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The interstage simulator component to be used during Exploration Upper Stage testing for the Space Launch System rocket arrives at the B-2 Test Stand NASA's Stennis Space Center on Sept. 21, 2022. Photo credit: (NASA/Danny Nowlin)

Taking Center Stage

See Pages 3-4

Artemis I launch attempt set for Nov. 14 at 12:07 a.m. EST

(For Central time zone, the 69-minute launch window opens at 11:07 p.m. on Nov. 13)

A splashing sound filled the air. "What could it be," I pondered while rolling over in bed. It is not out of the ordinary to hear many sounds overnight in the Stennis buffer zone, but this continuous cadence caught my attention.

More than half asleep, I squinted my eyes to get a better understanding of what I was hearing. The faint splashes sounded a little more familiar.

Something was here ... well somewhere at Stennis. Curiosity took over and my early morning mission was to find out.

My preferred method of travel is normally by foot, but at this moment, time was of the essence, so into the van I went.

No matter how sleepy I might be, I never forget that safety first is the Stennis way. My seatbelt clicked into place and fastened tightly.

The headlights were shining brightly so I could see exactly where this adventure would lead. I drove with the window rolled down as the sounds guided which way to go.

The dark of night disappeared, and the colors of a Stennis sunrise were now showing up. Shades of pink and blue were soon replaced by bright yellow and orange.

The reflection of the sun beamed off this gigantic object coming down the waterway. It nearly blinded me, so it was a good thing I brought my sunglasses.

I overheard workers that were gathered nearby.

"This is much more than a large hunk of steel," one said.

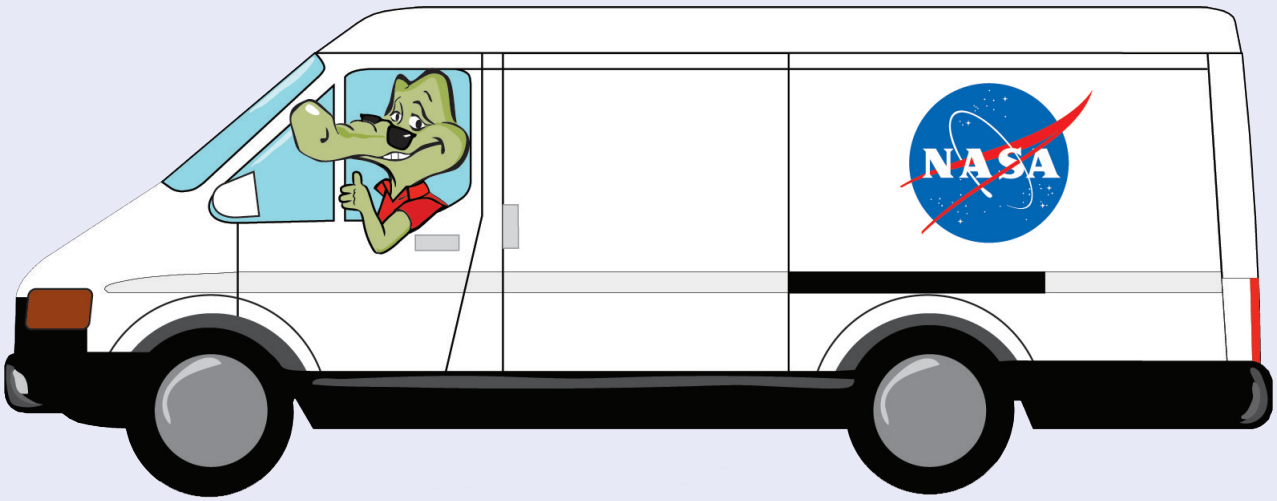
Another mentioned, "It will help begin the next great Green Run series."

Soon, I learned all about this object called the interstage simulator and how it will be used when Stennis tests the new Exploration Upper Stage (EUS) for NASA's future Artemis missions. It weighs 88 tons! That is more than 10 times the weight of a Tyrannosaurus rex.

As October ushers in the cool fall air, the color of the leaves will not be the only thing transforming in the coming months.

Crews are beginning work to complete work on the interstage simulator and prepare it for eventual installation on the B-2 Test Stand. There, it will await arrival of the EUS unit for Green Run testing. What started with the sound of a splash will finish with a hot fire roar one day in the future.

Stay tuned, my friends!



