



National Aeronautics and Space Administration



LAGNIAPPE

John C. Stennis Space Center

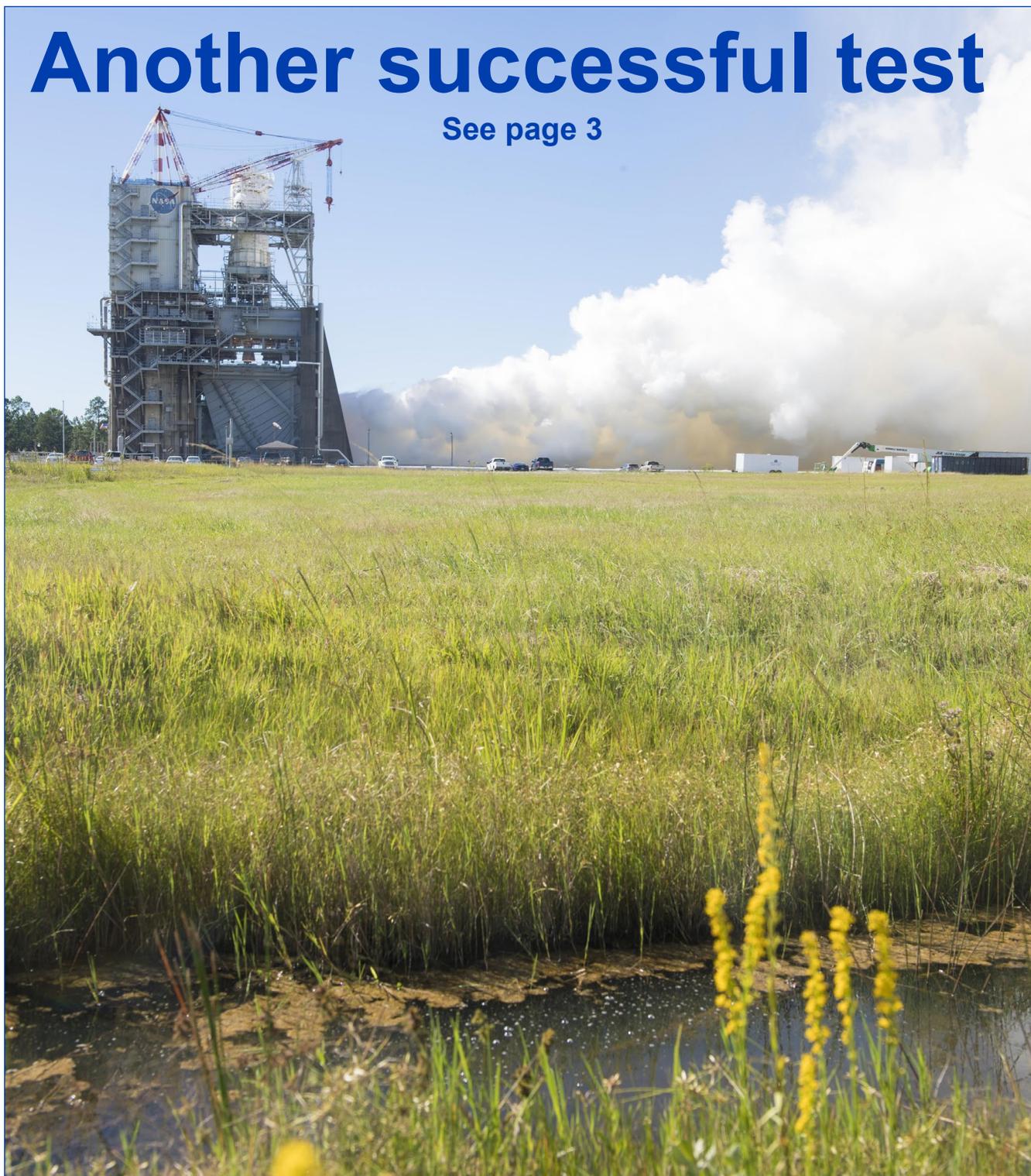
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Another successful test

See page 3



“Happy Birthday to you! Happy Birthday to you! Happy Birthday –” oops, you caught me warming up my vocal pipes. I bet you did not know ole Gator sang so well, huh? Ol’ Blue Eyes had nothing on me. Ark!

