 Test Stand. "However, by choosing to test at Stennis, commercial tenants like Launcher can reduce testing risk, speed up their developmental process, and incur cost-savings."

Another major advantage in testing at Stennis is access to high-pressure propellant tanks and gases. "One of the main reasons Launcher decided to come to Stennis was because of our test infrastructure and ability of our High Pressure Gas Facility to deliver needed propellants and gases," Roberts said.

For Launcher, the testing at Stennis is focused on efficiency. According to the company, the engine's combustion chamber is the world's largest, single-part, 3D-printed chamber of its kind for a liquid rocket engine and will produce the largest thrust, yield the lowest propellant consumption, and offer the lower cost-per-pound of thrust in the small satellite launcher class.

Launcher's E-2 engine is designed to produce 22,000 pounds of thrust at sea level using RP-1 (a highly refined form of kerosene) and liquid oxygen as its propellants. A single E-2 engine will power the first stage of the Launcher Light vehicle, which the team claims will be capable of delivering payloads of up to 330 pounds to low-Earth orbit. Its first launch is planned for 2024.

In the meanwhile, Launcher plans to conduct longer duration tests of the entire thrust chamber assembly in the weeks ahead. By the middle of next year, the team aims to conduct full-duration, full-scale testing of the E-2 engine with its integrated turbopump at Stennis.

As the nation's premier rocket propulsion test facility, Stennis offers nearly six decades of expertise, specialized and versatile infrastructure, cryogenic propellant and high pressure gas facilities, laboratories and shops, and advanced data-gathering technologies to ensure the success of commercial tenants, government partners, and academia. For more information on Launcher, click here. Click here for information on test sites.

The newly completed Orion pressure vessel for NASA's Artemis III mission is lifted out of the welding tool at Michoud Assembly Facility in New Orleans. Completion of the welding step this month marked a milestone in construction of the Artemis III crew module.

NASA in the News

Rover Added to Future Moon Mission

International and commercial partnerships are a critical component of NASA's long-term plans on and around the Moon under the Artemis program. The agency recently signed a new agreement with the Australian Space Agency that will further support human and robotic lunar operations for both countries. As part of the agreement, a consortium of Australian businesses and research organizations will develop a small rover that can operate on the lunar surface. The rover would have the ability to pick up and transfer lunar regolith (broken rock and dust) to a NASA-operated in-situ resource utilization (ISRU) system on a commercial lunar lander. Such a rover could fly to the Moon as early as 2026. For NASA, the Australian rover provides a complementary capability. While the lander that will deliver the rover will include a mechanism for collecting lunar soil and depositing it into NASA's ISRU system, the rover offers a second means of collection. For more on the rover click here.

Perseverance Reveals Watery Past

Pictures from NASA's latest six-wheeler rover on the Red Planet suggest the Jezero Crater area of Mars historically experienced significant flooding events. A new paper from the science team of NASA's Perseverance Mars rover details how the hydrological cycle of the now-dry lake at Jezero Crater is more complicated and intriguing than originally thought. The findings are based on detailed imaging the rover provided of long, steep slopes called escarpments, or scarps in the delta, which formed from sediment accumulating at the mouth of an ancient river that long ago fed the crater's lake. The images reveal that billions of years ago, when Mars had an atmosphere thick enough to support water flowing across its surface, Jezero's fan-shaped river delta experienced late-stage flooding events that carried rocks and debris into it from the highlands well outside the crater. For more on Perseverance Rover and the Jezero Crater's watery past, click here.

Stennis at 60 Celebrates Rich History, Bright Future

Note: The following is an op-ed by Stennis Space Center Director Rick Gilbrech. It was written in celebration of the 60th Anniversary of NASA's John C. Stennis Space Center and was distributed to area media outlets for publication.

October 25 marks the 60th anniversary of NASA's announcement to establish a national rocket engine test site in south Mississippi. I was actually born one month after that historic announcement, so it is easy for me to keep track of Stennis anniversaries.

As construction was underway in the early 1960s, famed rocket scientist Dr. Wernher von Braun affirmed the importance of the new test facilities by stating, "I don't know yet what method we will use to get to the Moon, but I do know that we have to go through Mississippi to get there!" Almost 60 years later, I am proud to lead the workforce that has grown into a model federal city and is once again at the forefront of NASA's critical path back to the Moon.

Since the 1960s, the American human space program has flown on rocket systems and engines tested at Stennis. First and second stages of the Saturn V rocket for NASA's Apollo Program were tested at Stennis, including those that propelled humans to the Moon on seven lunar missions from 1969 to 1972. Stennis engineers conducted the first-ever rocket engine test at the facility on April 23, 1966, a 15-second firing of a Saturn V second stage prototype (S-II-C). During the ensuing Apollo Program years, Stennis engineers conducted 43 test firings on 27 Saturn V rocket stages. All that were launched performed without a single failure.

Following the Apollo Program, Stennis was charged with testing the main engines needed to power the reusable space shuttle fleet. Stennis engineers conducted the first full-duration test of a space shuttle main engine on June 24, 1975. During the next 34 years, every main engine used on 135 space shuttle flights were tested at Stennis.

Prior to the first launch of a space shuttle, Stennis also conducted tests on the spacecraft's main propulsion test article. For this testing, three main engines were configured as on a space shuttle orbiter during flight. Beginning in April 1978, Stennis operators conducted tests by firing all three main engines simultaneously on the B-2 Test Stand to prove the shuttle propulsion system flightworthy.

As a testament to Stennis' expertise, the main propulsion system testing at Stennis allowed astronauts to ride on the very first launch of space shuttle Columbia in April 1981. Following that successful maiden mission, Columbia astronauts John Young and Robert Crippen visited Stennis to commend employees for their testing work. "John and I got to sit back and ride," Crippen noted. "We couldn't even make it look hard."

Stennis has a reputation for tackling – and meeting – such hard testing challenges. In 2018, for instance, site personnel once again demonstrated their skill, teaming with the others to conduct an unprecedented 10 large engine tests in a 240-hour period. It was a remarkable and historic test campaign.

Most recently, Stennis has conducted frontline testing for NASA's new Space Launch System (SLS) rocket. The site has been testing RS-25 engines to help power SLS since January 2015. In 2020, it began a series of Green Run tests of the first SLS core stage, culminating with a hot fire of the stage's four RS-25 engines in March 18, 2021. The hot fire marked the most powerful test at Stennis in more than 40 years. The SLS core stage now is being prepared for launch of the maiden mission for NASA's Artemis program, which will return humans, including the first woman and first person of color to the Moon and help prepare for eventual missions to Mars.

Since 1999, Stennis Space Center also has been a leader and model for partnering with companies to provide commercial space flights. From 1999-2021, Aerojet Rocketdyne (formerly Pratt & Whitney Rocketdyne) tested the RS-68 engines for the Delta IV rocket on the B-1 Test Stand. A host of other companies have partnered with the site as well, including SpaceX, Relativity Space, Stratolauncher, Blue Origin, Virgin Orbit, Launcher, and Firehawk, to name a few.