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NASA's MOON to MARS MISSION

Stennis Begins Work on Key Test Component

To view a video version of this article, visit here.

A critical component needed for future testing in support of NASA's Artemis missions to the Moon and beyond recently arrived at the agency's Stennis Space Center in south Mississippi.

Sunrise offers a perfect frame for the interstage simulator component following its arrival at the B-2 Test Stand at NASA's Stennis Space Center on Sept. 21, 2022. Stennis will use the unit during testing of the Exploration Upper Stage for NASA's Space Launch System rocket. Photo credit: (NASA/Danny Nowlin)

The interstage simulator special test equipment arrived at Stennis on Sept. 21 via barge from NASA's Michoud Assembly Facility in New Orleans where it was fabricated. The simulator, 31 feet in diameter and 33 feet tall, will be used during Green Run testing of the new Exploration Upper Stage (EUS). EUS will fly on future Space Launch System (SLS) missions as NASA continues its mission to explore the universe for the benefit of all.

EUS is being built at Michoud as a more powerful second stage to send the Orion spacecraft to deep space. It will replace the interim cryogenic propulsion stage being used on initial Artemis flights and enable NASA to send astronauts and large payloads to the Moon on a single mission.

The new upper stage will be powered by four RL10 engines, generating a combined 97,360 pounds of thrust, compared to the single engine used on the interim stage. That will allow NASA to send 40% more payload to the Moon, 38 metric tons compared to 27 metric tons on initial missions.

EUS is expected to fly on the Artemis IV mission. Prior to that time, it will undergo Green Run testing on the B-2 Test Stand at Stennis, where the SLS core stage also was tested.

During Green Run, NASA will conduct a series of tests on the EUS integrated systems to demonstrate it is ready to fly.

The interstage simulator recently delivered to Stennis is essential to enable the series of tests. The Green Run effort will culminate with a hot fire of the four RL10 engines, just as during an actual mission.

The interstage simulator will serve dual purposes. Most importantly, it will function much like the SLS interstage section to protect the lower part of the EUS vehicle from the environment, keeping the electrical and propulsion systems safe while at Stennis.

The top portion of the simulator also will serve as a thrust takeout system to absorb the thrust of an EUS hot fire and transfer it back to the test stand.

Upon arrival at Stennis, the simulator weighed approximately 88 tons. In the coming months, the Stennis team will perform finishing work to prepare the simulator for installation on the test stand.