Happy Birthday to You is the song of the month this October as NASA celebrates its 60th anniversary. It seems fitting. Guinness World Records maintains that *Happy Birthday to You* is the most recognizable song in the world, and there is little doubt that NASA is one of the most recognizable organizations on Earth – and maybe even beyond!

Technically, NASA was established with passage of the National Aeronautics and Space Act in July 1958. However, the agency officially began operations on Oct. 1 of the same year, which brings us back to the birthday celebration.

NASA was designed to pursue peaceful (as opposed to military) objectives in space. Its focus was lofty from the very beginning – nothing less than leading in scientific advancements, exploring the reaches of space and expanding human understanding of the universe.

Of course, such goals as those are never fully accomplished. However, NASA had led the way in all three of the areas and continues to do so, providing adventure after adventure to amaze the world (most often with rocket engines tested at Stennis Space Center).

Think about it. NASA landed the first – and only – humans on the moon. It has sent probes and/or rovers to every planet in the solar system. Its Voyager I and Voyager II crafts have traveled farther into space than any human-made objects. NASA-launched telescopes have returned breathtaking photos of the universe and identified hundreds of possible Earth-like planets. NASA satellites have rewritten understanding of Earth and its place in the universe. Along the way, NASA also has inspired the world and provided science that has benefitted every walk of daily life.

However, NASA is not finished. Its work continues, including plans for humans to travel farther into space than ever, including a return to the Moon and eventually to Mars. A record like that certainly calls for a song – and cake. Make sure you bring cake. Ark! Now, excuse me as I warm up. *“Do re mi fa sol la ti-i-i-i-i-i.”*



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Contact info – (phone) 228-688-3749; (email) ssc-pao@mail.nasa.gov; (mail) NASA OFFICE OF COMMUNICATIONS, Attn: LAGNIAPPE, Mail code IA00, Building 1100 Room 304, Stennis Space Center, MS 39529

Managing Editor – Valerie Buckingham

Editor – Lacy Thompson

Staff Photographer – Danny Nowlin



FULFILLING NASA'S EXPLORATION MISSION

NASA continues RS-25 engine test series



The arrival of fall in south Mississippi means billowing clouds of steam exhaust is in the air as NASA continues a series of RS-25 engine tests at Stennis Space Center. A team of operators conducted a pair of successful 500-second RS-25 hot fires on the A-1 Test Stand at Stennis on Sept. 25 (above photo) and Oct. 11 (page 1), marking the third and fourth in a series that will extend into 2019. The hot fires represented acceptance tests of RS-25 engine controllers for use on future flights of NASA's new Space Launch System (SLS) rocket. RS-25 testing represents a critical step in development of the SLS. A quartet of RS-25 engines, firing simultaneously, will provide a combined 2 million pounds of thrust to help launch the new rocket. NASA has been testing RS-25 engines at Stennis for SLS use since early 2015. The initial engines are former space shuttle main engines, modified to provide the additional power needed for the SLS rocket. A new flight controller is the central component of the modification and will operate as the RS-25 "brain," helping the engine communicate with the rocket and providing precision control of engine operation and internal health diagnostics. In addition to the flight controller, recent hot fires also have featured continued

testing of two other new engine components – a 3D-printed pogo accumulator and a main combustion chamber fabricated using an innovative bonding technique. The 3D-printed pogo accumulator dampens potential propellant pressure oscillations that can cause a rocket to become unstable in flight. The main combustion chamber was fabricated using a bonding technique called hot isostatic pressing, which saves time and money over more traditional methods. In addition to testing components, operators also continue to explore various engine performance levels and limits. Each RS-25 hot fire allows operators to test the performance and reliability of engine components and moves NASA closer to actual launch of the SLS on its maiden missions. SLS Exploration Mission-1 will test the new rocket and carry an uncrewed Orion spacecraft into space beyond the Moon. Exploration Mission-2 will be the first flight to carry humans aboard the Orion spacecraft to deep space. RS-25 tests at Stennis are conducted by a team of NASA, Aerojet Rocketdyne and Syncom Space Services engineers and operators. Aerojet Rocketdyne is the RS-25 engine prime contractor. Syncom Space Services is the prime contractor for Stennis facilities and operations.