For 60 years and counting, Stennis Space Center has served as a major economic force, positively impacting NASA and the Gulf Coast region. Home to more than 40 resident agencies and a diverse workforce of more than 5,000 employees, Stennis remains a unique federal city and model for government efficiency.

I often think about how blessed I am to work with some of the most resilient, compassionate, and experienced people in NASA. The Stennis workforce embraces each challenge with vigor and enthusiasm. We have proven time and again that natural disasters or even a global pandemic cannot keep us from accomplishing our mission.

Our history is rich, and our future is brighter as we continue to power dreams to the Moon – and beyond. Join us on a journey to the next 60 years!

For more information on Stennis Space Center, visit: NASA's Stennis Space Center | NASA

Stennis Space Center Celebrates 60 Years as History Continues to be Written

Stennis Space Center celebrates its 60th anniversary with virtual backdrops. Click to download.

Sixty years ago this month, NASA officials announced plans to build a site in a lowland corner of south Mississippi to test Apollo Program rocket stages and engines. They had no idea they were laying the foundation for so much more.

Six decades later, the propulsion test location is known as NASA's Stennis Space Center. The low rumble of rocket engines still sounds the site's proud history to the neighboring communities along the Mississippi and Louisiana gulf coast. However, the center also has grown into a sprawling federal city and area economic engine.

"The story of Stennis is one of resilience and ingenuity," Center Director Dr. Rick Gilbrech said. "The site has helped power the nation's space programs ever since the Apollo era of the 1960s and 1970s. At the same time, despite obstacles, it has developed into a highly efficient federal city. The Stennis workforce has a remarkable history of dedication and expertise. I feel continually blessed to lead such a talented group."

The story of Stennis begins with the presidential goal set by John F. Kennedy on May 25, 1961, to send humans to the Moon and return them home safely. Five months later, on Oct. 25, 1961, NASA announced the decision to establish a national rocket engine test site in Hancock County, Mississippi.

Community support was critical from the beginning. Construction required relocation of a number of area families. Other residents partnered with the site to provide a surrounding acoustical buffer zone to allow year-round testing without disturbing local communities. The 125,000-acre buffer zone remains a unique and historic asset that allows Stennis to conduct rocket stage and engine testing that other sites cannot.

"There would be no history of Stennis Space Center without the steadfast support of our surrounding communities," Gilbrech noted. "We talk a lot about testing partnerships, but the most important partnership we have is with the people of Mississippi and nearby Louisiana. Without their sacrifice and commitment, Stennis would not exist."

In return for such support, area residents were promised they would be a part of greatness. That promise began to be fulfilled on April 23, 1966, with the first test of a Saturn V rocket booster on the new A-2 Test Stand. Stennis subsequently tested the Saturn V rocket stages that helped power seven lunar missions and enabled 12 astronauts to step foot on the Moon. Following Apollo, Stennis tested every main engine that powered 135 space shuttle missions launched between 1981 and 2011.

At the same time, the center expanded its scope. Various federal agencies, (including the U.S. Navy), state organizations, and commercial companies joined NASA as tenants at Stennis to offset operating costs and maximize use of the federal property. The center also expanded its testing capabilities with construction of the E Test Complex to enable high-pressure testing of various rocket engines and components.

The years were not without challenge, such as Aug. 29, 2005, when Hurricane Katrina moved up the Pearl River and passed over the site, devastating the workforce and surrounding communities. Stennis served as a distribution location and regional resource in the storm's aftermath, solidifying its strong ties to area communities.

As the space shuttle era closed in 2011, Stennis continued work both in and out of the test complex. It gained recognition for efforts in education and STEM outreach. It was awarded for the success of its stellar small business program. It annually ranked as one of the best places to work in all the federal government.

The site also continued its frontline mission. In January 2015, Stennis began testing RS-25 engines to help power NASA's new Space Launch System (SLS) rocket. Meanwhile, the B-2 Test Stand and test complex support facilities were undergoing major modification to conduct a series of Green Run tests on the first SLS core stage. "Green Run" involves testing a flight unit's integrated systems prior to its initial launch.

The SLS core stage arrived in January 2020. Despite a COVID-19 pandemic and record breaking 2020 hurricane season, teams at Stennis persevered in conducting the Green Run test series. The series culminated with a hot fire of the stage's four RS-25 engines on March 18, 2021, the most powerful test at Stennis in more than 40 years. The same stage soon will help launch NASA's Artemis program to return humans, including the first woman and first person of color, to the Moon and prepare for missions to Mars.

In this 60th year, new commercial agreements also are contributing to Stennis test activities. In 2018, the site signed its first-ever Commercial Space Launch Act with Relativity Space, a private company using new manufacturing techniques to develop launch vehicles. Stennis currently maintains test partnerships with half a dozen aerospace companies.

Stennis is gaining notice in a new area as well, thanks to the work of an innovative Autonomous Systems Lab team focused on designing, developing, and testing the autonomous systems NASA will need for deep space missions of the future. At the same time, work is underway to prepare the B-2 stand to Green Run test the Exploration Upper Stage being built for use on future SLS missions.

Sixty years and counting, the annual economic impact of Stennis and its combined 5,000 employees remains substantial, totaling $656 million within a 50-mile radius in 2020. Meanwhile, a new Stennis Strategic Business Development Office is at work to ensure the site remains viable and valuable in the years ahead.

In 1961, NASA chose a site to test Apollo Program rocket stages and engines – nothing more. Six decades later, the location stands as much, much more – including the nation's premier propulsion test site, a model federal city, and a major economic engine.

And it is a story still being written.

NASA Develops South Mississippi Lowlands for Apollo Program Testing

During the 1960s,Stennis is home to the largest construction project in Mississippi and the second largest in the United States.

The history of Stennis Space Center extends as far back as 1699. Indians, settlers, pirates, and soldiers shaped the region near the mouth of the Pearl River in south Mississippi. In the decades before the space age arrived, the area stood home to the logging and shipping towns of Gainesville, Napoleon, Santa Rosa, Logtown, and Westonia. In October 1961, the federal government selected the area in Hancock County for construction of a propulsion test facility. The site selection was critical to testing extremely powerful launch vehicles used in the Apollo lunar landing program. The choice of the Mississippi site was a logical and practical one. The land offered water access, essential for transporting large rocket stages, components, and propellants. It also provided the 13,800-acre test facility with a surrounding acoustic buffer zone, still considered a national asset, of close to 125,000 acres. On April 18, 1962, the U.S. Army Corps of Engineers opened a real estate project office for land acquisition negotiations. On May 17, 1963, workers cut the first tree to start clearing the test site area for construction. In time, the location reshaped into a multi-agency federal city that now serves as NASA's premier rocket engine test facility and an economic engine for the region.

Construction in the south Mississippi lowlands precedes testing of Saturn V rocket stages used on human lunar exploration.

