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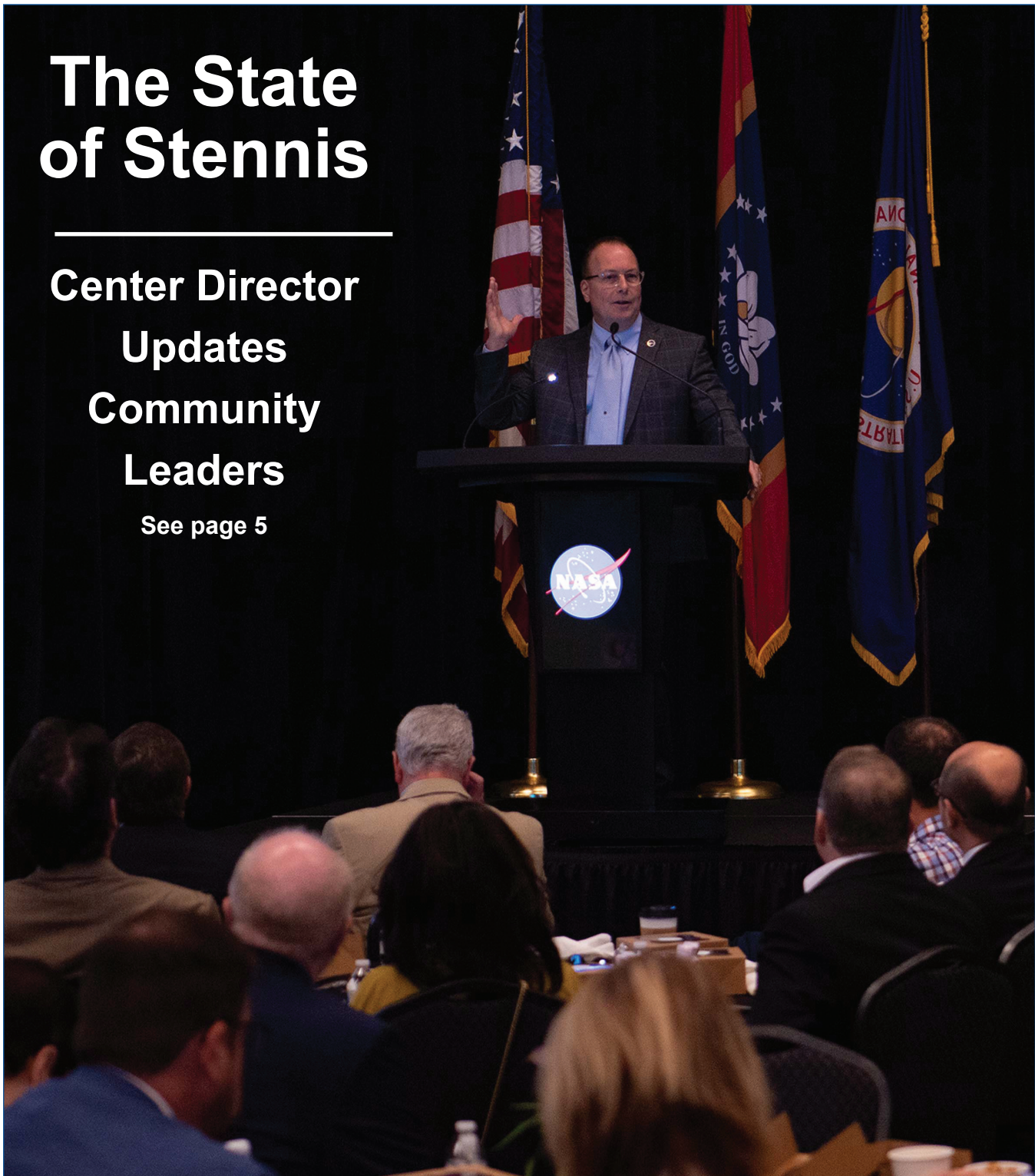
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May 2022

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I have been doing a lot of thinking recently on my commute to work and in the spare moments between tasks. Sometimes, one needs to step away and take a moment to reset before tackling the next task requiring attention.

While taking one such mental break, I stepped out onto the porch one late evening and noticed that a few meteorites would show up from time to time, rising occasionally from the eastern horizon.

Meteorites fascinate me. Ever since I was a little gator reciting “Twinkle, Twinkle, Little Star” and “Star Light, Star Bright,” those moving objects with tails seemed to really draw my attention. I used to think about how fast I liked to go on my skateboard, roller coasters, or down water slides. Meteorites and other objects falling from space move so much faster than that. They move so fast, passing through the air, that the friction superheats them and makes them glow and break apart.

I wonder what it feels like to move that fast. Astronauts know because they return through the

atmosphere in a similar manner, creating their own “shooting star” effect. The atmosphere slows them down as they pass through the upper layers, with the friction creating a fiery tail. It must take great trust in technology to volunteer to be an astronaut. Launching and returning to Earth are both spectacular instances with flames that make witnessing the event amazing.

Stennis folk are a big part of the process, making that trust a little easier to develop. The folk at Stennis test for one of the most dangerous parts of an astronaut’s space flight – the launch. Safety and quality require keen inspections and testing with experienced, attentive examiners. The Stennis testing provides a sense of confidence for those astronauts who trust their lives to the technology NASA develops.

Stennis employees take the responsibility seriously. As far as they are concerned, it is all about taking care of family. And speaking of which, as many employees begin returning on-site, be sure to take a few spare moments to catch up with some of those missed Stennis family members on the latest goings-on in their neck of the woods (or bayou). Ark!



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'Fire in the Hole:' NASA's Stennis Space Center Preparing Stand for RS-25 Testing

When cooking on a grill, one may notice that certain areas of the grate burn hotter than others. A similar phenomenon affects test stand flame deflectors at NASA's Stennis Space Center, albeit involving considerably hotter rocket engine exhaust.

