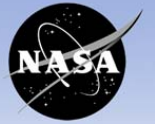




National Aeronautics and Space Administration



LAGNIAPPE

John C. Stennis Space Center

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Picture perfect!

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I hope you have had a chance to see the recent movie “Hidden Figures.” What a great story about some incredible people – and incredibly important people, too, as it turns out. Even without seeing the movie, you probably have heard the story about the African-American women who served as “human computers” early on for the nation’s space program.

They excelled at their work, despite having to deal with those discriminating times. With computers a fairly new invention, these women calculated trajectories for the early human spaceflights by hand. I do not know about you, but this ole Gator does not have near enough fingers and toes to do that kind of math. Ark!

These women had what it took, though, and they worked, day in and day out, largely unrecognized and under appreciated, to contribute how they could. One of the women, Katherine Johnson, reflected on the work they performed during a civic ceremony last year. She downplayed the efforts. “At the time it was just another day’s work,” she said.

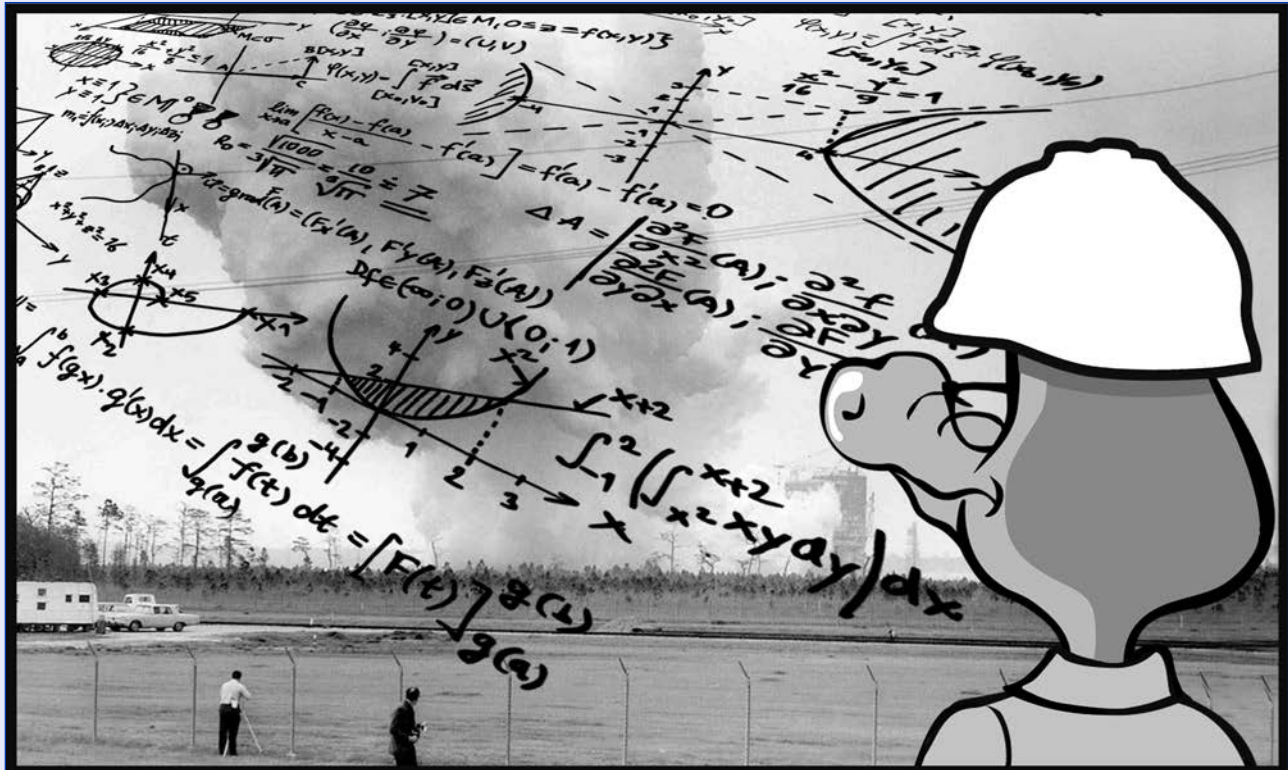
Reading what she said got me to thinking about all of the people, then and now, who do “just another day’s

work” around here and elsewhere in NASA. A lot of them – probably most of them – are pretty unnoticed, maybe even taken a bit for granted. And yet, they keep on doing their work – day after day after day.