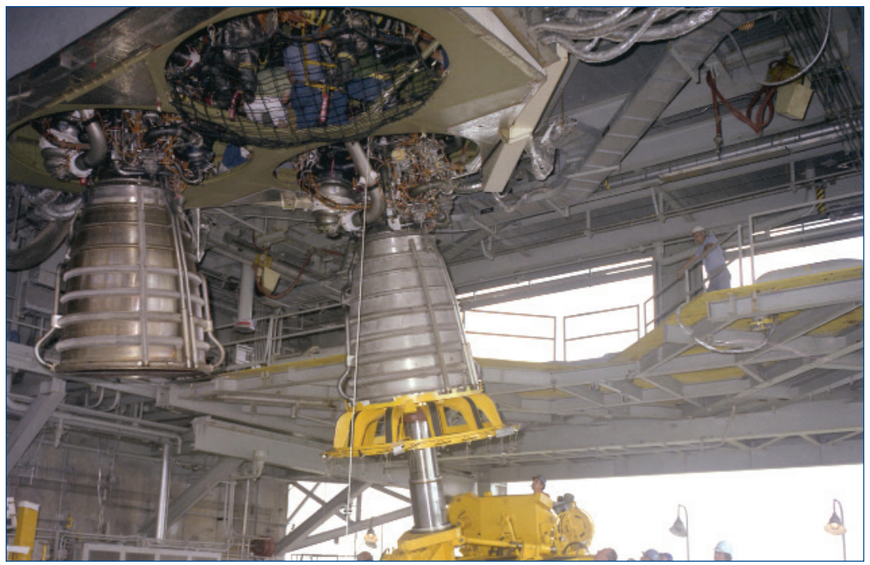
A 1960s photo shows construction of the Stennis A Test Complex, which tested rocket stages that helped land astronauts on the Moon in 1969.

The first Saturn V rocket stage (S-II-T) is lifted onto the A-2 Test Stand at Stennis. NASA conducted the first Saturn V test on site on April 23, 1966.

A Saturn V S-IC stage is hoisted into place during Apollo testing. First and second stages of Saturn V rockets were tested at Stennis prior to launch.

Flames erupt from the B-2 Test Stand flame deflector during a Saturn V S-IC stage test for the Apollo Program.

Stennis Rumbles Gulf Coast Region with Space Shuttle Main Engine Testing

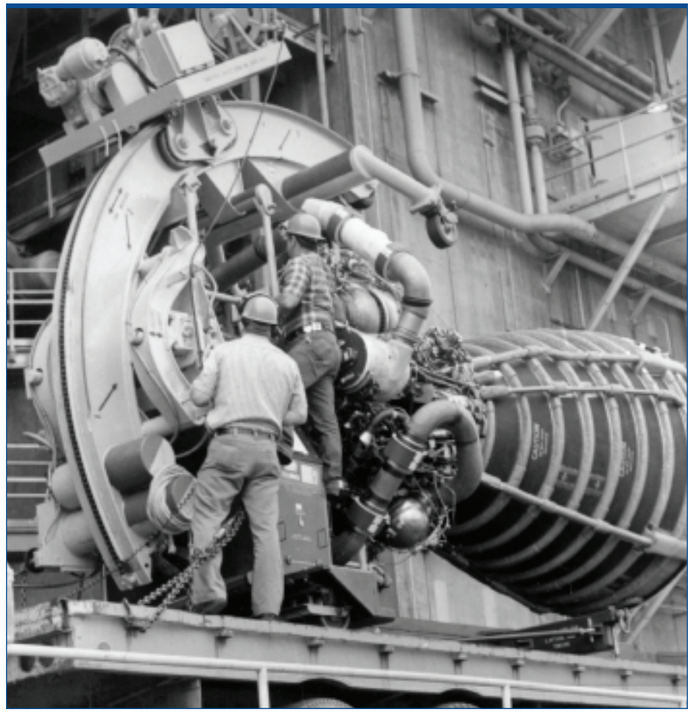


Workers mount three shuttle main engines together on the B stand to test simultaneously as the Main Propulsion Test Article.

Between the first launch on April 12, 1981, and the final landing on July 21, 2011, NASA's space shuttle fleet -- Columbia, Challenger, Discovery, Atlantis and Endeavour -- flew 135 missions that launched and repaired satellites and the Hubble Space Telescope, advanced technologies nationwide, helped construct the International Space Station in orbit, conducted cutting edge science and inspired generations by making the unimaginable reality. The preparation and conduct of Space Transport System (STS) missions required a massive workforce of NASA civil servants and contractors across multiple centers. Stennis remained very active between 1975 and 2009, testing flightworthy space shuttle main engines for every flown mission. In that regard, each of the three large test stands at Stennis contributed its own unique testing capabilities. The A-1 Test Stand tested single engines at sea level pressures simulating the conditions engines would face during the liftoff and early flight stage. The A-2 Test Stand was equipped with a diffuser, allowing it to simulate high altitude flight by reducing the pressure around the engine and exhaust plume. The B-2 side of the B-1/B-2 Test Stand enabled testing a set of three engines simultaneously and gimbaling them as the engines would move during flight. STS missions demonstrated NASA's commitment to space exploration and and led to increased low-Earth orbit space activity and capabilities.

NASA conducts a space shuttle Main Propulsion Test Article hot fire on the B-2 Test Stand between 1978 and 1981..

Space shuttle main engines test independently in the A Test Complex, simulating sea level (A-1) and high altitude (A-2) testing.



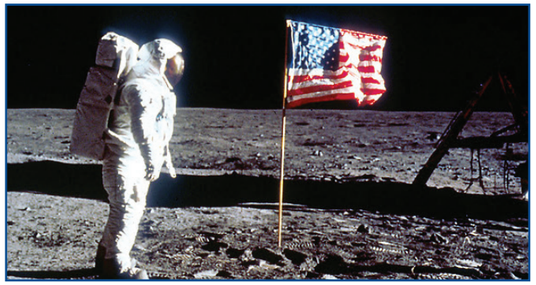
A Stennis team connects test stand boom crane lines in preparation for hoisting a space shuttle main engine into its testing position.

NASA conducts a space shuttle main engine test on the A-1 Test Stand at Stennis. At the base of the stand, the flame deflector directs the engine exhaust horizontally away from the stand. The opening above the flame deflector is where one can glimpse the engine nozzle of the main engine being tested.

Timeline

stennis space center

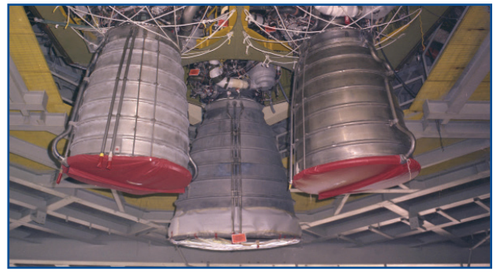
May 25, 1961 ... President John F. Kennedy challenges the United States to send humans to the Moon and return them safely by the end of the decade.



July 29, 1969 ... Astronaut Neil Armstrong becomes the first human to set foot on the Moon. His Apollo 11 mission is powered by first- and second-stage Saturn V rocket boosters tested at Stennis.