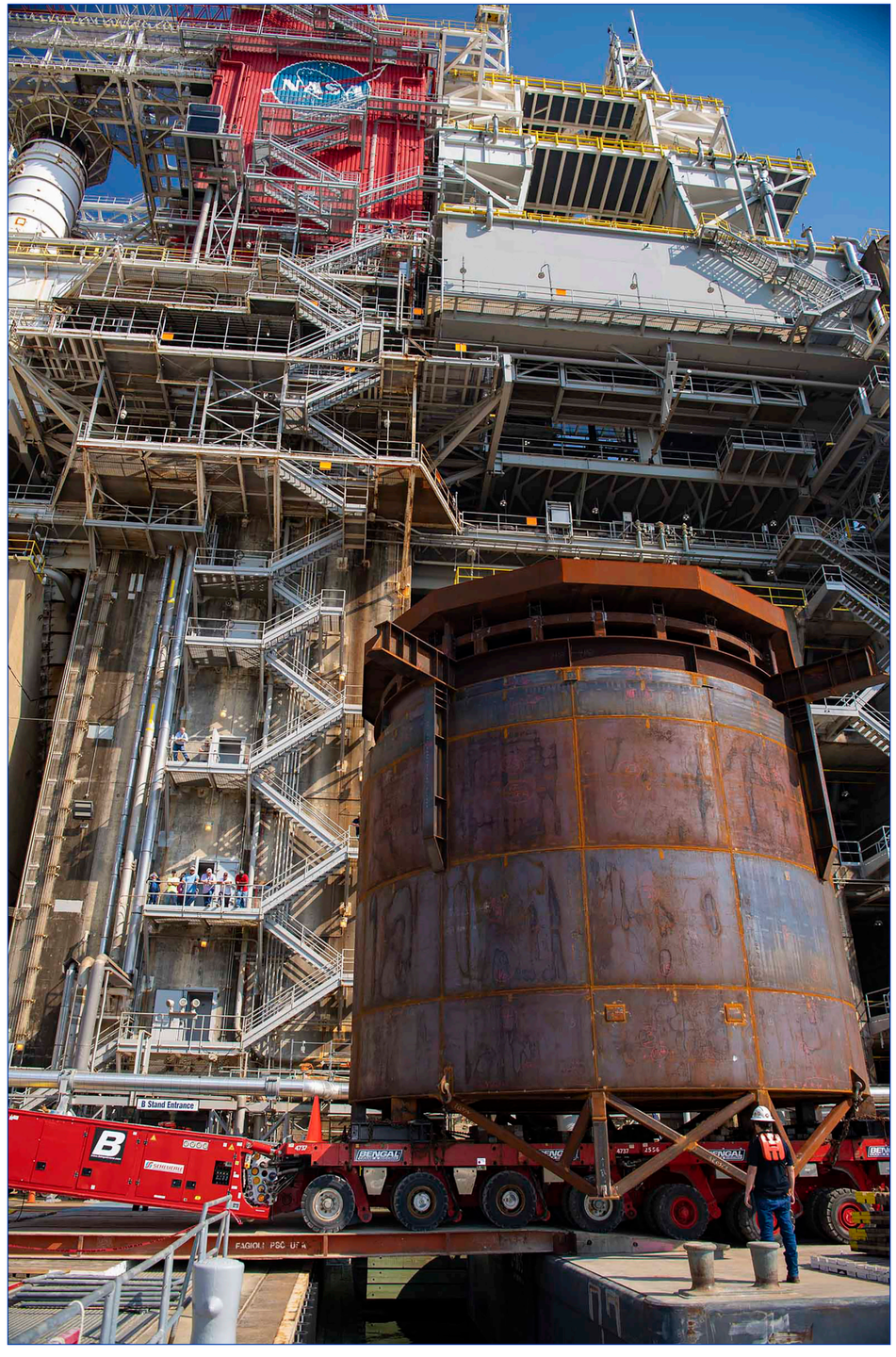
During this process, the team will add another seven to 10 tons of steel, interface beams, tubing and wiring prior to install in preparation for Green Run testing.

"As NASA looks to gain a better understanding of the universe, important projects like this need to occur, …" explained Stennis Project Engineer Nick Nugent. "Stennis is on the front lines … with our rocket engine testing, our component testing, and then also our stage testing, like we did with the (SLS) core stage Green Run. It's an exciting time to be here."

NASA's MOON to MARS MISSION

What To Know About Interstage Simulator

- Key Component For Green Run Testing of Exploration Upper Stage (EUS)
- 31 Feet in Diameter and 33 Feet Tall
- Weighs Approximately 88 tons, or 176,000 pounds
- Protects Lower Part of EUS Vehicle from Environment
- Serves as Thrust Takeout System to Absorb Thrust of EUS Hot Fire
- Currently Being Prepared for Installation at B-2 Test Stand



(Above photo) A drone photo shows the interstage simulator component sitting on the tarmac of the B-2 Test Stand at NASA's Stennis Space Center on Sept. 21, 2022. In upcoming months, Stennis will prepare the unit to be installed on the stand to support testing of the Exploration Upper Stage for NASA's Space Launch System rocket. (Right photo) The close up view of the interstage simulator component shows how massive the test component is in comparison to the B-2 Test Stand and nearby workers at the stand. Photo credit: (NASA/Danny Nowlin)

NASA Engineer's Childhood Inspires Space Future

When Pablo Gomez was a young boy in Cali, Colombia, South America, his eyes were opened to space through the pages of a National Geographic magazine subscription.

Gomez viewed pictures from NASA's Voyager and Pioneer missions. He learned about the Viking I mission, which was the first spacecraft to land on Mars in 1976.

"Back then, as a kid, I never imagined I would end up working on the space program at NASA," Gomez said.

The Colombia native moved from South America to Mobile, Alabama, at 17 for college. Gomez earned a bachelor's degree in electrical engineering from the University of South Alabama. Later, he completed his Master of Business Administration degree at the University of Southern Mississippi before settling in Slidell, Louisiana.

Now, Gomez is expectant for NASA to return to the Moon and eventually to Mars. This will happen through the Artemis space program that Gomez has actively contributed to as part of his 26-year-career at Stennis Space Center.