A lot of people here at Stennis through the years certainly fit that description. As astronauts were making headlines flying those early hand-plotted trajectories, these hidden figures were hard at work to build this test site. They then worked hard to test the rocket stages and engines that built on those early space flights and carried humans all the way to the moon.

Many of those folk are largely forgotten. Yet, they all played a part by doing their good day’s work. All in all, the Stennis team tested 27 Saturn V rocket stages during the Apollo years. All that were launched performed their missions without a single failure.

Hidden figures. Another day’s work. It all boils down to good people doing their share (large or small) of good work because they know how to do it and it needs to be done. When you add them all up, you can run out of fingers and toes pretty quick. You also can find your way to the stars.



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FULFILLING NASA'S EXPLORATION MISSION

NASA tests engine controller for 1st SLS flight



(Left photo) Aerojet Rocketdyne technicians inspect the engine controller for the first integrated flight of NASA's Space Launch System and Orion. The engine controller was installed on RS-25 development engine no. 0528 for testing at Stennis Space Center. The engine controller is a modern version from the RS-25 controller that helped propel all of the space shuttle missions to space.

(Middle photo) Stennis Space Center Deputy Director Randy Galloway (l) stands with NASA and Aerojet Rocketdyne officials atop the B-2 Test Stand during a tour of site facilities prior to the RS-25 test on March 23.

(Right photo) Stennis Space Center Director Rick Gilbrech (r) stands with Marshall Space Flight Center Director Todd May and Glenn Research Center Director Janet Kavandi during the March 23 test of an RS-25 engine on the A-1 Test Stand.

NASA marked a critical milestone March 23 with a test of the first RS-25 engine controller that will be used on the first flight of the new Space Launch System (SLS), the world's most powerful rocket.

The new controller or "brain" has the electronics that operate the engine and communicate with the SLS vehicle. Engine Controller Unit-2 (ECU-2) was installed on RS-25 development engine No. 0528 and test fired for 500 seconds on the A-1 Test Stand at Stennis Space Center.

Once test data is certified, the engine controller will be removed and installed on one of four flight engines that will help power the first integrated flight of SLS and the Orion spacecraft.

This year, two more engine controllers for the first SLS mission will be tested on this development engine at Stennis, and then installed on flight engines. The fourth controller will be tested when NASA tests the entire core stage during a "green run" on the B-2 Test Stand at Stennis. That testing will involve installing the SLS core stage on the stand and firing its four RS-25 flight engines simultaneously, as during a mission launch.

"This an important – and exciting – step in our return to deep space missions," Stennis Director Rick Gilbrech said. "With every test of flight hardware, we get closer and closer to launching humans deeper into space than we ever have traveled before."

The RS-25 engines that will help power the SLS vehicle on its first flights are former space shuttle main engines, built for NASA by Aerojet Rocketdyne. Four engines will fire simultaneously to provide 2 million pounds of thrust and operate in conjunction with a pair of solid rocket boosters to power the SLS launch.

Space shuttle main engines were tested extensively and used to power 135 missions from 1981 to 2011. For SLS, the engines have been upgraded to operate at a higher level and under different conditions, and the flight controller was one of the critical new parts of the engine to enable performance under these new conditions.