Ensuring the flame deflectors can withstand ultra-hot temperatures requires careful and precise work. Even now, Stennis teams are engaged in a critical – and intricate – maintenance project to protect the flame deflector on the Fred Haise Test Stand, where RS-25 engines for NASA's [Space Launch System](#) (SLS) rocket are tested.

"People would be surprised at what goes into maintaining our test infrastructure," said Jared Grover, the NASA manager leading the [Fred Haise Test Stand](#) project. "The test stands and facilities are massive and durable, but there is a level of detailed and even delicate work needed to ensure they function as needed."

During testing on the stand, an RS-25 engine's combustion chamber reaches 6,000 degrees Fahrenheit. Its exhaust plume hits the test stand's J-shaped flame deflector at temperatures around 5,000 degrees Fahrenheit and sends a cascade of shockwaves throughout the structure.

The exhaust is cooled by high-pressure water spraying the test stand flame deflector through thousands of 5/32-inch holes. Without the 170,000 gallons of water pumped every minute from the nearby [High Pressure Industrial Water Facility](#), the carbon-steel flame deflector would melt under the superhot exhaust plume.

However, just as with a backyard barbecue grill, the exhaust

hits some parts of the flame deflector more directly – and with more heat – than others. To offset the impact, the pattern of holes must be precise and uniquely tailored for a particular test project.

To prolong the life of the test stand and reduce ongoing maintenance costs, crews are now performing critical modifications on the Fred Haise Test Stand flame deflector. A crucial part of the work is drilling a new, highly specialized hole pattern to improve water cooling and protect the infrastructure. The hole pattern will be uniquely tailored for the RS-25 testing program.

"An engine plume is essentially a supersonic blowtorch," Stennis engineer Danny Allgood said. "There are extreme forces at play, such as high temperatures and pressures, that are factored into where we need to drill additional water-cooling holes. The objective is to ensure a layer of water constantly flows over the deflector during testing."

Allgood serves as NASA's computational fluid dynamics subject matter expert at Stennis. For the Fred Haise Test Stand project, he led in mapping out the flame deflector's hottest region, known as the "impingement zone," where the plume directly impinges on the deflector.

Having tested rocket engines and stages dating back to the Apollo missions, the Fred Haise Test Stand has a proven history of bearing the same temperatures and forces produced by a rocket engine during launch. However, testing RS-25 engines for SLS use – in upcoming [Artemis](#) missions to the Moon and eventual flights to Mars – has presented a new set of challenges. The engines sit at a lower point in the test stand (closer to the flame deflector) and operate at higher power



levels than engines from some previous test programs.

Moreover, RS-25 engine testing entails "gimbaling," which refers to re-directing the aim of the engine's plume around a tight circular axis, a critical function for "steering" a rocket and controlling its trajectory in flight.

Allgood conducted a computational analysis of [several previous RS-25 gimbaling tests](#) to track and measure how gimbaling affects the impingement zone. His investigation accurately determined where there is an increased need for additional water-cooling holes.

"Imagine a flashlight, signifying an RS-25 engine, shining down on a flat sheet of paper, producing a circular halo of light," Allgood said, explaining the analysis process. "Now, imagine tilting that sheet of paper like a ramp, sort of like the shape of the flame deflector. That halo of light – the engine plume – will now look more like an ellipse, or oval, taller than it is wide. With engine gimbaling, the reach of the engine plume's 'ellipse' is even wider and longer, and that represents the area on the flame deflector in need of more water cooling."

In the center of the ellipse, or zone of impingement, a team of machinists will drill additional holes at an angle of about 60 degrees – slightly off-vertical – in a grid-like pattern, reaching a density of 72 holes per square foot. Some existing holes in this area may be plugged if they do not conform to the planned pattern.

In the remainder of the egg-shaped zone of impingement, more holes (at the same angle of about 60 degrees) will be drilled to a density of 20 holes per square foot since the exhaust plume from a gimbaling engine will only briefly be directed at this area. The hole angling is intended to help water flow more easily down the flame deflector and insulate the surface from the engine plume as much as possible.

In addition to the spray pattern effort, weld crews also are completing work on the flame deflector manifold structure. The flame deflector consists of 21 horizontal manifolds, or "water boxes," similar to the non-overlapping bands of armor on an armadillo. Each one is about one foot deep, five feet high, and 44 feet wide, from bend to bend. They are stacked together to make up the flame deflector, towering 83 feet tall.