Gomez experienced a "once-in-a-lifetime opportunity" with his involvement in the Green Run test series, where the four RS-25 engines and core stage of the Space Launch System (SLS) rocket for Artemis I were fully tested together at Stennis.

As NASA's chief of electrical test operations at Stennis, Gomez supported instrumentation efforts to ensure the B-2 Test Stand was equipped for Green Run.

Starting from scratch, his team purchased and installed a new data acquisition system and rewired the test stand. The team designed, installed, and performed checkouts on dozens of electrical interface enclosures. This process allowed them to record, review, and deliver valuable instrumentation data during the Green Run test series.

Additionally, Gomez led the fabrication of umbilical cables, which connected the SLS rocket to equipment on the test stand. For his efforts, Gomez received the NASA Silver Achievement Award.

"My proudest moment was staffing a (test control center) console during the SLS core stage testing," Gomez said.

His group was responsible for recording and displaying low- and high-speed data and video throughout activation of the test stand and the subsequent test series.

"I was also very proud when the A-3 Test Control Center was selected to be the test control center for SLS during Green Run," Gomez said. "I worked on the design of the A-3 Test Control Center while working on the A-3 Test Stand project a decade earlier."

From South America to the Gulf Coast of Mississippi, Gomez said he feels right at home at Stennis.

"Stennis has been doing a good job in attracting a diverse culture," he said. "Stennis is like a big family. I have developed great friends throughout the years. Additionally, my job is close to where I live, and it is a great place to work."

NASA engineer Pablo Gomez stands in front of the B-1/B-2 Test Stand where he led various activities to equip the B-2 Test Stand for the successful Green Run test series that concluded in March 2021 at Stennis Space Center. Photo credit: (NASA/Danny Nowlin)

Stennis Sustainability Team Wins Prestigious Blue Marble

As attention to climate and environmental issues grow more and more urgent, NASA's Stennis Space Center is emerging as a leader in sustainability, evidenced by a recent prestigious recognition.

NASA recently honored the Stennis Sustainability Team with a Blue Marble Director's Award for its leading work in energy reduction across the south Mississippi center. Stennis. Sustainability Team Lead Alvin Askew accepted the award during a Sept. 20 ceremony at NASA's Langley Research Center in Hampton, Virginia. Overall, eight agency teams and individuals were recognized for environmental excellence and leadership during the ceremony.

"This is a great affirmation of hard work not just by a dedicated team of individuals but by everyone at Stennis," Center Director Rick Gilbrech said. "It shows that when we commit and work together, we can make a real difference both today and for the future."

The high-level agency award affirms a concerted ongoing effort by Stennis not only to meet federally established energy reduction goals but to establish and maintain sustainability practices across the federal city site. The scope and success of the work is reflected in an annual Sustainability Report and Future Plan.

Stennis specifically was highlighted during the recent awards presentation for its use of Geospatial Information System (GIS) technology to reduce energy usage and costs. Use of this technology helped reduce overall energy usage at Stennis by 3.5% in the most recent year of record.

The sustainability team used the GIS technology to create a Stennis Energy Intensity Map that shows buildings sitewide in a color-coded format to indicate levels of energy intensity or usage. A click on the map shows a building's current energy intensity, along with data from the previous two years. The data shows trends in energy usage, identifies areas of needed focus, and confirms success of the team's reduction efforts.

The map also has helped the team award a contract to complete Existing Building Commissioning on 10 buildings at Stennis. Existing Building Commissioning is a systematic process for assessing, optimizing, and verifying the performance of a building's systems. The 10 Stennis projects are estimated to provide energy, as well as operations and maintenance, savings of more than $300,000.
In addition, the sustainability team used the GIS map to implement the first utility energy service contract at Stennis. The Stennis contract focuses on the site's High Pressure Industrial Water Facility and is expected to achieve enough energy reduction to pay back an initial $600,000 investment in four-and-one-half years, followed by continued savings.

Following up on this success, the Stennis team worked with NASA Headquarters in Washington to convert an existing project into an agency-funded utility energy service contract. The new contract is expected to result in enough energy savings to pay back the $2.1 million investment in less than 12 years, with continued savings thereafter.

Such efforts are paying off with consistency at the center. Since the Stennis Sustainability Team was established, the site has been one of the top four achievers among NASA centers for energy use intensity reduction each year. It has developed and implemented projects to reduce sitewide facility energy use intensity from its baseline by as much as 48.6 percent.