Prior to a flight, performance specifications, such

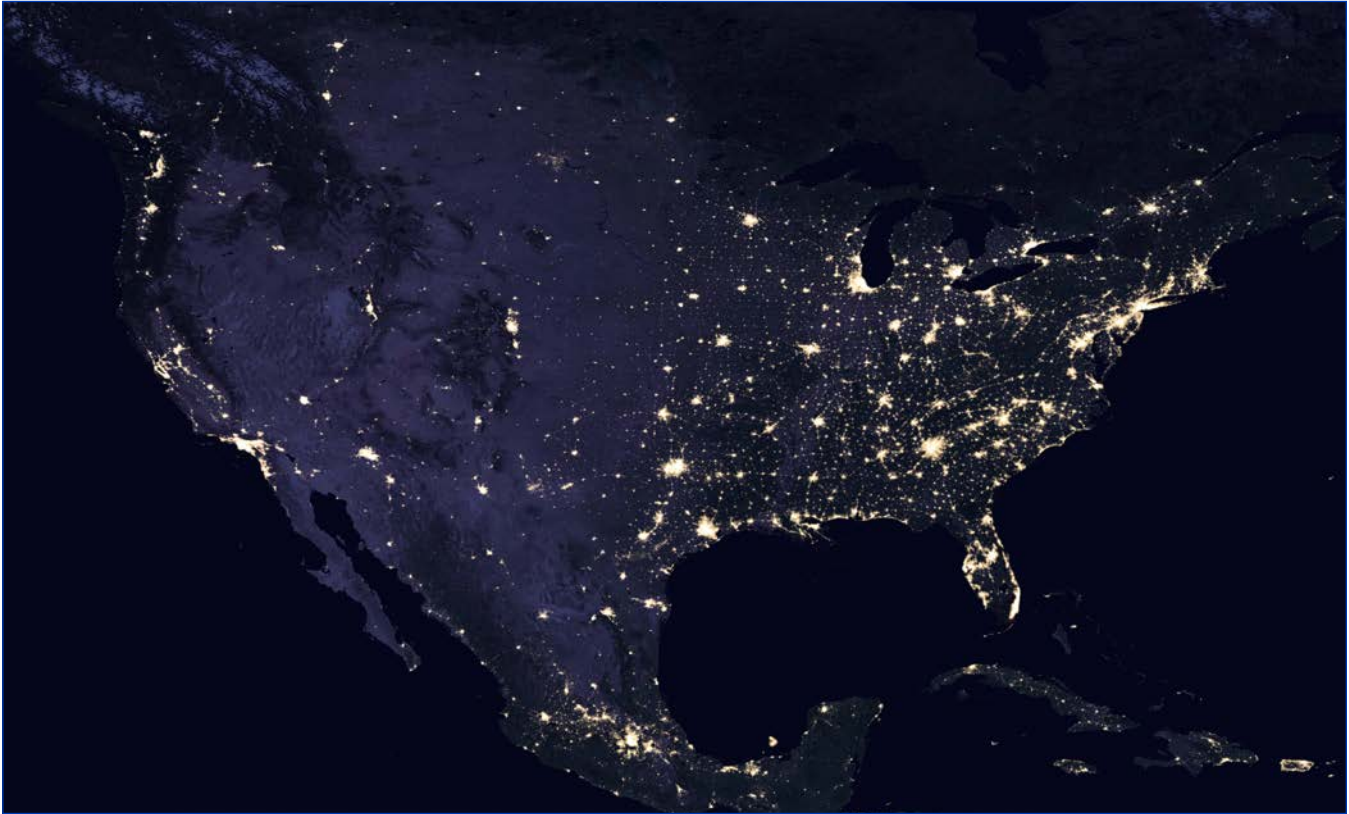
as the percentage of thrust needed, are programmed into the controller. The controller then communicates the specifications and monitors engine conditions to ensure they are being met, controlling such factors as propellant mixture ratio and thrust level.