March 1, 1971 ... As the Apollo Program ends, NASA assigns responsibility for testing space shuttle main engines to Stennis.

May 1, 1994 ... Management of the space shuttle main engine test operations program is transferred from NASA's Marshall Space Flight Center in Huntsville, Ala, to Stennis Space Center.



April 21, 1978 ... The first test of the space shuttle Main Propulsion Test Article is conducted, which involves simultaneously firing three space shuttle main engines arranged in flight configuration.

Dec. 30, 1991 ... NASA designates Stennis as the Center of Excellence for large propulsion system testing.

Jan. 21, 2004 ... A test firing at Stennis marks 1 million seconds of space shuttle main engine test and flight operations.

Aug. 8, 1998 ... All four large test stands – A-1, A-2 and B-1/B-2 – are occupied for the first time.

Feb. 21, 1997 ... Stennis is designated as NASA's lead center for implementing commercial remote sensing activities.

April 21, 2006 ... A space shuttle main engine test marks the 40th anniversary of rocket engine testing at Stennis.

Aug. 11, 2005 ... Stennis marks 30 years of space shuttle main engine testing with an afternoon firing on the A-2 Test Stand.

April 23, 1966 ... The space age arrives in Hancock County as operators at Stennis conduct the first-ever Saturn V rocket booster (S-II-T) test on the A-2 Test Stand.

May 17, 1963 ... Construction workers cut the first tree to start clearing an area for NASA's new rocket engine test facility.

Sept. 9, 1970 ... NASA announces its Earth Resources Laboratory will be located at Stennis.

May 28, 1976 ... A flag-raising ceremony marks official move of the Naval Oceanographic Program to Stennis.

June 24, 1975 ... The first-ever full-duration space shuttle main engine test is conducted at Stennis.

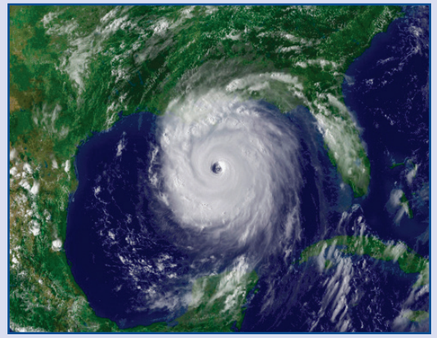
July 24, 1992 ... Stennis operators conduct the 2,000th test firing of a space shuttle main engine.

Aug. 20, 1990 ... Space shuttle main engine tests are conducted for the first time on all three Stennis test stands on the same day.

May 30, 1996 ... NASA designates Stennis as its lead center to manage capabilities and assets for rocket propulsion testing.

Aug. 5, 2002 ... Ribbons are cut on three new Stennis facilities, valued at more than $60 million, for Lockheed Martin, the U.S. Navy and the Naval Oceanographic Office.

July 27, 1998 ... Activation is initiated on the E-1 Component Test Facility, a world-class, high-pressure cryogenic test structure at Stennis.



Aug. 29, 2005 ... Hurricane Katrina makes landfall, battering southeast Louisiana and the Mississippi Gulf Coast. Tracking maps show the storm's eye passing directly over Stennis, inflicting damage to several facilities. After the storm, Stennis serves as a key relief/recovery location for area residents.

Aug. 2010 ... The Stennis Education Office develops Mass vs. Weight, its first-ever teaching curriculum. It offers a series of hands-on activities to help educate students about mass and weight concepts. A year later, in support of the curriculum, Stennis hosts area students to dialogue with International Space Station astronauts during the facility's first-ever live video feed from the orbiting ISS.

July 29, 2009 ... The final space shuttle main engine is tested at Stennis, ending 34 years of testing flight engines for 135 shuttle missions.

Sept. 29, 2006 ... Operators conduct the final space shuttle main engine test for the A-1 Test Stand. In early November, the stand is officially handed over to begin testing the next-generation J-2X engine.

Oct. 22, 2008 ... Operators at Stennis' A-2 Test Stand conduct a final certification test on engine No. 2061, the last space shuttle main flight engine scheduled to be built.

May 8, 2008 ... Stennis engineers successfully complete an initial series of tests on Powerpack 1A, which is a key component of the next-generation J-2X rocket engine in development.

June 2, 2009 ... NASA officials and visiting dignitaries open the new Emergency Operations Center at Stennis to house the facility's medical clinic, fire department, security services, energy management control system and incident command post.

Aug. 11, 2011 ... The visit of the STS-135 space shuttle Atlantis crew marks the close of NASA's Space Shuttle Program for Stennis. The crew returned to Earth on July 21, completing the final flight in the 30-year shuttle program.

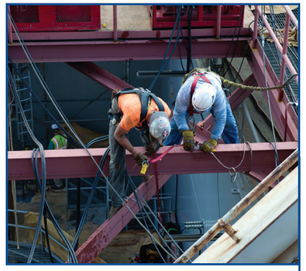
May 2011 ... The Stennis Applied Science and Technology Project Office provides invaluable satellite data on water and sediment flow after Louisiana officials open the Morganza and Bonnet Carre spillways to control Mississippi River flooding.

Nov. 10, 2010 ... Stennis conducts first successful test of the Aerojet AJ26 engine for Orbital Sciences Corporation. The AJ26 will power commercial cargo transport flights to the International Space Station.

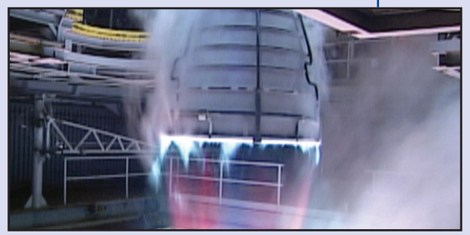
July 26, 2011 ... Stennis operators conduct a successful ignition test of the next-generation J-2X rocket engine.

May 2, 2011 ... The main administration building at Stennis is named in memory of late site Director Roy S. Estess.

April 21, 2014 – NASA and Space Exploration Technologies Corp. (SpaceX) cut the ribbon at the E-2 Test Stand at Stennis Space Center to launch a partnership to test components of the company's methane-fueled Raptor rocket engine.



August 7, 2014 ... NASA takes a big step forward in preparations to test its new Space Launch System core stage with a 20-foot repositioning of the Main Propulsion Test Article (MPTA) structure on the B-2 Test Stand at Stennis. The 61-foot-high, 1.2-million-pound MPTA, built for testing Apollo/Saturn rocket stages, was shifted to accommodate the larger SLS core stage.



Jan. 9, 2015 ... Stennis tests an RS-25 rocket engine for 500 seconds on the A-1 Test Stand, providing critical data on the engine controller unit and inlet pressure conditions. The test is the first of an RS-25 engine since the end of space shuttle main engine testing. in 2009.

Aug. 2015 ... The last of three levels of structural steel is added to the B-2 Test Stand, extending its framework 100 feet higher and marking another step renovating the stand for Space Launch System core stage testing.