The team also has reduced water usage by 45 percent since 2007, exceeding established reduction requirements. The team has contributed to agency-level reduction efforts as well, with Askew serving as the team lead for a NASA project to optimize the Energy and Water Support contract.

"I am very proud of the great Sustainability team we have at Stennis," said Center Operations Director Patrick Appelman. "The work that resulted in this award will be a launchpad for significant energy savings at Stennis Space Center as well as all across NASA."

The Stennis Sustainability team consists of NASA personnel and contract support. NASA members include: Team Lead Alvin Askew, Stennis Energy Manager Missy Ferguson, and Project Manager Kevin Stiede. Contract members include: Synergy-Achieving Consolidated Operations and Maintenance (SACOM) Contract sustainability champion Thomas Mitchell, SACOM energy lead Jordan McQueen, SACOM data analyst Rebecca Mataya, and GIS lead Kelly Boyd with Alutiiq Essential Services.

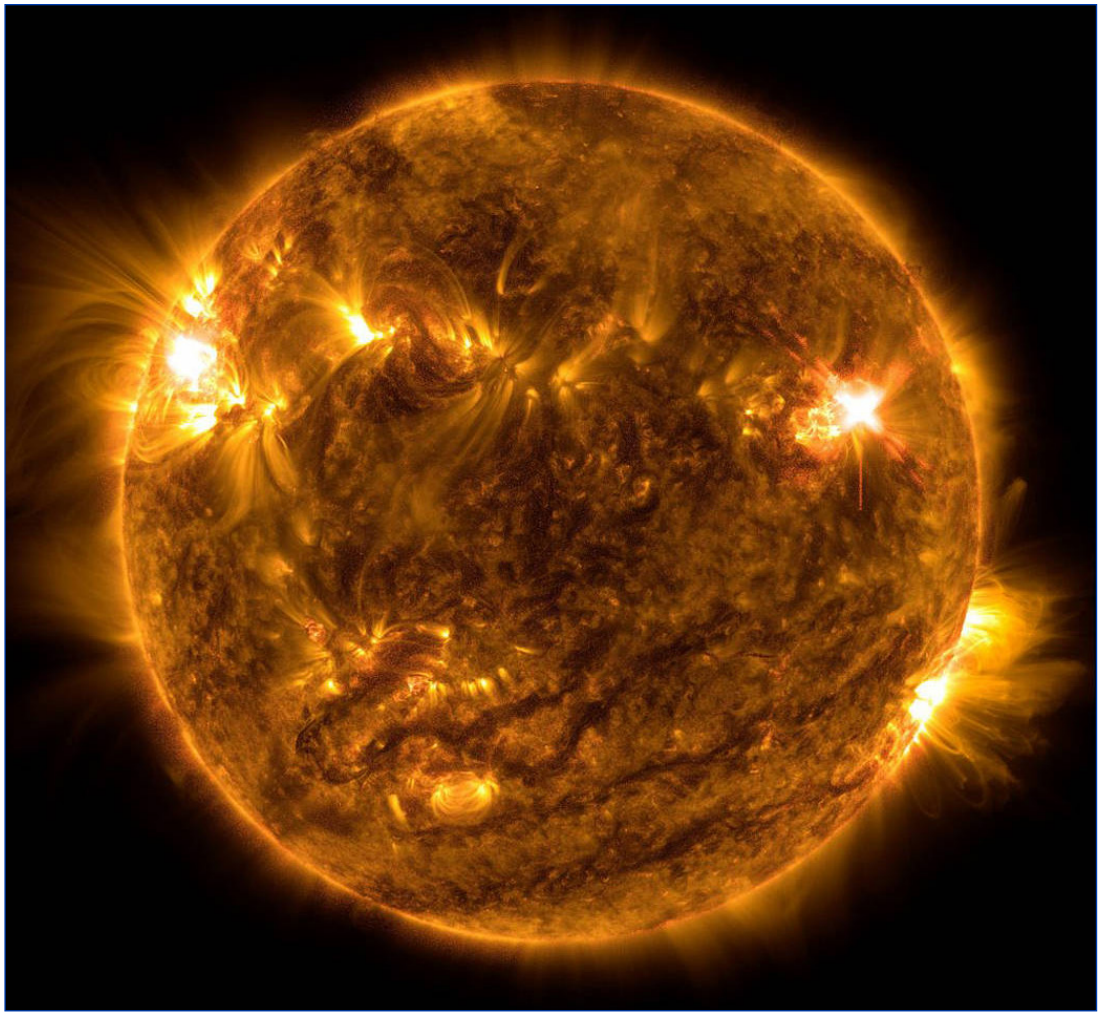
Stennis Space Center Sustainability Team Lead Alvin Askew displays the Blue Marble Director's Award following a Sept. 20 ceremony at NASA's Langley Research Center in Hampton, Virginia. Photo credit: (NASA)