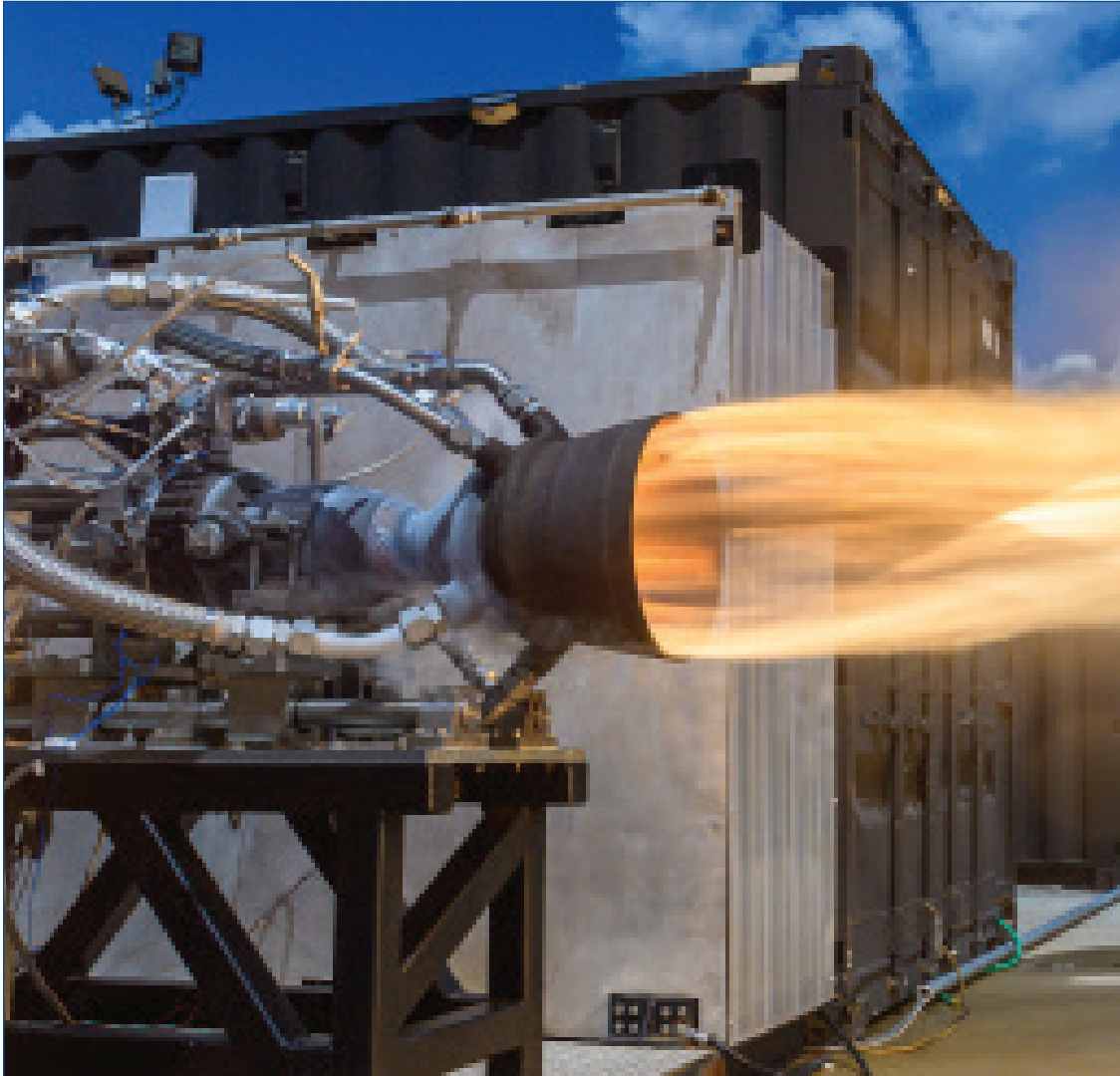
The structure also includes some "mini wet manifolds" that spray additional water in high-heat areas. The current project involves installing more mini manifolds in the hottest area of the flame deflector to improve cooling performance.

"Welders and machinists have always been an integral part of performing the maintenance and modifications we need to test the future of spaceflight," Grover said. "From the engineers and analysts who draw up our work plans to the welders and machinists who follow them with precision, our team is ensuring that Stennis Space Center remains America's premier rocket propulsion test site for decades to come." To view an engine test video, click [here](#).



(Top right photo) Water vapor billows from the Fred Haise Test Stand's water-cooled flame deflector during an engine test at Stennis Space Center. The inset graphic is a computer-generation rendition of an engine exhaust plume's heat distribution on the flame deflector. On the right side of the inset graphic, note the elliptical "impingement zone" where the plume directly impinges on the deflector, much like water from a sink faucet hitting a spoon and dispersing. (Left photo) A welder works on modifications to the flame deflector on Stennis Space Center's Fred Haise Test Stand on April 27.

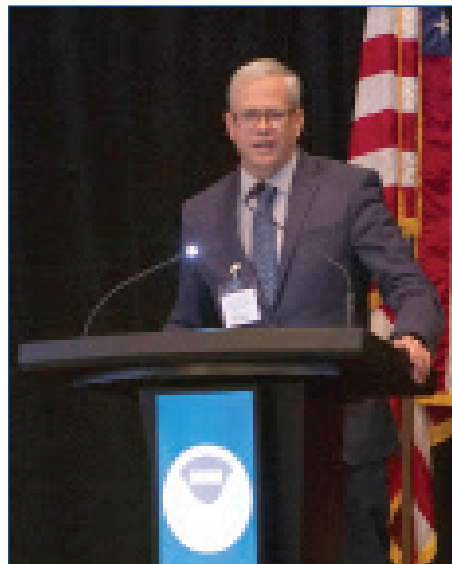
Launcher Space Hits Testing Milestone at Stennis



Commercial company Launcher Space conducts hot fire tests of a thrust chamber assembly for its E-2 engine on the E-1 Test Stand at Stennis Space Center on May 4. Launcher is partnered with Stennis for testing as it develops its new 3D-printed engine. The company recently marked a testing milestone as its thrust chamber assembly (injector and combustion chamber) demonstrated nominal thrust, pressure, and oxidizer/fuel mixture ratio for the first time. The company also reached 97.5 percent of its performance efficiency goal. Launcher is working to develop E-2 as the highest-performance 3D-printed engine in the world, capable of 22,000 pounds of thrust. It will be used to power the Launcher Light vehicle, which will be capable of carrying 330 pounds to orbit. The E-2 combustion chamber is unique in that it uses liquid oxygen and kerosene as its oxidizer and fuel, respectively, and also for cooling. Typical engines use fuel as the only coolant. Launcher is planning to fly its Launcher Light vehicle, with a single E-2 engine, to space in 2024.