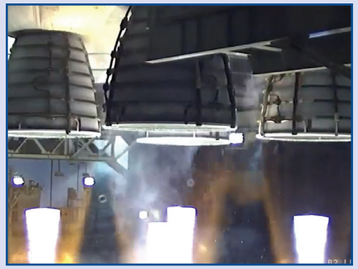
May 3, 2019 ... Following its arrival on the Pegsus barge, the Space Launch System core stage Pathfinder was rolled out behind the B-2 Test Stand at Stennis.

Aug. 27, 2015 ... Stennis completes the first developmental test series on the RS-25 engines that will help power the core stage of NASA's new Space Launch System.

Aug. 29, 2019 ... Stennis lift teams set the Space Launch System core stage pathfinder in place on the B-2 Test Stand as training for lifting the actual flight test article for Green

April 20, 2021 ... NASA removes the Space Launch System core stage for the Artemis I Moon mission from its Stennis test stand.

Mar. 18, 2021 ... Four RS-25 engines fire for 500 seconds during the second Green Run hot fire test of the Space Launch System core stage.



Jan. 16, 2021 ... The SLS core stage's four RS-25 engines fire for the first time together during the initial Green Run hot fire test, generating a combined 1.6 million pounds of sea-level thrust for approximately one minute.

and the journey continues ...

Chief Engineer Dr. Harry Ryan's Path to Stennis and Support of World Changing Missions

For Dr. Harry Ryan, the events of this day are out of this world or, more literally, are helping to launch a new Artemis generation out of this world. The path to his current role at NASA started with effort, drive, and willingness to take a chance. These qualities are evident in how the life of Ryan led to his role as NASA Stennis chief engineer.

"Most of my earliest and most vivid space-related memories are from the Space Shuttle Program and the images from the Hubble Space Telescope," Ryan explained while reflecting on his childhood thoughts of NASA.

Born in Baltimore and growing up in Hampstead, Maryland, Ryan attended the University of Maryland Baltimore County and majored in mechanical engineering. After earning a Bachelor of Science degree, Ryan continued his education to earn a Master of Science degree and a Doctor of Philosophy degree in mechanical engineering, both from the Pennsylvania State University in State College, Pennsylvania.

Like many others, Ryan did not begin his career working directly with NASA. However, while working at Praxair, Inc., an industrial gas company, in Tarrytown, New York, some 20 years ago, Ryan received a phone call from a college friend working at NASA's Stennis Space Center. His friend indicated that Stennis had some open positions, so Ryan applied. Afterward, Ryan received an opportunity to interview and made it count. That interview selection opened the door to his NASA career.

After 21 years, Dr. Harry Ryan describes his path of success at NASA's Stennis Space Center. Ryan describes how the diversity of his Stennis teams contribute to overcoming the challenges of Core Stage Testing.

Shortly after interviewing, Ryan began work with NASA and moved into the local community around Stennis. Ryan now lives in Mandeville, Louisiana, and has worked at NASA Stennis since 2000. Getting the job was his first step, and Ryan dedicated himself to diligent work.

In his early career at Stennis, Ryan demonstrated his leadership and technical proficiency as the project manager for the Integrated Powerhead Demonstrator project. Much of the component testing for the project was successfully completed at the Stennis E-1 Test Stand, but Ryan diversified his experience.

For the next 15 years, Ryan held various technical positions in the Engineering and Test Directorate, culminating with serving as the Engineering Division chief.

In that role, he led a team of dedicated engineering professionals ranging from early career employees to subject matter experts, many with highly specific disciplines. The diversity of his Stennis teams and projects, along with Ryan's leadership adaptability, led to his successful involvement for in world-changing NASA missions.

"One of the benefits of working at Stennis is the opportunity to work on a variety of teams," Ryan said. "These teams can be comprised of local members as well as NASA and contractor personnel across the agency, thus allowing one to interact with those with different viewpoints and perspectives. Although some of these activities have been virtual over the past year and a half, there is still great benefit in the exchange of ideas and attending unique presentations online."

Currently, Ryan serves as the NASA Stennis chief engineer. As chief engineer, he supports propulsion testing and center-wide activities, including supporting technical investigations, project readiness reviews, and configuration management activities.

From the inception of the Artemis program to the successful Green Run testing of the first core stage for NASA's Space Launch System rocket on site, Ryan's support of the Stennis mission has been primarily in the design and analysis arena, including the management of the technical test requirements. Ryan's efforts contributed to the Stennis team's ability to overcome the multitude of challenges in testing the core stage.

"Certainly, one of the biggest challenges of the Green Run activities was the large scale of the effort, considering the number of team members involved and the amount of work that needed to be accomplished," Ryan explained. "Everyone at Stennis played a key role, and all of us had to properly communicate and integrate our activities to support a successful Green Run test series."

Now that the core stage Green Run tests have concluded, Ryan considers the accomplishments of his team. "It was certainly a great honor to work with so many talented individuals that supported the successful Green Run testing," he said. "It was a fantastic opportunity to participate in the effort and has led to many fond memories."

For Ryan, his daily contributions and those of his Stennis teams support the literal launch of America's human space exploration future. Ryan also takes pride in recomending career-launching opportunities offered by the Stennis outreach, local community, and internship programs.

Ryan can see the potential for opportunities and growth at Stennis. Looking ahead, he is excited about continuing Stennis's long, storied propulsion test history as it evolves to support the burgeoning commercial space flight environment. In addition, Ryan is very much looking forward to the launch of, and subsequent images from, NASA's James Webb Space Telescope.

Meanwhile, Ryan continues his work at Stennis, which as been recognized by NASA. He received the agency's Space Flight Awareness Management Award in 2018, which is presented to mid-level managers who consistently demonstrate loyalty, empowerment, accountability, diversity, excellence, respect, sharing, honesty, and integrity, and are proactive.

Ryan and his wife, Elizabeth, have two daughters, Christina and Veronica, both of whom are students at Louisiana State University.

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.

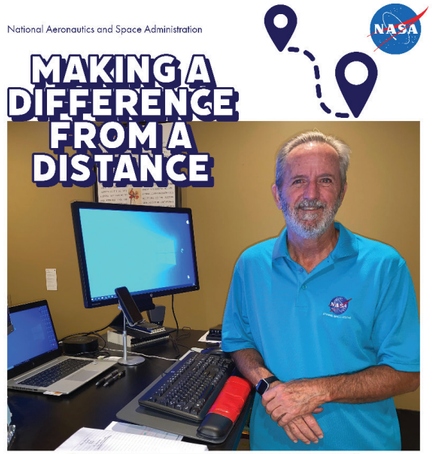
The campaign features employees who were nominated by either management or their colleagues and consists of employee profiles representing the offices and directorates at Stennis. On a weekly basis, featured employee profiles will be included in Orbiter and on Stennis social media accounts:

- Stennis' Facebook
- Stennis' Twitter

TESSA KEATING
PUBLIC AFFAIRS SPECIALIST
OFFICE OF COMMUNICATIONS

Tessa is nominated for her outstanding leadership of event operations and guest viewing opportunities during the two Green Run hot fire tests of the Space Launch System (SLS) core stage, ensuring complete adherence to public health and safety protocols during a global pandemic. The logistics were planned in a teleworking capacity and executed between top-level administration changes. Tessa also demonstrated adaptability and perseverance by successfully orchestrating several virtual events, such as retirement celebrations and all-hands meetings, that have historically been attended in person. Tessa has a proven record working across departmental boundaries, collaborating with the information technology and facilities teams to execute virtual events and ensure they proceed smoothly.