Stennis Sustainability Team Accomplishments

- Created energy intensity map using Geospatial Information Technology, leading to many cost-saving benefits.
- Reduced energy usage by 3.5 percent in most recent year of record (NASA's yearly goal per center is .5 percent).
- Awarded contract that will result in 10 Stennis projects estimated to provide energy, and operations and maintenance, savings of more than $300,000.
- Reduced water usage by 45 percent since baseline measurement in 2007.

Blue Marble Awards Program

- Became official NASA Awards Program in 2005.
- Recognizes NASA civil servants and contractors who demonstrate environmental leadership.
- 88 individuals representing eight centers honored with 2022 awards.
- Stennis Sustainability Team received 2022 Director's Award.



The Sun released an X1 solar flare, a powerful burst of energy, captured by NASA's Solar Dynamics Observatory (SDO) on Oct. 2. X-class are the most intense flares, while the number provides more information about its strength. For instance, an X1 flare is half as strong as an X2. While solar flares can affect radio communications, power grids, and navigation signals, harmful radiation from a solar flare cannot pass through Earth's atmosphere to physically affect humans on the ground. By studying flares and how they affect Earth and nearby space, the SDO helps to better prepare for and mitigate these potential disruptions. Click here to learn more about solar flares. Photo credit: (NASA/SDO)

NASA in the News

NASA Confirms DART Mission Impact Successfully Changed Asteroid's Motion in Space

Analysis of data obtained recently by NASA's Double Asteroid Redirection Test (DART) investigation team shows the spacecraft's kinetic impact with its target asteroid, Dimorphos, successfully altered the asteroid's orbit. This marks humanity's first time purposely changing the motion of a celestial object and the first full-scale demonstration of asteroid deflection technology. Prior to DART's impact, it took Dimorphos 11 hours and 55 minutes to orbit its larger parent asteroid, Didymos. Since DART's intentional collision with Dimorphos on Sept. 26, astronomers have been using telescopes on Earth to measure how much that time has changed. The investigation team confirmed the spacecraft's impact altered Dimorphos' orbit around Didymos by 32 minutes, shortening the 11-hour and 55-minute orbit to 11 hours and 23 minutes. Click here to read more.

NASA Study Suggests Shallow Lakes in Europa's Icy Crust Could Erupt

In the search for life beyond Earth, subsurface bodies of water in the outer solar system are some of the most important targets. That's why NASA is sending the Europa Clipper spacecraft to Jupiter's moon Europa. There is strong evidence that under a thick crust of ice, the moon harbors a global ocean that could potentially be habitable. Scientists believe the ocean is not the only water on Europa. Based on observations from NASA's Galileo orbiter, they believe salty liquid reservoirs may reside inside the moon's icy shell – some of them close to the surface of the ice and some many miles below. The more scientists understand about the water that Europa may be holding, the more likely they will know where to look for it when NASA sends Europa Clipper in 2024 to conduct a detailed investigation. Click here to read more.

Stennis News

Students Visit Stennis For Recent Tour

(Above photo) Participants from the University of Arkansas at Pine Bluff STEM (science, technology, engineering and mathematics) Summer Institute stand in front of the Roy Estess Building at NASA's Stennis Space Center during a site tour on Sept. 26. The students viewed multiple areas of the federal city, including a visit to the B Test Stand, where students learned about Stennis' role in the Artemis program and how the core stage of Artemis I and four RS-25 engines were tested at Stennis during the Green Run test series. The school's STEM program started in 2003 and is designed to help increase the number and diversity of well-prepared STEM graduates.