Testing for the upgraded engines and new controllers is vital to ensure they will perform as needed within the operating parameters. For instance, space shuttle main engines operated at a maximum of 104.5 percent of power level capability. For SLS flights, the RS-25 engines must fire at 109 percent of capability. The engines also will operate with colder liquid oxygen and engine compartment temperatures, higher propellant pressure and greater exhaust nozzle heating.

"The importance of this testing cannot be over-emphasized," A-1 Test Director Jeff Henderson said. "Each test has specific objectives to determine how the engine will respond. The goal is to learn as much as we can about the performance of the engine."

RS-25 testing at Stennis Space Center is conducted by a team of NASA, Aerojet Rocketdyne and Syncom Space Services engineers and operators. Aerojet Rocketdyne serves as the prime contractor for RS-25 engines. Syncom Space Services is the prime contractor for Stennis facilities and operations.

For more regarding the SLS rocket and program, visit: <http://www.nasa.gov/sls>



NASA releases clearest-yet 'night light' maps of the world

NASA scientists are releasing new global maps of Earth at night, providing the clearest-yet composite view of the patterns of human settlement across the planet. The above image shows a view of the United States. Satellite images of Earth at night – “night lights” – have been a gee-whiz curiosity for the public and a tool for fundamental research for nearly 25 years. Produced every decade or so, such maps have spawned hundreds of

pop-culture uses and dozens of economic, social science and environmental research projects. Now, a NASA team is on the verge of providing daily, high-definition views of Earth at night, and are targeting the release of such data for later this year. Providing daily images has many potential uses, such as aiding short-term weather forecasting and disaster response. To explore NASA “night light images,” visit: <https://earthobservatory.nasa.gov>.

NASA in the News

NASA unveils public resource library

NASA officially has launched a new resource to help the public search and download out-of-this-world images, videos and audio files by keyword and metadata searches from NASA.gov. The NASA Image and Video Library website consolidates imagery spread across more than 60 collections into one searchable location. NASA Image and Video Library allows users to search, discover and download a treasure trove of more than 140,000 NASA images, videos and audio files from across the agency’s many missions in aeronautics, astrophysics, Earth science, human spaceflight, and more. Users now can embed content in their own sites and choose from multiple resolutions to download. The website also displays the metadata associated with images. The library is not comprehensive, but rather provides the best of what NASA makes publicly available from a single point of presence on the web. Additionally, it is a living website, where new and archival images, video and audio files continually will be added. Access the website at: <https://images.nasa.gov>.

Astronaut extends record mission

Already poised to break the record for cumulative time spent in space by a U.S. astronaut, Peggy Whitson is extending her mission with an additional three months at the International Space Station. Rather than returning to Earth with her Expedition 51 crew mates in June as originally planned, Whitson will remain on the space station and return home in September. The arrangement takes advantage of a Soyuz seat left empty by the Russian space agency decision to temporarily reduce their crew complement to two cosmonauts. Whitson’s extension will ensure a full complement of six astronauts on board the station and increase the amount of astronaut time available for experiments. This is Whitson’s third long-duration stay onboard the space station. On April 24, she will break the current U.S. record of 534 cumulative days in space. In 2008, Whitson became the first woman to command the space station; on April 9, she became the first woman to command it twice. In addition, she holds the record for most spacewalks by a female.

Stennis joins Bicentennial event

The Stennis Office of Education and Office of Communications joined together March 31 and April 1 to celebrate the Mississippi Bicentennial and promote increased public awareness of the missions and benefits of space exploration.

Representatives from the two Stennis offices hosted exhibits and presentations during the recent Mississippi Bicentennial Celebration held at Centennial Plaza in Gulfport, Mississippi.

Informational handouts focused on promoting interest in STEM (science, technology, engineering and mathematics) activities and highlighting NASA work aboard the International Space Station and how it has resulted in research/technology advancements and benefits to daily life.

The two-day bicentennial festival highlighted Mississippi's history, culture and advancement during the past 200 years. More than 25,000 parents, students, military veterans, government officials and others attended this historic event.