The 'Making a Difference from a Distance' campaign highlights outstanding contributions from SSC employees who are in a virtual work setting.



LACY THOMPSON
NEWS CHIEF
OFFICE OF COMMUNICATIONS

Lacy is nominated for his outstanding efforts in helping to create and implement logistics for media and guest viewing opportunities at the two Green Run hot fire tests of the Space Launch System (SLS) core stage during the center's telework status. He coordinated with site personnel to ensure media interview and appearance requests he received were fulfilled. Lacy's efforts also helped Stennis to host local, regional, national, and online media on-site for both the January and March hot fires. Following the Green Run test series, Lacy coordinated with WAPT-TV in Jackson for production of a four-part series on Stennis. The series focused on both NASA and commercial testing at Stennis, as well as the efforts of the newly-formed Autonomous Systems Lab. This media opportunity showcased Stennis in an area of the state in which the center has aimed to increase its reach. Now, as telework status largely continues, Lacy is working to expand the center's visibility in Mississippi as more outlets schedule interviews and coverage to highlight Stennis.

The 'Making a Difference from a Distance' campaign highlights outstanding contributions from SSC employees who are in a virtual work setting.

SAMONE WILSON
PUBLIC AFFAIRS SPECIALIST
OFFICE OF COMMUNICATIONS

Samone has demonstrated resourcefulness and creativity in maintaining a viable Speakers Bureau and Outreach program during the mandatory teleworking environment due to a global pandemic. She successfully adapted the way Stennis' Office of Communications handles speaking requests and coordinates appearances to continue providing stellar support to the programs. Samone also played a key role in supporting the project manager with providing viewing opportunities for the Space Launch System (SLS) core stage hot fire tests in January and March of 2021. She escorted members of the media for each event and provided support for volunteers, exhibits, educational materials, and other logistics that were necessary for successful guest operations. Furthermore, Samone worked diligently to develop and implement a six-month campaign to celebrate the center's 60th anniversary in October 2021.

The 'Making a Difference from a Distance' campaign highlights outstanding contributions from SSC employees who are in a virtual work setting.

BRIAN EVERETT
SOFTWARE ASSURANCE ENGINEER
NASA SAFETY AND MISSION ASSURANCE DIRECTORATE

Brian joined NASA two weeks before Stennis Space Center went to mandatory telework status in March 2020. Despite having very little in-person contact, Brian has become an essential team member in the software assurance effort, allowing Stennis to significantly reduce a longstanding center risk. In addition, he has supported a mishap investigation, Space Launch System testing as an additional Interim Response Team member, and the Historically Black Colleges and Universities Week effort. He also is helping to fill the gap at Stennis in human factors and is training as an auditor. As a new employee who has been on 99 percent telework since his third week at Stennis, his contributions are remarkable.

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.

KELLY MARTIN-RIVERS
DEPUTY DIRECTOR OF EDUCATION, SOUTH EAST REGIONAL OFFICE
NASA OFFICE OF STEM ENGAGEMENT

Kelly has established, and continues to foster, a team culture of openness and collaboration despite a shift to working remotely. As a leader of a team working remotely from many locations and multiple centers, she has facilitated an open door policy with regular office hours through Microsoft Teams and models an atmosphere of collaboration and innovation through her STEM Engagement leadership.

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.

KAREN PATTON
AUDIT MANAGER
NASA SAFETY AND MISSION ASSURANCE DIRECTORATE

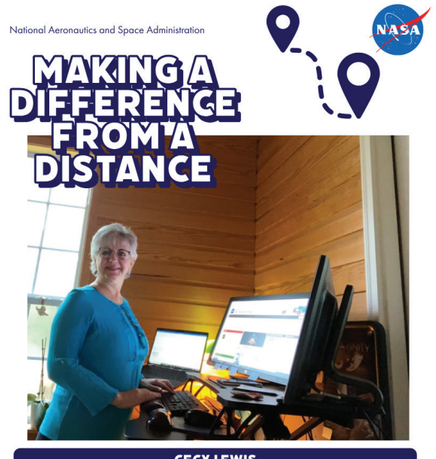
Karen planned and organized the agency's first-ever virtual Institutional, Facility, Operational Safety Audit, which required identifying auditees for numerous audit sessions, coordinating multi-level Microsoft Teams meetings amongst agency and center personnel, and providing real-time support throughout the audit. Her untiring efforts led to a successfully executed audit. Positive feedback was provided from both auditors and auditees.

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.

CHARITY POTTER
ADMINISTRATIVE ASSISTANT, CBF PARTNERS
NASA OFFICE OF STEM ENGAGEMENT

Charity has gone above and beyond to ensure all team members, including new hires, interns, and partners, feel welcomed and part of the NASA family while working remotely. She has created new channels and groups in Microsoft Teams to coordinate multiple offices to ensure smooth and clear processes take place across all activities and locations in the Southeast Regional Office of STEM Engagement. Her communication emanates a warm and welcoming tone, a sometimes difficult task to accomplish while working from a distance and a skill that supports team building across the center and the agency.

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.



CECY LEWIS
EEO SPECIALIST
NASA OFFICE OF DIVERSITY AND EQUAL OPPORTUNITY

Cecy became an Equal Employment Opportunity (EEO) specialist and the Disability Program manager just one month prior to the mandatory telework status due to the global pandemic. She serves as the Disability Program manager for Stennis Space Center and NASA Shared Services Center. Cecy is "Making a Difference from a Distance" by providing reasonable accommodations (RA) training and supporting employees and their supervisors as they work through the RA process. These accommodations typically provide the needed adjustment or resources to assist employees to fully contribute to the NASA mission and goals.

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.