(Left photo) The Northshore robotics team stands at the B Test Stand during a visit to Stennis Space Center on Sept. 30. The FIRST robotics team from Slidell, Louisiana, formed in 2005. The FIRST Robotics Competition (FRC) is a distinctive style of sport designed to foster a love for science and engineering in young adults. Photo credit: (NASA/Danny Nowlin)

October 1961 – NASA names Hancock County For Test Site

The National Advisory Committee for Aeronautics (NACA) was created in 1915 to promote aeronautical research. NACA's original goal was to study the present errors of flight and create a practical solution based on an observational view of these errors. Noticing their progression behind European flight, NACA accelerated research into aeronautics and crafted the first flight testing facility in 1920 known as the Langley Aeronautical Laboratory. NACA existed until October 1958, when it was converted to a new agency, the National Aeronautics and Space Administration (NASA).

The reason for the conversion was the Soviet Union's launch of the satellite Sputnik I into low-Earth orbit on Oct. 4, 1957. The Soviets later launched the first human in space, Yuri Gagarin. There was a congressional review of the American space program underway at the time of the Sputnik launch.

The Soviet Union's increasing foothold in space exploration further encouraged the government to act and pioneer its own exploration into the new frontier. Using the bones of NACA, a bill was presented to President Dwight Eisenhower in July 1958 to create NASA. The official beginning of the agency was Oct. 1, 1958.

In May 1961, President John F. Kennedy delivered a speech before a special joint session of Congress. He proclaimed the United States should put a person on the Moon before the end of the 1960s. This idea engaged Americans all over the country. NASA had less than nine years to place a human on the Moon, so the process needed to be accelerated and efficient. To meet the goal, the agency needed to test rockets.

In August 1961, an ad hoc committee of members from NASA Headquarters and Marshall Space Flight Center started the work of finding the perfect location for such a task. There were several variables to consider since the rockets would be manufactured at the Michoud Assembly Facility outside New Orleans and launched from Cape Canaveral, Florida.

On Oct. 25, 1961, NASA announced Hancock County as the location for its rocket test site. This photo, taken between 1963 and 1965, shows a sign giving direction to the Saturn Test Site at the Mississippi Test Operation facility. Photo credit: (NASA/SSC)

NASA needed a facility that, ideally, would lie between these two places, be situated away from a densely populated area because of the noise associated with testing rocket stages and engines, have access to both waterway and highway, have a mild climate so testing could conceivably be conducted year-round, and have supported communities nearby. All of the qualities were found in one county in Mississippi. This would be the start of historic space exploration and advancement.

On Oct. 25, 1961, NASA announced that a rocket test site would be established in Hancock County. The area, then known as Mississippi Test Operations, would be the facility to test the Saturn rocket stages that would launch Apollo missions to the Moon.

Just over seven years later, on July 20, 1969, Neil Armstrong, followed by Buzz Aldrin, stepped onto the surface of another world, the Moon. The Apollo 11 crew did not make it on their own, as the contributions of many NASA centers, including the Mississippi Test Operations, contributed to the successful landing.

It is estimated that 400,000 people worked to get humans to the Moon. Hundreds of people built Mississippi Test Operations, including the test stands and control buildings needed to test the rockets to take humans to the Moon.

The engineers, scientists, and technicians in Hancock County all had a part to play in the historic achievement that helped shape the United States and the space exploration goals it continues to pursue decades later.

After the landing on the Moon, Mississippi Test Operations began work on space exploration-related projects. In 1988, the new name the center became Stennis Space Center.

More than 60 years after it was established, Stennis Space Center continues to operate as the nation's premier rocket engine test site.

Hail & Farewell

NASA welcomes the following:

Desiaralle Mendell	Management and Program Analyst	Office of the Chief Financial Officer

Office of Diversity and Equal Opportunity

Ensure Workplace Equity for Persons With Disabilities

October marks National Disability Employment Awareness Month (NDEAM). The observance was declared in 1988 by the U. S. Congress to raise awareness of disability employment needs and celebrate the contributions of individuals with all types of disabilities. This year's theme is "Disability: Part of the Equity Equation."

The theme focuses on equity for people with disabilities and on the support needed to ensure they have fair access, equal opportunities, resources, and an ability to succeed in work environments and participate in activities. This requires eliminating or reducing physical barriers and ensuring all activities and electronic spaces can be accessed by everyone.

There are many new accessibility options in electronic spaces that increase equity for employees who are deaf or hard of hearing. Closed captioning can be accessed by everyone on websites, presentations, and virtual meetings. Google Chrome enables live captions by simply turning on the option in the browser settings.