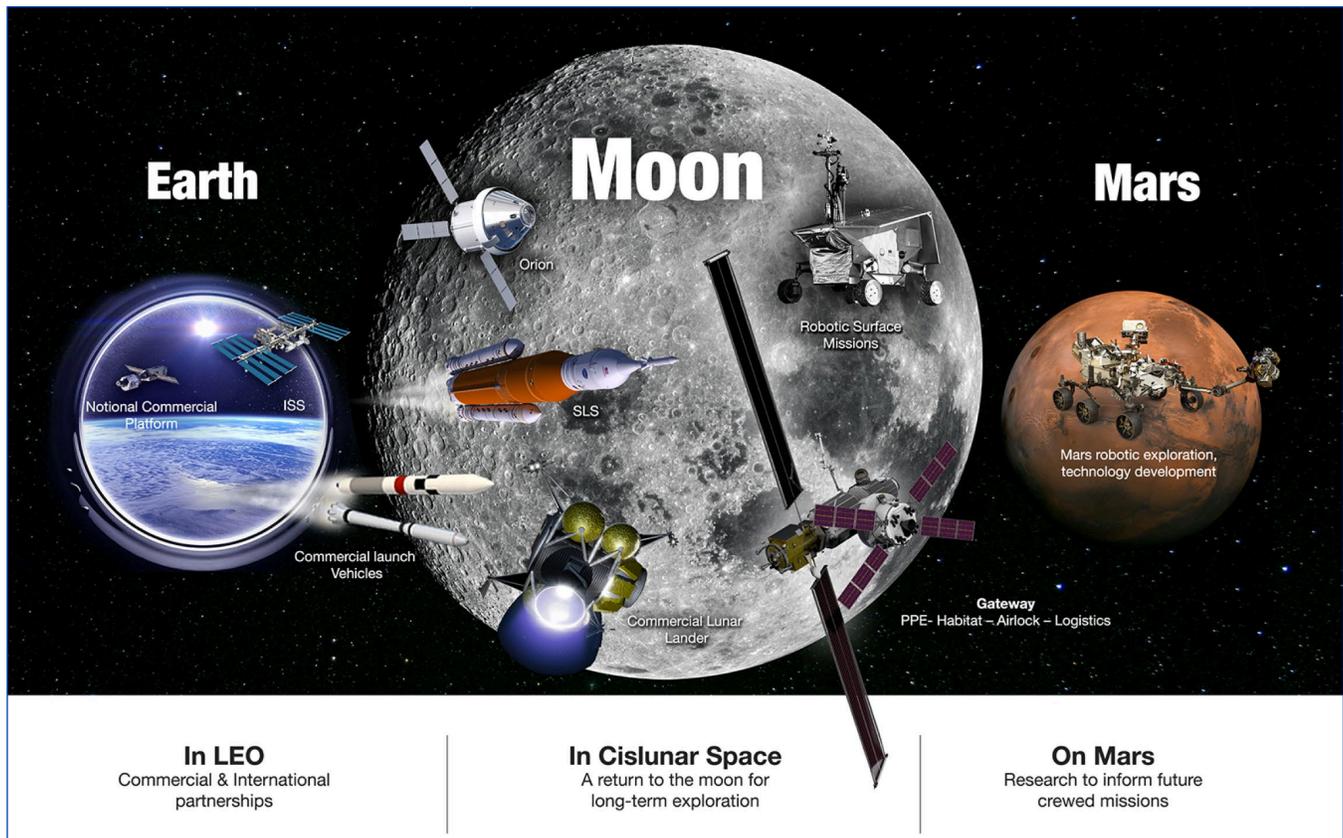
FULFILLING NASA'S EXPLORATION MISSION

Lunch-and-learn focuses on Michoud's SLS role



Pat Whipps, NASA stages resident manager at Michoud Assembly Facility in New Orleans (top photo, r) and Chad Bryant (right photo, l), Space Launch System (SLS) stages element office core stage manager at Marshall Space Flight Center in Huntsville, Ala., talk with Stennis Space Center employees about the new SLS rocket being built to carry humans deeper into space than ever. Whipps and Bryant visited Stennis to participate in a lunch-and-learn session Sept. 18 highlighting Michoud's role in building SLS. The pair presented information about Michoud's work on fabricating and assembling the SLS core stage, which will eventually be transported to Stennis for testing on the B-2 Test Stand. The lunch-and-learn session was the third to focus on SLS work. During their presentation, Whipps and Bryant updated progress in preparing the SLS core stage for delivery to Stennis and reviewed some of the new techniques being used during construction. Both Michoud and Stennis are playing critical roles in building SLS. As Michoud works on the core stage, Stennis is testing RS-25 engines that will help power the SLS at launch. In addition to preparing for core stage testing, Stennis also is getting ready to test the exploration upper stage (EUS) that will be used on the rocket.





NASA unveils campaign to return to Moon, travel to Mars

NASA recently unveiled its National Space Exploration Campaign, which calls for human and robotic space exploration missions to expand the frontiers of human experience and scientific discovery. Among other goals, the

plan calls for returning astronauts to the Moon and building capabilities to travel to Mars and elsewhere. For more, visit: <https://go.usa.gov/xPkk3>. The new plan also will be featured in the November issue of Lagniappe.

NASA in the News

Three NASA missions return 1st-light data

NASA's continued quest to explore the solar system and beyond received a boost recently with three key missions proving not only that they are up and running but that their science potential is exceptional. On Sept. 17, TESS – the Transiting Exoplanet Survey Satellite – shared its first science observations. Later in the week, the latest two missions to join NASA's heliophysics fleet returned first light data: Parker Solar Probe, humanity's first mission to "touch" the Sun, and GOLD, a mission that studies the dynamic boundary between Earth and space. TESS will spend two years monitoring the