Stennis Office of Education staff presented two human exploration and operations-themed activities – rocket transportation and UV beads – for the K-12 students in attendance. They also sponsored a vacuum chamber simulation to show what happens to objects when air and other gases are removed, thus creating a low-pressure environment.

Office of Communications staff provided replicas of a space suit and dehydrated space food, items currently used in outer space travel to the International Space Station. Participants also were given important safety information regarding the upcoming solar eclipse on Aug. 21.



The NASA Office of Education and NASA Office of Communications at Stennis Space Center collaborated March 31-April 1 to host exhibits and presentations at the Mississippi Bicentennial Celebration in Gulfport. Stennis representatives shared information about NASA and its work, provided space-related presentations and activities.

Stennis educators host workshop for community college scholars



The Stennis Space Center Office of Education hosted 44 select community college students from across the country for the Spring 2017 NASA Community College Aerospace Scholars (NCAS) Program the week of April 9. Funded by the Minority University Research and Education Program, NCAS supports community college students who are interested in pursuing STEM (science, technology, engineering and mathematics) studies and future STEM careers. The weeklong workshop offers students "an authentic NASA experience" to encourage them in their continued studies and career pursuits, said Kelly Martin-Rivers, the STEM engagement activity manager for the NCAS program at Stennis. The agency-wide program

started at NASA's Johnson Space Center in Houston and is now hosted at various NASA centers twice a year, fall and spring. The Stennis four-day spring workshop was held at INFINITY Science Center on April 10-13 for selected students who successfully completed a five-week online course. During the workshop, students were divided into four teams representing fictitious companies competing to earn a NASA contract to explore Mars. In the exercise, team members developed and tested a prototype rover to explore Mars, managed a production budget, and developed and presented a plan for communications and outreach (bottom left photo). The teams worked with Stennis Space Center educators and engineering

mentors during the week. Two students from the fall NCAS workshop at Stennis also served as program assistants for the spring class. Teams built toward a robotic challenge in which they operated their prototype rovers on a simulated Mars landscape (center photo). In the challenge, students used their robotic rovers to show how they would collect mineral samples and other items on Mars. Stennis volunteers served as judges for the challenge. In addition to the exploration exercise, the workshop featured several guest speakers, including Stennis Deputy Director Randy Galloway (top left photo). Others included Katrina Emery, director of the Stennis Office of Education; Freddie Douglas, direc-

tor of the Safety and Mission Assurance Directorate at Stennis; Howard Conyers, a Stennis engineer who spoke about development of a revolutionary high-speed camera; Joy Smith, NASA internships, fellowships and scholarships lead at Stennis; John Bailey, director of the Stennis Engineering and Test Directorate; and Michael Vallan, an attorney specializing in intellectual property and copyright law in the Stennis Office of the Chief Counsel. The students also toured Stennis facilities, including the Aerojet Rocketdyne engine assembly facility and the A-2 Test Stand (top right photo). For more on the NCAS Program and NASA Education, visit: <https://nas.okstate.edu/ncas/> and <https://www.nasa.gov/education>.

Stennis educators host teacher workshop

Stennis Space Center educators teamed with the Keesler Air Force Base on March 30 to host a “Weather Academy” professional development workshop for Mississippi and Louisiana teachers.

The collaborative workshop was held at Keesler Air Force Base in Biloxi, Mississippi, and attracted 19 educators from the two-state area. Presented as a continuing education unit opportunity, the development workshop featured a pair of Stennis presenters, working in conjunction with Keesler Weather School and Hurricane

Hunter personnel. Stennis educators were Steve Culivan, NASA STEM (science, technology, engineering and mathematics) educator professional development collaborative specialist, and Seth Johnson, a Stennis Space Center

education specialist with NVision Solutions Inc.

During the five-hour session, the K-12 educators investigated and explored how weather is studied and predicted.