Microsoft PowerPoint has a new feature that allows for closed captioning while presenting. Simply select "Slide Show" on the ribbon tab, then "Subtitle Settings," then "Always Use Subtitles." Microsoft Teams also has closed captions available. To enable, select "More Actions" under the three dots at the top of the meeting screen. Then, select "Turn on Captions." For more information, visit Live Captions in Teams Meetings.

A best practice for every meeting is to provide a slide at the beginning to inform participants about live captions options and how to access them.

Another accessibility feature in Microsoft Teams is Audio Conferencing, which allows participants to join Teams meetings with a dial-in number. This allows a sign language interpreter to join a meeting to provide interpreting services or to connect a transcription device. To request a conference number, visit Teams Audio Conference Request.

NASA has recently awarded an agencywide Blanket Purchase Agreement for sign language interpreting (SLI) services. It will provide SLI services, on an as needed basis, for individuals who are deaf or hard of hearing. For more information on how to request the service, contact the center disability program manager at ssc-odeo@mail.nasa.gov.

Aside from technology, there are several tips on how to create an inclusive environment for individuals with disabilities, such as the following practices:

- Do not assume that a person with an apparent disability needs assistance. It is acceptable to offer assistance in broad terms, such as "Let me know if you need anything" or "May I hold the door for you?" This is inclusive language that does not assume inability.
- Put the person before the disability by using more inclusive language, such as "a person who uses a wheelchair" instead of "confined to a wheelchair" or "a wheelchair person," or a "person who is blind" rather than "a blind person."
- If convenient and natural, put oneself at eye level when engaging in a conversation with a person who uses a wheelchair. Rather than standing over them or kneeling, pull up a chair instead.
- When interacting with a person who is blind, describe the setting, environment, and physical features when introducing oneself. Also, a person who is blind may not be deaf, so speaking loudly is not helpful.
- Resist the temptation to pet or talk to a guide or service animal. If the animal becomes distracted, it could endanger the individual.
- For individuals who utilize a sign language interpreter, speak directly to the person, not the interpreter; keep your eyes on the individual and not on the interpreter.
- Many individuals who are deaf or hard of hearing read lips to help understand what is being communicated. Always look directly at the person and speak clearly; in a virtual environment, turn on your camera so the person can see your face.
- If you do not understand what someone is saying, ask the person to repeat what they said, and if needed repeat it back to ensure understanding.

From technology to one's own actions, there are several ways to promote equity and inclusion for people with disabilities. As workplaces celebrate and observe NDEAM, remember to center the individual and ensure that activities and electronic spaces can be accessed by everyone.

For more information, click on the following links:

National Disability Employment Awareness Month 2022 | U.S. Department of Labor (dol.gov)

Disability Etiquette – A Starting Guide – Disability: IN (disabilityin.org)

Online Resources

Click the links below for more about NASA's Stennis Space Center

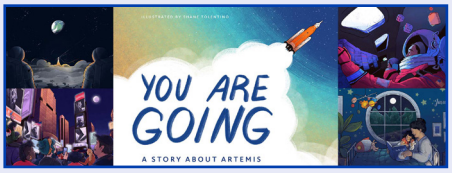
- WDAM: 40-year NASA Engineer Praises HBCUs for Quality Graduates
- WGNO: NASA's Stennis Space Center Proven to be Powered by HBCU Excellence
- Mississippi Public Broadcast Interviews Travis Martin as NASA Celebrates HBCU Week
- WLOX Celebrates Women in STEM with NASA Engineer Megan Martinez
- Associated Press: Gulf Coast Powers NASA's New Moon Rocket
- Stennis Video Short: Data Acquisition System
- Stennis Video Short: Thrust Vector Control System
- Stennis Space Center Fact Sheets

Stennis Artemis Resources

Watch Orion's Journey

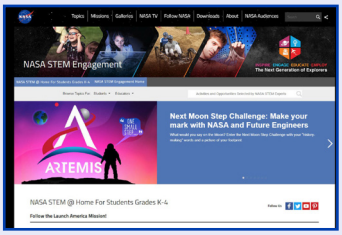
- Part 1: Leaving Earth
- Part 2: Entering Distant Retrograde Orbit
- Part 3: Return Home

Stennis Virtual Tour



You Are Going
Children's Book

First Woman Graphic Novel



NASA STEM@Home for Students