nearest, brightest stars for periodic dips in their brightness, known as transits. Such transits suggest a planet may be passing in front of its parent star. TESS is expected to find thousands of new planets using this method. The other two missions will focus on the study of the effects of the Sun on the solar system. Parker Solar Probe will help scientists understand how the Sun's atmosphere drives particles out into space. GOLD will monitor changes in the space close to Earth, much of them driven by solar activity.

Dust storms spotted on Saturn moon

Data from NASA's Cassini spacecraft has revealed what appear to be giant dust storms in equatorial regions of Saturn's moon Titan. The discovery makes Titan the third solar system body, in addition to Earth and Mars, where dust storms have been observed. The observation is helping scientists to better understand the dynamic environment of Saturn's largest moon. Titan is an intriguing world – in ways quite similar to Earth. In fact, it is the only moon in the solar system with a substantial atmosphere and the only celestial body other than Earth where stable bodies of surface liquid are known to still exist. There is one big difference, though: On Earth, rivers, lakes and seas are filled with water, while on Titan, it is primarily methane and ethane that flows. The weather on Titan varies from season to season as well, just as on Earth. At certain times, massive clouds can form in tropical regions and cause powerful methane storms. Cassini has observed such storms during its Titan flybys. For more on Cassini, visit: <https://www.nasa.gov/cassini> or <https://saturn.jpl.nasa.gov>.

Stennis employee receives Silver Snoopy award

Astronaut Butch Wilmore (r) presents a NASA Space Flight Awareness Silver Snoopy Award to Kenneth Jackson, a lead technician with Aerojet Rocketdyne at Stennis. Jackson received the award for indispensable contributions to NASA's Space Launch System and Aerojet Rocketdyne's RS-25 Programs. Specifically noted was Jackson's engine assembly, disassembly, modification and propulsion hot fire testing efforts, which played a vital role in Aerojet Rocketdyne's ability to meet NASA's schedule requirements. In addition to the certificate, Jackson received a pin flown aboard space shuttle Discovery on the STS-124 mission in May 2008. Joining Jackson for the presentation is Mike McDaniel, Aerojet Rocketdyne general manager at Stennis. The SFA Silver Snoopy Award is the astronauts' personal award and is presented to less than 1 percent of the total NASA workforce annually.