Stennis educators provided a variety of weather resources and lessons for classroom use. Keesler Weather Academy instructors demonstrated the methods the U.S. military uses to train weather specialists and hosted a tour of the base weather center.

In addition, Hurricane Hunter person-

nel provided an overview of their work to investigate and understand hurricanes and other major storms. Participating educators also had a chance to tour Hurricane Hunter aircraft and equipment.



Mississippi and Louisiana educators stand in front of a Hurricane Hunters aircraft during a recent Weather Academy professional development workshop co-hosted by the Stennis Office of Education.

Stennis program marks Women’s History Month



Mississippi educator and businesswoman Dr. Cherie Labat speaks to Stennis Space Center employees during a 2017 Women’s History Month program on site March 29. Labat is assistant superintendent of academics and federal programs for Bay St. Louis and Waveland schools. She also serves as a board member for several community organizations. She spoke on the 2017 theme – “Honoring Trailblazing Women in Labor and Business.”

Stennis participates in student career expo

Mississippi students enjoy an opportunity to meet and interact with Stennis Space Center mascot Orbie the Astronaut during the Pathways to Possibilities event in Greenville, Miss., on March 21-24. Pathways is an interactive expo designed to introduce eighth-grade students from six Mississippi counties to various career possibilities. NASA hosted exhibits and activities for hundreds of visiting students during the recent event, emphasizing STEM (science, technology, engineering and mathematics) studies and careers.



Stennis supports autism awareness

Stennis Space Center employees stand in front of the Roy S. Estess Building on April 13, all wearing blue in sign of their support of annual National Autism Awareness Month. Autism spectral disorder is a complex developmental disability that affects a person's ability to communicate and interact with others in a variety of ways.



Mark your calendar – Stennis Old Timers Day, May 5, 4 p.m.



More than 150 athletes with special needs competed in the Stennis Space Center Area II Special Olympics Field Games hosted at INFINITY Science Center on April 8. Photos show athletes competing in some of the Olympic-style events, as well as celebrating victories and friendships. Above, a young boy encourages a competitor in her race event. (Photos by Douglas LeMere, communications specialist with the NASA Shared Services Center)

Stennis hosts South Mississippi Area III Special Olympics Field Games

Stennis Space Center sponsored the annual South Mississippi Area III Special Olympics Field Games on April 8 at INFINITY Science Center.

Athletes from Hancock, Harrison, Stone and Pearl River counties competed in numerous summer sporting events. More than 150 athletes with special needs, joined by 300-plus volunteers, came together for friendly competition.

Former Green Bay Packers quarterback Brett Favre was guest speaker for the event and urged the athletes to do their best. Many athletes enjoyed a chance to take a photo with Favre, who also signed autographs for some of the participants.

The mission of Special Olympics is to provide year-round sports training and athletic competition for intellectually or developmentally challenged adults and children at least eight

years old. Through successful experiences in sports, Olympians gain confidence and build a positive self-image that carries over into the classroom, home, job and community.

Patterned on the World Olympics, the games include an opening ceremony and a host of Olympic-type track and field competitions. Other fun events and entertainment also were available. Competition events included: bocce ball, football toss,

frisbee throw, running, long jump, basketball throw and golf, to name a few. All athletes receive ribbons for participating.

Stennis Space Center first hosted the South Mississippi Area III Special Olympics Field Games in 1983.

For more information about Special Olympics, visit online at: <https://www.sscspecialolympics.com/>

Stennis part of Mississippi 200-year history

Note: For more than 50 years, NASA's John C. Stennis Space Center has played a pivotal role in the success of the nation's space program. This month's Lagniappe provides a glimpse into the history of NASA and the south Mississippi rocket engine test center.