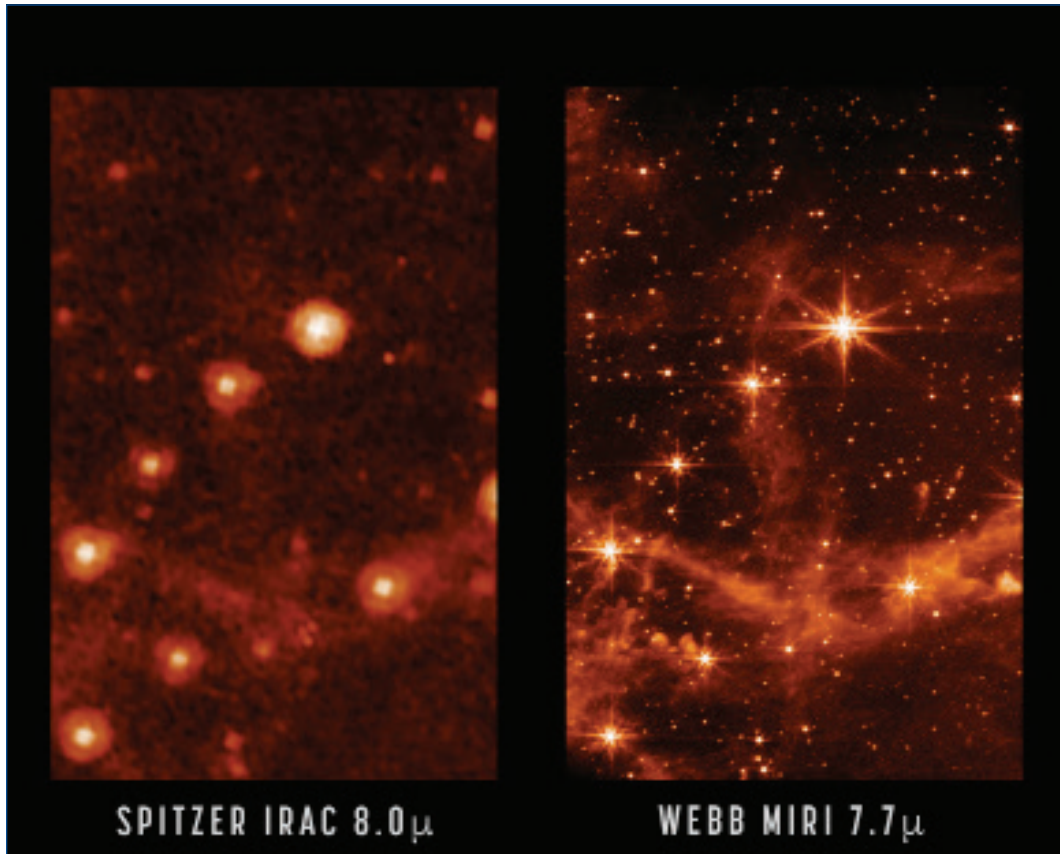


NASA, Stennis Leaders Deliver Annual Updates During Community Briefing



Stennis Space Center Director Rick Gilbrech (top left photo) delivers an annual state of Stennis address to community leaders gathered at INFINITY Science Center on May 4. Partners for Stennis and Michoud hosted the annual center director's community briefing as an in-person event for the first time since 2019. The 2020 event was canceled due to COVID-19, and last year's event was conducted virtually. About 125 leaders and guests attended the May 4 gathering, which featured updates from several areas of NASA and Stennis work. In his remarks, Gilbrech updated briefing participants on the future of work at Stennis as the center continues to transition out of its COVID-19 framework. He also reported on Stennis propulsion activity, including the center's ongoing testing for NASA's Space Launch System rocket, which is scheduled to launch on the maiden Artemis I test mission to the Moon this year. Gilbrech noted the center has enjoyed a busy propulsion schedule, with a total

of 571 tests conducted on seven of 12 test positions during the past 16 months. In addition, Gilbrech updated leaders on the center's new Strategic Business Development Office, the work of the Autonomous Systems Lab, and Stennis' continued economic impact in the Gulf Coast region. In addition to Gilbrech, other leaders presenting updates during the May 4 event included (left photos): Lonnie Dutriex, director of NASA's Michoud Assembly Facility in New Orleans; Rear Adm. Ron Piret, commander of the Naval Meteorology and Oceanography Command; William Burnett, director of the National Data Buoy Center; and Andy Guymon, senior propulsion test engineer with Relativity Space at Stennis. Michelle Anderson (above photo), executive director of INFINITY Science Center, also delivered a report on recent activities at her facility. Mark Glorioso, chair of Partners for Stennis and Michoud, served as emcee for the event.



NASA's James Webb Space Telescope is aligned across all four of its science instruments. Now, NASA takes a closer look at an image, focusing on Webb's coldest instrument: the Mid-Infrared Instrument, or MIRI. The MIRI test image shows part of the Large Magellanic Cloud. This small satellite galaxy of the Milky Way provided a dense star field to test Webb's performance. Here, a close-up of the MIRI image is compared to a past image of the same target taken with NASA's Spitzer Space Telescope's Infrared Array Camera. The retired Spitzer telescope was one of NASA's Great Observatories and the first to provide high-resolution images of the near- and mid-infrared universe. For more, click [here](#).

NASA in the News

NASA Earns Webby, People's Voice Excellence Awards

NASA has earned three Webby awards and five People's Voice awards in the 26th annual Webby Awards Competition, recognizing excellence in online communications. The awards are NASA's 24th, 25th and 26th Webby Awards since 1998 and represent the breadth of the agency's digital communications, including NASA's first interactive graphic novel. NASA's 2022 Webby award-winning entries, selected by a panel of judges, are: First Woman – NASA's Promise For Humanity; NASA's Global Climate Change; and NASA's Solar System Exploration. Alongside the Webby Awards, which are selected by a panel of judges, the winners of the People's Voice Awards are determined by a public vote. Five NASA projects received the honor of winning People's Voice awards: NASA's Social Media: Creating a Community of Explorers; NASA's Global Climate Change website; NASA's Jet Propulsion Laboratory Virtual Tour; NASA's Curious Universe: James Webb Mini-Series; and First Woman – NASA's Promise For Humanity. NASA also made substantial contributions to National Geographic's Mars Rover Augmented Reality Experience with NASA, which earned a People's Voice award for Best Use of Filters/Lenses. For more, click [here](#).