NASA honors Stennis employees for flight safety



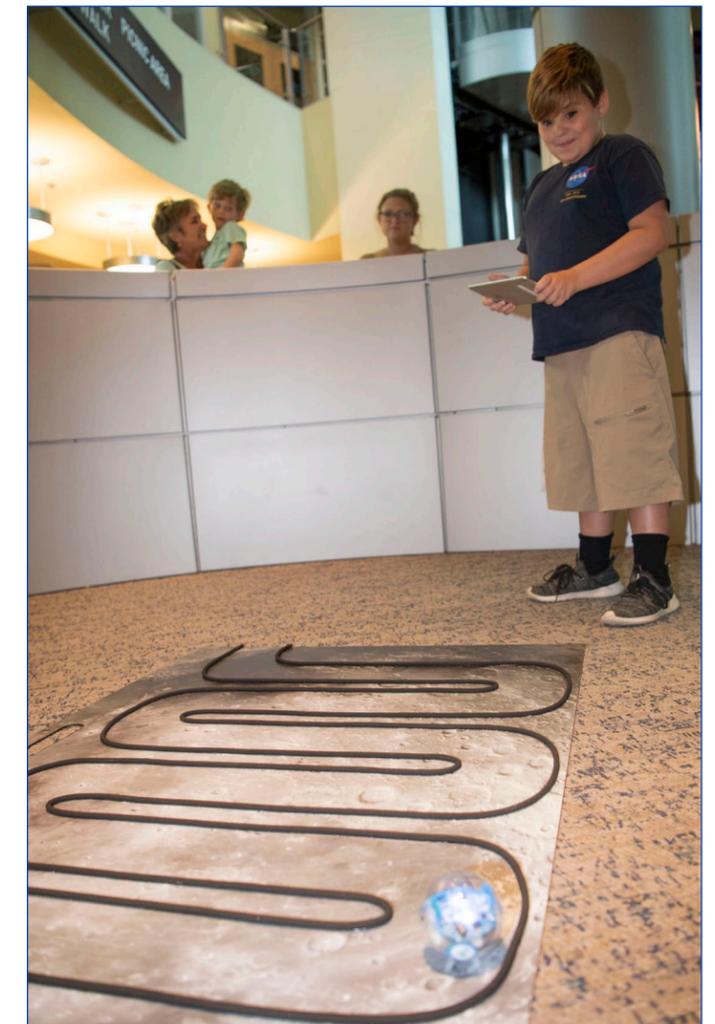
Astronauts Randy Bresnik (l), Mark Vande Hei (third from right) and Jeanette Epps (r) stand with recipients of NASA's Space Flight Awareness Honoree Award following a Sept. 18 ceremony in Washington, D.C. In recognition of their flight program contributions, honorees traveled to Washington to tour Goddard Space Flight Center in nearby Greenbelt, Maryland, and the Udvar-Hazy Air and Space Museum in Chantilly, Virginia. They also attended a celebration of NASA's 60th anniversary hosted by the American Institute of Aeronautics and Astronautics. Honorees and ceremony participants shown are: (front row, l to r): Stennis Safety and Mission Assurance Directorate representative Karen Vander, honoree Pam Covington

(NASA), honoree Patrice Comeaux (Syncom Space Services), honoree Tabatha Butler (A²Research), honoree Kamili Shaw (NASA), Vande Hei; (back row, l to r) Bresnik, Stennis Safety and Mission Assurance Directorate representative Grant Tregre, honoree Philip Geraci (SaiTech, Inc.), Stennis Associate Director John Bailey, honoree Ryan McKibben (NASA), honoree Michael Olsen (Aerojet Rocketdyne), honoree Dorsie Jones (NASA) and Epps. NASA's Space Flight Awareness Program recognizes outstanding job performances and contributions by civil service and contract employees and focuses on excellence in quality and safety in support of human spaceflight.