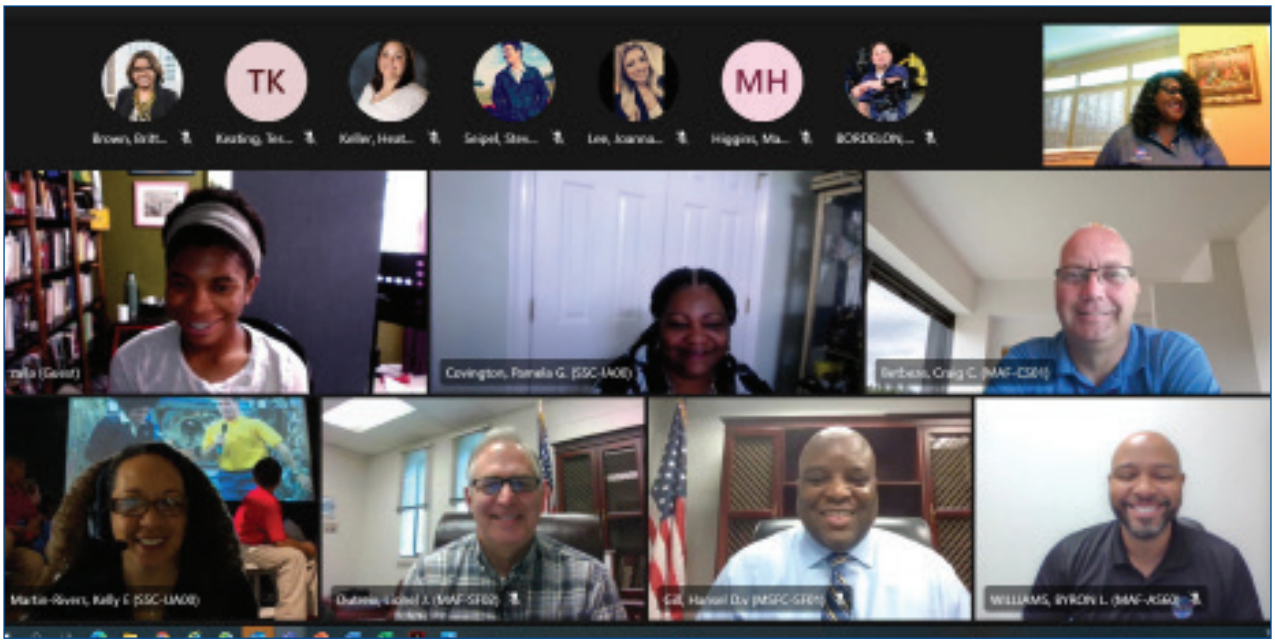
REBEKAH BLAIR-YARBROUGH
CURRICULUM LEAD/EDUCATION SPECIALIST
NVISION SOLUTIONS
NASA OFFICE OF STEM ENGAGEMENT

Rebekah has sustained growth of the ASTRO CAMP Collaborative Program by continuing to provide the necessary curriculum for collaborators to use for their programming during a global pandemic. She also helped to provide professional development training workshops for formal and informal educators. An impressive highlight of Rebekah's telework is ensuring that the virtual digital binder of activities include virtual field trips of all NASA centers.

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.

Stennis News

NASA Leaders Meet With National Spelling Bee Champ in Teams



NASA leaders at Stennis Space Center, Marshall Space Flight Center in Huntsville, Ala., and Michoud Assembly Facility in New Orleans participated in a Team call Aug. 25 with Zailia Avant-Garde, the first African American to win the Scripps National Spelling Bee. On July 8, Avant-Garde, 14, a homeschool student from nearby Harvey, Louisiana, became the first African American winner in the 96-year history of the spelling competition. Avant-Garde has expressed a strong interest in NASA and has identified astronaut Mae Jemison as one of her favorite historical figures. NASA participants in the Teams call NASA participants in the Teams call shown on screen above include: Pam Covington, Katrina Emery and Kelley Martin-Rivers from Stennis; Hansell Gill from Marshall; and Lonnie Dutriex and Craig Betbeze from Michoud.

NASA Awards Multi-Location Contracts

NASA has awarded two contracts to Chenega Global Protection LLC of Chantilly, Virginia, an 8(a) small business, to provide protective services and fire services at several agency locations, including Stennis Space Center. The NASA Protective Services Contract - South Region and Fire Service Contract both begin Dec. 1. The contracts, including options, have a maximum total value of $253,563,974 and $328,275,007, respectively. For more on the NASA contracts, visit here for Fire Services Contract and here for Protective Services Contract.

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 has been recognizing Space Heroes performing necessary and critical work. Overall, 25 Stennis Space Center employees have been cited for their Artemis-related efforts.

Peter Tran, a test operations engineer at Stennis, was recognized Sept. 24 for his long hours of work preparing technical systems to ensure a supply of necessary gaseous nitrogen and gaseous helium for the Artemis Green Run activities, which aided in the success of the Green Run test.

Mark Hancock, a project manager at Stennis, was recognized Oct. 8 for enabling effective planning and timely problem resolution with minimal schedule loss as the deputy project manager for the Space Launch System Core Stage Green Run test.

SLS Exploration Upper Stage Trusses Arrive

Two trusses enter the Stennis Space Center canal system, passing through the site's lock system Aug. 17. The arrival marks the first of several large elements needed to prepare the B-2 Test Stand for Green Run testing of the Exploration Upper Stage (EUS) unit being built for use on future Space Launch System (SLS) missions. Arrival of the trusses comes about six months after Stennis completed Green Run testing of the first SLS core stage on the B-2 stand and transported the flight unit to Kennedy Space Center for launch of the Artemis I missions. NASA plans a similar series of tests on the EUS systems prior to the stage's first launch. The EUS trusses are a modular system developed to adapt the B-2 Test Stand to hold the smaller upper stage unit in a position previously occupied by the larger SLS core stage. The trusses will be placed in some of the existing core stage attachment locations on the stand and support the heavy load of the EUS water-cooled diffuser assembly. The modular approach allowed fabrication of the trusses to begin off site even as the core stage test series was continuing at Stennis. Once the trusses arrived, Stennis teams used the B-2 Test Stand derrick crane to unload the elements. Additional large item deliveries will follow as Stennis continues modifications needed for EUS testing.

Office of Diversity and Equal Opportunity

Inclusion Powers America's Recovery

October was declared National Disability Employment Awareness Month (NDEAM) in 1988 by the U.S. Congress in an effort to raise awareness of employment needs and contributions of individuals with all types of disabilities. This year, NDEAM recognizes the turbulent times through its theme, "America's Recovery: Powered by Inclusion."

Inclusion is an essential tool to help create unity and diversity in the workplace. But what does the inclusion of disabilities look like in the workplace? Leaders in the disability rights movement have constructed two distinct models of how society views disability: the medical model and the social model. These models provide a framework for how people perceive those with disabilities. While the medical model is a helpful way of understanding illness and loss of function, people in the disability community have largely rejected it in favor of the social model.

The social model promotes the idea that adapting social and physical environments to accommodate people with a range of functional abilities improves people's quality of life and opportunity, with and without impairments. For example, a disabled person who cannot use stairs cannot access a building with a step entrance. Utilizing the social model in this example would help recognize a problem with the structure, not the person, and suggest adding a ramp to the entrance.

The social model is a great tool to use when creating an inclusive environment for people with disabilities. According to the Commit to Inclusion Campaign, some other ways to make inclusion for individuals with a disability include:

Objectives that include people with disabilities. Program objectives should explicitly and unambiguously state that the target population has people with a range of different disabilities (cognitive, intellectual, and other developmental disabilities, mobility, visual, hearing, and mental health disabilities).

Involvement of people with a disability in development, implementation, and evaluation. Program development, implementation, and evaluation should include input from people with various disabilities and their representatives (e.g., community members or other experts with disabilities, potential participants with disabilities, and their assistants.).