This December, Mississippi will turn 200 years old. The birthday party started in April with the southern bicentennial celebration in Gulfport, Mississippi, and will culminate with a celebration in the state capital of Jackson this December. The John C. Stennis Space Center had a presence at the Gulfport Bicentennial Celebration. The history of the area where the Stennis Space Center now sits can be traced back well before Mississippi entered statehood in 1817. There were five towns located in what now is the acoustic buffer zone that surrounds Stennis: Napoleon, Logtown, Gainesville, Santa Rosa and Westonia.

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

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

Gainesville was the only town in what is now Stennis that lay in the fee area. It began in 1810 with a land grant by Dr. Ambrose Gaines for more than 500 acres in what was then Spanish territory. Gaines laid out his plan for a new town, naming it Gaines Bluff. Andrew Jackson, just prior to the Battle of New Orleans in 1813, marched his troops through Gainesville so not to be detected by British troops. Gainesville grew due to the shipping and logging industries along the Pearl River, but in 1883,

the Southern Railroad Line between New Orleans and Meridian, Mississippi bypassed the town by 10 miles. By 1961, when NASA was looking to build the rocket test facility, Gainesville only had 35 families left.

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

populated the area surrounding Stennis until the mid-1960s.

The town of Westonia was named for the lumber tycoon Horatio Weston, who founded the H. Weston Lumber Company. Westonia grew up around the timber industry and also housed a repair station for railroad flat cars and steam engines. It was a small town with churches, stores, one hotel, a small school and a couple of wells used for the steam engines

that traveled through the town. After 1930 and the Great Depression, the timber industry in the area shut down. By the 1960s, the town was almost nonexistent.

On Nov. 1, 1961, on the grounds of the Logtown elementary school, U.S. Sen. John Stennis of Mississippi gave a speech to the 1,500 people from the surrounding area. The government planned to build a rocket testing center on their land, and Stennis spoke about the project and what the government was asking the people to do. "There is always the thorn before the rose; ... you have got to make some sacrifices, but you will be taking part in greatness," he said. It was a "call to arms" in the space race against the Soviet Union. Soon, because of the sacrifices of the families in the surrounding towns to allow construction of the rocket engine test site, it was said, "If you want to go to the moon, you first have to go through Hancock County, Mississippi."

NASA and Stennis Space Center are now preparing to go beyond the moon and journey to Mars.



Stennis History Office Coordinator Jessica Herr greets visitors to an informational exhibit at the Mississippi Bicentennial Celebration in Gulfport.

Office of Diversity and Equal Opportunity

Stennis G.E.M.S. event focuses on inclusiveness

This article was written by Carl Clark, a graduate Pathways intern in the NASA Office of Communications at Stennis.

The annual Girls Excited about Math and Science (G.E.M.S.) event was developed to encourage young women to pursue science, technology, engineering and mathematics (STEM) careers. It is typically held in March to coincide with Women's History Month. The event has been held at Stennis Space Center for the past six years. NASA and other resident organizations team up to host more than 200 young women, all interested in STEM and from schools throughout Mississippi and Louisiana.

This event is designed to help change the disparity of women in STEM careers. While progress has been made in the technical areas of medical science, there is still a large gender gap in the other STEM career fields. Through programs like G.E.M.S., young women may be

inspired to become the next generation of explorers and possibly even be the first to set foot on Mars or help enable the astronauts who travel to the Red Planet.

Each year, a number of STEM-related activities are featured, as well as opportunities to learn more about the professional world. The students are treated to STEM education activities as well as a speed-mentoring session with STEM professionals.

Attendees also learn about various advanced education

options available to them during a college workshop. The ever-popular fashion show featured each year is an activity designed to inform the students about office etiquette and professional dress in a fun, entertaining way.

The young women also learn what it is like to be an engineer through a team-based exercise involving building objects that are lightweight but strong.

***NASA has made
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However, work remains
to be done.***

NASA has made great strides in becoming more inclusive of women throughout its workforce. However, work remains to be done to ensure the nation's full brain trust and talents take part in the perspective-expanding act of discovery regardless of gender, race, creed, color or sexual orientation.