Stennis commemorates NASA anniversary with Family Day activities



Young and old visitors alike enjoy special Family Day activities at INFINITY Science Center on Sept. 29. Stennis Space Center hosted special displays and activities at INFINITY as part of Family Day activities for employees. INFINITY visitors also enjoyed the displays and activities in celebration of NASA's 60th anniversary. Then-President Dwight Eisenhower signed the National Aeronautics and Space Act to establish NASA on July 29, 1958. The new agency officially began operations on Oct. 1, 1958. Since that time, it has led a national space program that has benefited all areas of daily life and transformed human understanding of the universe. NASA's first space program, Project Mercury, featured numerous uncrewed space flights and six crewed missions that featured the first American to launch into space and the first American to orbit Earth. Project Gemini followed with 10 crewed missions focused on developing and perfecting capabilities needed to enable missions to the Moon. The Apollo Program built on those capabilities to launch six successful missions that landed a total of 12 astronauts on the Moon in the late 1960s and early 1970s. NASA then built the reusable space shuttle, which flew on 135 missions from 1981 to 2011. The agency now is building the Space Launch System rocket to return humans to deep space missions, to the Moon and eventually to Mars.



Stennis hosts girls for annual G.E.M.S. event



Almost 200 high school girls from Mississippi and Louisiana visited Stennis Space Center on Sept. 20 to attend the seventh annual Girls Excited about Math and Science (G.E.M.S.) event. The girls participated in four workshops: the “Dress for Success” fashion show, a hands-on engineering activity, a speed mentoring session and an opportunity to view a full-dome presentation on the forces of flight called “Take Flight” in an inflatable planetarium. Corporate sponsors for this event were A²Research, Aerojet Rocketdyne, Lockheed Martin, Pinnacle, MTS, SAIC, Bastion, and SaiTech, Inc.



Stennis promotes energy awareness

Gayle Sims with the Mississippi Development authority (I) offers tips on energy efficiency to Gary Marshall with Syncom Space Services during annual Energy Awareness Day activities at Stennis on Oct. 10. Various area companies and organizations visited Stennis for the day, providing an opportunity for employees to gather information on various energy-related topics, such as conservation, energy efficiency, controlling energy costs and renewable energy. Participants included representatives of Stennis energy, environmental and energy management/control system departments, as well as such companies as Coast Electric, Siemens, Solar Alternatives, Mississippi Power Company, Centerpoint Energy, Home Depot and the Energy Division of the Mississippi Development Authority.



1961 – NASA settles on Mississippi for new test site



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 the south Mississippi rocket engine test center.

In 1915, the National Advisory Committee for Aeronautics (NACA) was created to promote aeronautical research. It existed until Oct. 1, 1958, when it was converted to a new agency, the National Aeronautics and Space Administration. The reason for the conversion was the Soviet Union 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 under way at the time of the Sputnik launch, and using the bones of NACA, a bill was presented to President Dwight Eisenhower in July 1958 to create the National Aeronautics and Space Administration (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, proclaiming that the United States should put a person

on the Moon before the decade of the 1960s was out. NASA had less than nine years to place a human on the Moon. In order to do so, the agency needed to test rockets, and on August 1961, an ad hoc committee of members from NASA Headquarters and Marshall Space Flight Center began the work of finding the perfect location to do so.

There were several variables to consider since the rockets would be assembled at the Michoud Assembly Facility outside of New Orleans and launched from Cape Canaveral, Florida. 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 engines, have access to both waterway and highway, have a mild climate so testing could conceivably be conducted year round and have supporting communities nearby.



Wernher von Braun, then-director of NASA's Marshall Space Flight Center at Huntsville, Ala., speaks at the flag-raising ceremony marking the opening of the new Corps of Engineers office at the new Mississippi Test Operations site on Sept. 26, 1963.

be established in Hancock County, Mississippi. The site, then known as Mississippi Test Operations, would be the facility to test the Saturn rockets that would launch the Apollo missions to the Moon. Every single rocket engine that has put astronauts into space from American soil has been tested at what is now known as Stennis Space Center.