NASA's InSight Mission Records Largest Quake Ever on Mars

NASA's InSight Mars lander recently detected the largest quake ever observed on another planet: an estimated magnitude 5 quake that occurred on May 4. This detection adds to the catalog of more than 1,313 quakes InSight has detected since landing on Mars in November 2018. The largest previously recorded quake was an estimated magnitude of 4.2 detected on Aug. 25, 2021. InSight was sent to Mars with a highly sensitive seismometer to study the planet's deep interior. As seismic waves pass through or reflect off material in Mars' crust, mantle, and core, they change in ways that seismologists can study to determine the depth and composition of these layers. What scientists learn about the structure of Mars can help them better understand the formation of all rocky worlds, including Earth and its Moon. A magnitude 5 quake is a medium-size quake compared to those felt on Earth, but it is close to the upper limit of what scientists hoped to see on Mars during InSight's mission. "This quake is sure to provide a view into the planet like no other," said Bruce Banerdt, InSight's principal investigator at NASA's Jet Propulsion Laboratory in Southern California. "Scientists will be analyzing this data to learn new things about Mars for years to come." For more, click [here](#).

Deep Space Mission Suppliers Meet in Washington



(Top photo) Stennis Space Center Rick Gilbrech shares a presentation about his site's propulsion test work during the 2022 Space Launch System (SLS) – Orion – Exploration Ground Systems – Gateway Suppliers Conference held April 27-29 in Washington, D.C. Gilbrech was joined by other NASA center leaders for a panel discussion about their involvement in development of the SLS rocket that will power Artemis missions to the Moon and eventual flights to Mars. The Washington conference provided an opportunity for various companies involved in SLS development to gather and share information about their work and capabilities. Briefings and panel discussions discussed how the complex rocket system was created by integrating pieces and parts from a multitude of vendors from every state in the country. Gilbrech and other NASA leaders also had a chance to visit various members of Congress, including U.S. Rep. Brian Babin of Texas, a member of the House Committee on Science, Space and Technology; U.S. Rep. Robert Aderholt of Alabama, a member of the House Committee on Appropriations; staff members from the U.S. Senate Commerce, Science and Transportation Committee; and U.S. Sen. Roger Wicker of Mississippi, a member of the Senate Committee on Commerce, Science, and Transportation.

(Top right photo) U.S. Rep. Brian Babin of Texas (second from right) stands with Marshall Space Flight Center Director Jody Singer (l to r), Kennedy Space Center Director Janet Petro, Johnson Space Center Deputy Director Stephen Koerner, and Stennis Space Center Director Rick Gilbrech during a late April visit in Washington, D.C.

(Bottom right photo) U.S. Sen. Roger Wicker of Mississippi (center) stands with Marshall Space Flight Center Director Jody Singer (l to r), Stennis Space Center Director Rick Gilbrech, Kennedy Space Center Director Janet Petro; and Johnson Space Center Deputy Director Stephen Koerner during a congressional visit in late April.



NASA Leaders Visit Stennis to Discuss Future of Work



Stennis Space Center employees participate in a dialogue luncheon session (top photo) with NASA Chief Resilience Officer Melanie Saunders (top left photo) and NASA Future of Work Agency Lead Sonia Miller (bottom left photo) on May 10. The two NASA leaders spent a day at Stennis, meeting with various groups to discuss workplace changes and challenges as NASA emerges from its COVID-19 response framework. During the day, Saunders and Miller met with the Stennis executive team, senior managers, Future of Work team members, supervisors, and NASA employees representing various center offices and directorates. Employees at Stennis and other NASA centers are beginning to return to on-site work following two years of largely telework status. Many employees will assume a hybrid work schedule that includes both on-site and telework activities. Saunders and Miller discussed lessons learned from the past two years and answered questions about the future of work across the agency. In the top left photo, Stennis Director Rick Gilbrech (l) and Deputy Director John Bailey listen as Saunders responds to a question from a Stennis employee.

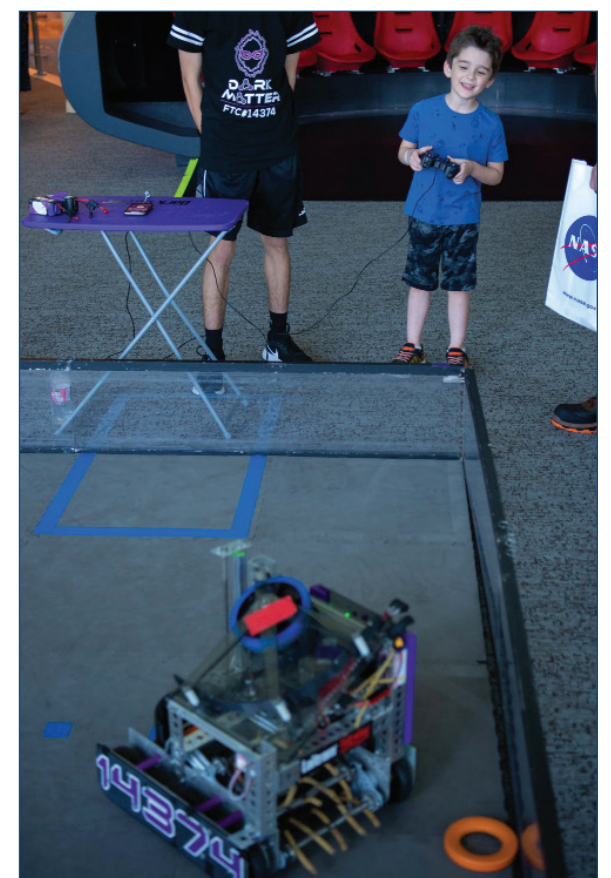
INFINITY Science Center Concludes Month of Anniversary Activities