Program accessibility. Programs should be accessible to people with disabilities and other users, socially, behaviorally, programmatically, in communication, and in the physical environment. Program planning and implementation may include people with disabilities, but if the programs are not physically and programmatically accessible, people with disabilities will not be able to use them.

Accommodations for participants with a disability. Programs should address the individual needs of participants with disabilities through accommodations specifically tailored to those needs.

Outreach and communication to people with disabilities. Programs should use a variety of accessible methods for outreach and program promotion to people with disabilities. Good outreach and marketing activities help broaden the participant base and ensure the integration of programs and activities. Thus, program staff should target their outreach efforts to both individuals with and without disabilities.

Cost considerations and feasibility. Program planning should address potential resource implications, including staffing, training, equipment, and other resources needed to promote inclusion.

Process evaluation. If applicable, programs should implement process evaluation (with transparent monitoring, accountability, and quality assurance) that includes feedback from people with disabilities and personal assistants. Processes for making changes based on feedback should be included in the evaluation.

Outcome evaluation. Programs should collect outcomes data using multiple disability-appropriate measures. Outcome evaluation helps to establish whether programs are adequate and whether the primary purpose for the programs has produced the intended results.

NDEAM is an excellent opportunity to highlight the contributions of employees with disabilities and to address any barriers to full participation by all employees. It is vital to create inclusive environments where all employees feel valued and included. Creating an inclusive environment for individuals with a disability will promote independence, inclusion, and self-determination. For more information click here.

Office of Diversity and Equal Opportunity

Esperanza Celebrates Heritage and Hope

Hispanic Heritage Month recognizes and celebrates the contributions Americans tracing their roots to Spain, Mexico, Central America, South American, and the Spanish-speaking nations of the Caribbean have made to American society and culture. The observance was born in 1968 when Congress authorized the president to issue an annual proclamation designating National Hispanic Heritage Week. Just two decades later, lawmakers expanded it to a month-long celebration, stretching from Sept. 15 to Oct. 15.

The timing is key. Hispanic Heritage Month – like its shorter precursor – always starts on Sept. 15, a historically significant day that marks the anniversary of independence of five Latin American countries: Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua. The designated period is also a nod to those from Mexico and Chile, who celebrate their independence on Sept. 16 and Sept. 18, respectively.

This year's theme for Hispanic Heritage Month is "Esperanza: A Celebration of Hispanic Heritage and Hope." The theme invites the nation to celebrate Hispanic Heritage and reflect on how great tomorrow can be when people embrace resilience and hope. It also encourages individuals to reflect on Hispanics' past contributions and those they will continue to make in the future.

According to the U.S. Census Bureau, there are 60.6 million Hispanics in the United States, or 18.5 percent of the country's population, as of July 2019. Since the American Revolution, Hispanics or Latinos have contributed to American life, fighting in every war since then. In addition, Latinos today continue to advance communities across the country as small business owners, veterans, teachers, and public servants, among many other professions. Hispanic Heritage Month allows people to recognize their achievements and contributions to America's national story.

Because of the Mexican-American and Spanish-American wars, two treaties were put in place (the Treaty of Guadalupe Hidalgo and the Treaty of Paris, respectively) that gave the United States territories in the Southwest and Puerto Rico, incorporating the peoples of these areas into the United States.

Food is an integral part of Hispanic culture and is a common language that brings people together. Ezequiel Moreno started a Mexican bakery and restaurant out of his home in 1918, moving to La Plaza in the heart of Los Angeles in 1920. He named his bakery La Esperanza, meaning hope. Until the 1970s, their bread, coffee, Mexican dishes, and "American-style" lunches brought all kinds of people together, from Mexican immigrants to downtown employees and even Hollywood movie stars. Bakeries today continue this tradition of community, with El Bolillo Bakery in Houston baking an estimated 4,400 pounds of flour into Mexican bread to help those in need after Hurricane Harvey.

Baseball also played an essential role in building the Latino community. Latino community baseball leagues across the United States provided a place to build relationships, organize, and engage with younger community members. For example, at the Major League level, Roberto Clemente, a player for the Pittsburgh Pirates, was a Hispanic civil rights activist and a close collaborator with Rev. Martin Luther King Jr.

Music is a powerful and influential art form. With a rise in the popularity of Latin music, the Latino community can now hear songs that celebrate being Latino and being a part of a country and community that is important to one's identity. Latin jazz is a combination of African American and Latin rhythms first mixed in the 1940s. Jazz legend Dizzy Gillespie and Cuban percussionist Chano Pozo first collaborated to create Afro-Cuban rhythms and jazz. After that, new York's Palladium Ballroom became the hub of Latin jazz with greats such as Tito Puente, Machito, and his Afro-Cubans, and Tito Rodriguez, among others.

Hispanic and Latino Americans celebrate many holiday traditions. For example, the Day of the Dead (el Día de los Muertos) is celebrated Nov. 1-2 each year and remembers family and community members that have passed. Originally from Meso-America but now celebrated in Latino communities across the United States, the commemoration combines indigenous and Catholic rituals.

Individuals are encouraged to take time this year to share in this annual tribute by learning and celebrating the generations of Hispanic and Latino Americans who have positively influenced the nation and society.

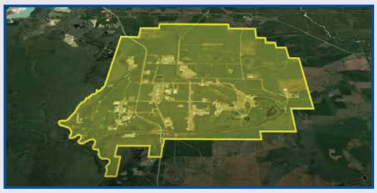
Online Resources

WWL-TV interviews Grant Tregre

Click here to see the Sept. 21 interview

Stennis Emergency Management

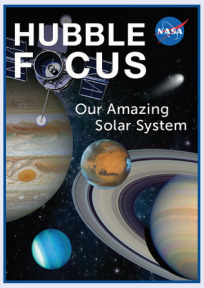
Stennis Fact Sheets



Stennis Virtual Tour

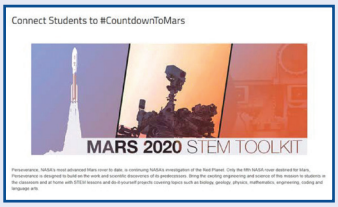
NASA Coronavirus Response

First Woman Graphic Novels

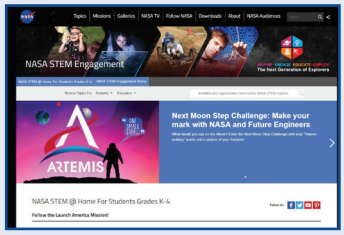


NASA E-Book Downloads

Stennis Artemis Resources page

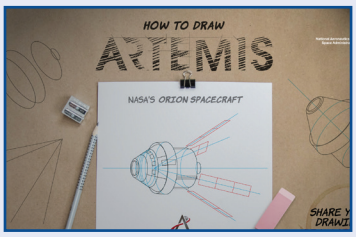


MARS 2020 STEM Toolkit



NASA STEM@Home for Students

NASA at Home



How to Draw Artemis