On Oct. 25, 1961, NASA announced a rocket test site would

Hail & Farewell

NASA bids farewell to the following:

Rebecca Deschamp
Katrina Wright

Program Analyst
Industrial Hygienist

Engineering and Test Directorate
Center Operations Directorate

NASA welcomes the following:

Valerie Johnson
Milford Olinger
Jason Peterson

Accountant
AST, Facility System Safety
Program Manager

Office of the Chief Financial Officer
Safety and Mission Assurance Directorate
Center Operations Directorate

Office of Diversity and Equal Opportunity

Celebrate disability inclusion in the workplace

October is National Disability Employment Awareness Month (NDEAM). NDEAM is an annual campaign to raise awareness about disability employment issues and celebrate the contributions of America's employees with disabilities. The 2018 theme is "America's Workforce: Empowering All."

NASA is committed to equal employment opportunity, a workplace free of discrimination and harassment, and a workplace that supports reasonable accommodations and accessible tools and technology so employees with disabilities can win at work and fully contribute to mission success across the agency.

In 1945, Congress decreed the first week in October each year as "National Employ the Physically Handicapped Week." In 1962, the word "physically" was removed to acknowledge individuals with all types of disabilities. In 1988, Congress expanded the week to a month and changed the name to "National Disability Employment Awareness Month."

NASA works intentionally to attract and retain employees who reflect the diverse world we live in and serve. Hiring employees with diverse abilities strengthens the agency's capability to achieve its mission, creates innovation and enhances employee engagement.

Office of Diversity & Equal Opportunity
Mission and Vision



Mission: *To make equal opportunity and the appreciation of diversity an integral part of all NSSC and SSC programs.*

Vision: *To set an example of diversity appreciation and teamwork for NSSC and SSC; To be an excellent resource for our customers, stakeholders, and partners; To have a sustained impact on NSSC and SSC and beyond.*

Many people have disabilities, whether overt or hidden. NDEAM is about encouraging each person to embrace differences in order to see the potential in everyone.

In commemoration of National Disability Employment Awareness Month, all Stennis Space Center employees

are invited to visit the NASA Office of Diversity & Equal Opportunity (ODEO) blog to obtain information on various activities across NASA and to participate in events in their communities.

Information for this article came from the NASA ODEO blog at <https://blogs.nasa.gov/odeo/>.

Stennis celebrates Hispanics

Almeydi Rosario, an international military student officer with the Naval Small Craft Instruction and Technical Training School (NAVSCIATTS) at Stennis, speaks during a National Hispanic Heritage month program on site Oct. 10. Rosario and other NAVSCIATTS personnel shared their views and experiences regarding Hispanic heritage during the program. National Hispanic Heritage Month is observed annually to celebrate the contributions of American citizens who trace their roots to Spain, Mexico and the Spanish-speaking nations of Central America, South America, and the Caribbean.





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 employee is highlighted on the following page.



Cecy Lewis



For Cecy Lewis, working at Stennis Space Center is just continuation of a family tradition. Growing up in Long Beach, Mississippi, as the youngest of eight children, Lewis remembers the “payday presents” her mother would bring home from her work at what the family called “the test site.” Later, a sister working at Stennis told Lewis about a job opening on site. Lewis already had compiled a 20-year career in grant development and program management but changed courses to begin work 10 years ago as an contractor administrative assistant in the Stennis Office of Diversity and Equal Opportunity (ODEO). She now serves as a contractor diversity and inclusion analyst supporting the same office, which has grown to provide equal opportunity, as well as diversity and inclusion programs and services, for both Stennis and the NASA Shared Services Center. Lewis’ sup-

ports most aspects of the office’s work, including the Model Equal Employment Opportunity Program and the Diversity and Inclusion Program. Her duties include data analysis, program planning and report development for the programs. Now a resident of Saucier, Mississippi, Lewis loves the “melting pot” culture of Stennis that brings people of various backgrounds, experiences and cultures together. “I believe a diverse workforce supports overall mission success,” she says. “I’m proud of the work we do in ODEO to encourage equality and inclusion in the workforce.” Lewis also is excited about the work at Stennis to support the next era of space exploration. “Stennis is important to the success of the space program,” she says. “It will be an exciting moment when we watch the next-generation spacecraft lift off, knowing that our work at Stennis was critical to its success.”