INFINITY Science Center hosted a range of hands-on activities April 30, concluding a month of celebration for its 10th year of operation. INFINITY opened its doors in April 2012 as a premier tourist attraction and the official visitor center for NASA's nearby Stennis Space Center. To close out the celebration, Stennis representatives hosted various activities during the day. These included the opportunity to build and launch a paper rocket (bottom left photo), to enjoy a space-related virtual reality experience (bottom right photo), and to try out a model astronaut glove (left photo). The day also featured a showing of a Mississippi State University documentary titled XIII, recounting the work of two Mississippi engineers on the famous Apollo 13 mission in 1970. One of the engineers, Gilroy Chou, attended the viewing and responded to visitors' questions following the showing. He was joined virtually by Apollo 13 astronaut Fred Haise, a native of Biloxi, Mississippi (see page 5). INFINITY visitors also had a chance to operate a specialized robot, collect NASA memorabilia, enjoy a coloring station, and explore a full-scale International Space Station module. INFINITY features several "galleries" of exhibits and activities. These include a number of space-related items, such as the Apollo 4 command module and the Saturn V S-IC-15 stage built to launch the Apollo 19 mission before it was canceled.



INFINITY Science Center Concludes Month of Anniversary Activities



Stennis Collaborates on Small Business ‘Boot Camp’ Project

Most people are familiar with large aerospace companies such as Boeing, Aerojet Rocketdyne, Northrop Grumman, and Lockheed-Martin, but how many know that [thousands of suppliers](#), including small businesses, contribute to NASA’s missions?

Many small businesses themselves, particularly those representing minority, underrepresented, or underserved segments of society, do not know of the opportunities as well. However, a recent “Minority Boot Camp” pilot project supported by NASA’s Stennis Space Center focused on changing that fact.

Over six weekly virtual sessions spanning February and March, the Louisiana Technology Transfer Office located at Stennis worked with (1) the Small Business Administration’s [Louisiana Small Business Development Center](#) (SBDC)

based at Louisiana State University, (2) the Small Business Administration’s [Office of Investment and Innovation](#) (OII), (3) Xavier University of Louisiana, and (4) the NASA Office of Technology Development to

offer more than 300 boot camp participants a unique opportunity to learn about federal research-and-development (R&D) funding opportunities for university faculty and small businesses. During virtual sessions, individuals also learned about the processes of bidding on federal contracts and drafting federally sponsored research proposals.

Participants included representatives of minority- and women-owned small businesses; higher education leadership, faculty, and student communities; area resource partners and stakeholders; and several federal labs, including NASA, the Department of Agriculture, and the Department of Defense.

The SBDC utilized federal grant funds to organize the “Minority Boot Camp” pilot project as part of its outreach efforts to help make minority-owned companies and Historically Black Colleges and Universities (HBCU) more aware of the opportunities to receive funding through the Small Business Administration’s [Small Business Innovation Research \(SBIR\) and Small Business Technology Transfer \(STTR\)](#) grant programs.

The project included information on NASA’s SBIR and STTR Programs and other agency collaboration opportunities. For example, NASA’s [Patent Portfolio](#) contains a list of commercially viable patents available for licensing by companies. Small businesses also may submit research proposals in collaboration with universities and research laboratories – all geared toward developing technologies that advance the nation’s space program and improve life on Earth.

The event at Xavier University was loosely modeled after a similar minority-oriented bootcamp held several years ago at Mississippi’s Jackson State University, a public HBCU.

“Our primary purpose is to provide technology transfer and commercialization support to NASA at large and Stennis in particular to meet mission-critical goals and objectives, as well as to identify Louisiana universities and companies that can help NASA solve technical problems,” said Victor “Vic” Johnson, associate director of the Louisiana Technology Transfer Office, a full-time staffed resident agency at Stennis for the past 22 years.

“We also work with the NASA Office of Small Business Programs at Stennis to help small businesses in Louisiana position themselves to bid on NASA contract opportunities,” Johnson added.



The Stennis-based office represents the State of Louisiana through the [Office of the Governor](#) and the [Louisiana Economic Development](#), as well as the public higher education system through the [Louisiana Board of Regents](#).

“Our Small Business Development Center at LSU works closely with the Louisiana Technology Transfer Office at Stennis to support projects such as the boot camp,” said William “Hutch” McClendon, business consultant with the Louisiana SBDC. “We also serve as an important resource for the office in areas such as SBIR program outreach for NASA.”

NASA engineer Dawn Davis, director of the Stennis Office of Technology Development, presented during the third of the six virtual sessions. “I gave an overview of NASA’s technology transfer and SBIR/STTR programs and of other opportunities available for universities and business communities,” Davis said. “I also provided information regarding other student opportunities through NASA’s internship programs.”

The boot camp supported NASA’s new Equity Action Plan that seeks to broaden opportunities for underrepresented and underserved communities. “This plan seeks to further identify and remove the barriers that limit opportunity in historically underserved and underrepresented communities and anchor equity as a core component in every NASA mission to inspire a new, more inclusive generation,” NASA Administrator Bill Nelson notes in an introductory letter.

Based on the success of this initial effort, Johnson said his office is exploring the possibility of hosting a minority-focused boot camp later this year at another HBCU in Louisiana. “When you have that kind of relationship and partnership at NASA, good things are going to happen,” concluded Johnson.

Stennis News

Safety and Mission Assurance Group Visits Stennis

NASA Safety and Mission Assurance representatives from several agency centers stand in front of the Fred Haise Test Stand during a Stennis Space Center site tour May 5. The group toured Stennis and learned about its propulsion test work while on site for three days of face-to-face meetings about NASA exploration systems development work. May 3-5. Participants included Safety and Mission Assurance personnel from NASA Headquarters, Kennedy Space Center, Johnson Space Center, Marshall Space Flight Center, and Glenn Research Center.



NASA Recognizes Stennis Space Center Employees

To mark progress in NASA’s Artemis program that will return humans, including the first woman and first person of color, to the Moon, the space agency has been recognizing Space Heroes performing necessary and critical work. Overall, 33 Stennis Space Center employees have been cited for their Artemis-related efforts.