The young women who visit Stennis with G.E.M.S. are potentially the next generation of NASA. Fostering this talent pool is not the only reason why inclusivity of gender is important. The main reason has to do with who NASA is and what the agency represents.

NASA is at the forefront of exploration, enabling discoveries on Earth, throughout the solar system and within ourselves. As with all great endeavors, success is made easier and is enriched through the diversity of those who work to achieve it.

Hail & Farewell

NASA bids farewell to the following:

Michael Bednarczyk	Student Trainee	Office of the Chief Financial Officer
Nicole Borchert	Student Trainee	Office of the Director
Carl Clark	Student Trainee	Office of Communications
Kathy Cooper	AST, Facility Systems Safety	Safety and Mission Assurance Directorate
Rosa Obregon	AST, Mechanical Experimental Equipment	Engineering and Test Directorate
Eric Ross	AST, Quality Assurance	Safety and Mission Assurance Directorate



Faces of Stennis

Each month, Lagniappe will feature employees at Stennis Space Center whose work enables the center to fulfill its mission as the nation's largest rocket engine test center. This month's employees are highlighted on the following pages.



Kim Avery



Kim Avery knew about NASA. As a child in Chalmette, Louisiana, she had watched with her parents and other family as Apollo 11 astronauts landed on the moon for the very first time. Avery also knew about Stennis Space Center. As an adult living in Slidell, Louisiana, the site was only 20 minutes away. However, until she accepted a position with the NASA Shared Services Center (NSSC) at Stennis in 2011, she did not understand the key role the site played in her earliest space memory and other space exploration efforts. “I was never completely aware of what Stennis’ mission was,” says Avery, who moved from the NSSC to a resources management position in the NASA Office of the Chief Financial Officer in 2015. “It has been very interesting to become familiar with the engine testing and the work that Stennis does to support NASA.” As a management and program

analyst, Avery plays a key role in enabling that work and support. She manages the budget for numerous areas at Stennis, including strategic communication, technical excellence, product data and life-cycle management, the Education Office, the Safety and Mission Assurance Directorate, the NASA Engineering and Safety Center, and the Office of the Chief Engineer. She also manages working capital fund budgets for the NSSC and the National Center for Critical Information Processing and Storage. She is proud of the work she does to support each area and of her cost analysis contributions to the effort to expand and develop use of Stennis’ restricted air space range. She also is proud of her overall 35-year career in federal government and is excited about the future of space exploration, especially the possibility of humans traveling to Mars.

Belfield Collymore



Belfield Collymore took a circuitous route to Stennis Space Center. A native of the Central American nation of Belize, Collymore eventually migrated to the United States, serving 20 years as an air transportation specialist in the U.S. Air Force. He then began work as a civil servant, settling in Illinois. A couple of years ago, he and his family decided they had experienced enough cold winters and decided to move south, so Collymore accepted a position in the Naval Oceanographic Office at Stennis in April 2015. The following January, he became a contracting officer in the NASA Office of Procurement. In that role, he oversees pre-award activities for the natural gas system modification project and procurement of hydrogen burn-off igniters for support of Space Launch System work at both Stennis and Kennedy Space Center. He also administers contracts for the laboratory

expansion project in Bldgs. 8100 and 8110, for the demolition of three other Stennis facilities and for replacement of high-pressure air dryers and compressors at the high-pressure gas facility. Collymore identifies people as the best thing about working at Stennis – “supervisors who encourage new ideas and innovation, and peers who collaborate to build relationships and achieve common goals.” He is proud of working in such an inclusive workplace and excited about the role Stennis is playing to help NASA accomplish its space exploration goals. Looking back, he should not be surprised that his career has carried him to Stennis. After all, his earliest space memory is of the Apollo 16 lunar mission, that flew during his very first trip to the United States in 1972. As he now knows, the rocket stage that powered the launch of that mission was tested right here in south Mississippi.