The latest honorees include NASA employee Samone Wilson. Wilson was recognized for playing a critical role in the development of the agency’s virtual engagement activities. As a public affairs specialist in the Stennis Office of Communications, Wilson increased



activity with non-traditional audiences to share the story of Stennis’ role in the Artemis mission. She also provided outstanding support to the special viewing for the Space Launch System core stage hot fire tests.

Lacy Thompson was also recognized for his contributions as the NASA news chief in the Office of Communications and consistently telling the story of Stennis and the Artemis missions. Thompson’s timeliness in supporting inquiries and visits to the center from multiple media outlets and documentary crews were key leading up to the Space Launch System core stage hot fires.



Stennis Lead Accountant Supports Spaceflight Behind the Scenes

Testing rocket engines relates in some ways to having a morning cup of coffee. It takes a network of people to provide one's coffee shop selection, from farmers growing beans to engineers designing machines to supply chain personnel scheduling deliveries.

In like manner, testing rocket engines at NASA's Stennis Space Center, near Bay St. Louis, Mississippi, requires a support network with many different behind-the-scenes workers. Leslie Anderson, a NASA accountant in the Stennis Office of the Chief Financial Officer, is one of those workers.

A native of Picayune, Mississippi, Anderson now lives in nearby Carriere and makes a daily commute to the Stennis site she first visited on a sixth-grade field trip.

"I remember sitting in the auditorium, watching a video on the big screen about NASA and what it does," she said. "The pictures were amazing. ... It brought me out of the realm of my small hometown school and broadened my mind and perspective on new and interesting possibilities."

Anderson further explored those possibilities as a summer student intern at Stennis in 1990 and 1991. She was hired as an accounting analyst by site contractor Johnson Controls World Services in 1992, then joined the NASA civil servant workforce in 1994. "I basically grew up here at Stennis," she said.

Today, Anderson is the lead accountant in the Reimbursable Accounting Branch at Stennis.

Her team supports all reimbursable accounting work for the center's on-site tenants and commercial customers. She also is part of a NASA team focused on implementing a new federal G-Invoicing system for efficient intra-governmental transactions.

Working in a support area, Anderson must remain flexible to

meet the agency's needs and understand where projects are headed. "As the agency Mission Support Directorate makes decisions, you must be ready to change with it and figure out how to make the business work," Anderson said, "That can be



Leslie Anderson, NASA accountant in the Stennis Office of the Chief Financial Officer, supports Artemis missions to the Moon as part of a behind-the-scenes team across a broad spectrum of areas.

simple, or it can be very challenging."

The challenge is worth it and offers the opportunity to be a part of historic work, Anderson said. For instance, she had a firsthand chance to view the historic hot fire of the first flight core stage for NASA's Space Launch System (SLS) rocket on the B-2 Test Stand at Stennis in March 2021. NASA is building SLS to power deep space Artemis missions to the Moon and

eventual flights to Mars. The maiden Artemis I test mission is set to launch later this year.

"It was exciting to be able to be a part of a key historical

occasion that would bring NASA even closer to returning to the Moon," she said. "That was a great day."

At the same time, Anderson said people are her favorite aspect of working at Stennis. "I've been privileged to meet interesting, passionate, and friendly people who have become family to me," she said. "They care about the work, and they care about each other. I have spent the greater part of my life now at

Stennis, and I often think of how blessed I have been to be a part of this agency, particularly in this location."

Anderson described the Stennis culture as "welcoming and encouraging." She said she feels privileged for the opportunity to collaborate with individuals from diverse backgrounds. "I love hearing their stories and learning from the experiences they share and the gifts they bring to the table," she said.

Looking ahead, Anderson said she is excited about the possibilities of expanding the Stennis federal city to include new tenants and test complex customers.

"Stennis provides fantastic job opportunities for south Mississippi and Louisiana residents, and I would love to see that continue and flourish," she said.

Anderson said she also is excited about upcoming Artemis missions, including those that will land the first woman and first person of color on the Moon.

"NASA is all about doing what has never been done before and pioneering the way," she said. "We excel at that, and we need to keep moving forward with that exploration mission. There is a lot to see out there."

At the same time, Anderson said she is interested in how NASA research and technology spinoffs improve everyday lives on Earth. She encourages others to check out the NASA Spinoff website (spinoff.nasa.gov), which highlights how space-related technologies and capabilities are benefiting everyday people.

Considering her work at Stennis, Anderson maintained the spotlight is not required for professional satisfaction.

"I'm proud of my efforts to improve and streamline processes, ensure data integrity, and enable technical teams to be able to accomplish the work they perform," the NASA accountant said. "Although I'm not a technical person working a specific mission, I like to think that my efforts cover a broad spectrum of work and that I've contributed to all the NASA missions in some way."

Office of Diversity and Equal Opportunity

Celebrate Asian American, Native Hawaiian/ Pacific Islander Heritage Month in May

May marks Asian American, Native Hawaiian/Pacific Islander (AANHPI) Heritage Month. The observation celebrates the contributions of Asian Americans, Native Hawaiians, and Pacific Islander people throughout the United States' history.

The theme for 2022 is “Advancing Leaders Through Collaboration,” which highlights the [Federal Asian Pacific American Council's](#) efforts in advancing leaders in the federal and District of Columbia governments.”

According to the council, “Collaboration involves two or more individuals, groups or organizations actively working together to accomplish a task or achieve a goal. Collaboration at its core requires improving team dynamics and enhances problem-solving, leading to increased innovation, process efficiency, improved communication, and ultimately overall success.”

Moreover, collaboration “allows for a culture of openness and trust, which further fosters diversity and inclusion, a variety of opinions and a robust discussion of ideas and approaches, which are all the foundational traits of a thriving organization at the forefront of leading change,” the statement adds.

The focus on collaboration within leadership, and the workplace in general, as it relates to AANHPI Heritage Month, promotes the equity and inclusion of AANHPI people. As stated, the Federal Asian Pacific American Council is “committed to its mission of promoting equal opportunity and cultural diversity for Asian Americans, Native Hawaiian and Pacific Islanders in public service ... and encourages the participation and advancement of AANHPIs in the government workforce.”

Many AANHPI leaders have collaborated to increase innovation, efficiency, and communication. Below are a few notable AANHPI leaders:

- Tammy Duckworth was born in Thailand and became a trailblazer within the United States Government. Duckworth is a U.S. senator from

Illinois and became the first Thai American woman elected to Congress, the first person born in Thailand elected to Congress, the first woman with a disability elected to Congress, the first double amputee in the Senate, and the first senator to give birth while in office. Additionally, Duckworth is a veteran of the Iraq War, where she retired as an Army National Guard lieutenant colonel and received a Purple Heart.

- Kamala Harris is the daughter of Indian and Jamaican immigrants and is currently serving as the vice president of the United States. She is the first woman to hold this office and the highest-ranking female government official in U.S. history. Before she transitioned to the White House, Harris served as a U.S. senator from California from 2015 to 2020 and the state's attorney general from 2011 to 2017.
- Daniel Ken Inouye was born to Japanese immigrants and was a U.S. senator from Hawaii from 1963 until his death in 2012. Inouye earned a law degree from Washington University Law School in 1952. Additionally, in June 2000, he was awarded the medal of honor for his incredible service in World War II. Until Harris's inauguration, Inouye was the highest-ranking Asian American politician in U.S. history.
- Margaret Vo Schaus is a first-generation Vietnamese American. She received several Bachelor of Arts degrees in science, technology, and society, as well as English, from Stanford University, and a Master of Science in management science and engineering from Stanford University. In April 2021, Schaus was nominated by President Joe Biden to be the next chief financial officer at NASA and was confirmed by the Senate in July 2021. [NASA Agency CFO | NASA](#)

To learn more about AANHPI month and other notable Asian American Native Hawaiian Pacific Islander individuals, visit: asianpacificheritage.gov and [Asian American and Pacific Islander Heritage Month \(nationaltoday.com\)](https://AsianAmericanandPacificIslanderHeritageMonth.nationaltoday.com).

Hydrogen Fire Imager Fits NASA's Safety Culture



A worker looks through the NASA Hydrogen Fire Imager used to detect superheated, invisible fires at rocket engine test areas at Stennis Space Center.

Note: NASA's John C. Stennis Space Center has played a pivotal role in the nation's space program. The following offers a glimpse into the history of the space program and the rocket engine test center. As the center celebrates its 60th anniversary later this fall, Lagniappe is looking back at the history of the site.

At NASA, safety is ingrained in the work culture. In many everyday activities, it is the first consideration. Workers are encouraged to step back and look before they act, but what if the danger can not be seen? This scenario is possible at NASA's Stennis Space Center due to the use of rocket engine propellants and presents a very real concern.

NASA commits itself to continually improving the safety of employees and contractors working on NASA projects or at NASA's facilities. That means innovation and invention when an out-of-the-ordinary challenge arises. The NASA Hydrogen Fire Imager is one invention developed for just such a challenge.

Hydrogen is, and long has been, commonplace on Stennis's work sites because it is used as a type of rocket fuel. Experts at Stennis receive special training and equipment to be proficient in transportation, storage,

system design, safety standards, hazard analysis, worker considerations, and testing policies when using hydrogen propellant. Stennis remains among the world's largest users of liquid hydrogen, consuming and storing great amounts for rocket engine testing.

The main concern is that hydrogen is a very flammable gas, and hydrogen fires are invisible. Therefore, if a hydrogen leak is believed to be present, it should always be presumed that a flame is also present.

To better indicate where a hydrogen problem may exist and to further ensure the safety at the center, Heidi L. Barnes of Stennis Space Center and Harvey S. Smith of Lockheed Martin developed the Hydrogen Fire Imager to make the invisible visible. Technicians use the small handheld device to spot and avoid flames, allowing them to keep a lifesaving safe distance while shutting down the hydrogen source and extinguishing the fire.

The imager operates at infrared wavelengths where hydrogen fires appear bright, relative to the background light from the sun. The imager also aids in finding alcohol fires and hydrocarbon fires, which emit light in the same spectral regions.

Online Resources

Hubble: Not Yet Imagined

WLOX interview with Joe Schuyler

I Am Stennis Facebook Videos

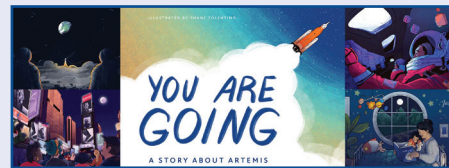
Stennis Emergency Management

NASA Coronavirus Response

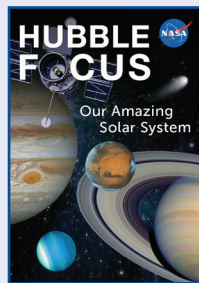
Stennis Fact Sheets



First Woman Graphic Novel



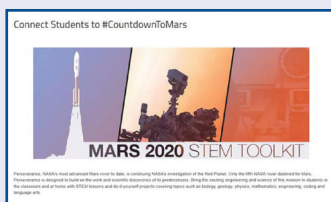
You Are Going Children's Book



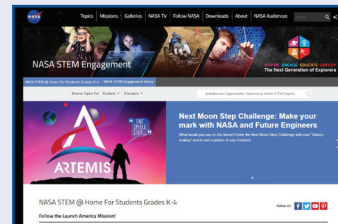
NASA E-Book Downloads



Stennis Artemis Resources



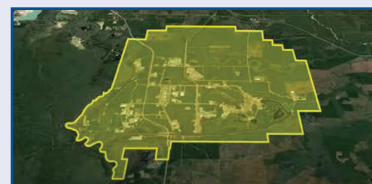
MARS 2020 STEM Toolkit



NASA STEM@Home for Students



NASA at Home



Stennis Virtual Tour