National Aeronautics and Space Administration

LAGNIAPPE

John C. Stennis Space Center

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‘Critical lift’ at A-1 Test Stand

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I hate to do this to you, what with it being summer vacation time, but here is a math equation to ponder. What does 2,045 + 2,047 + 2,060 equal? Go ahead – take a minute. Fingers and toes can be used if needed. Ark!

Got it? If you answered 6,152, you ace the standard elementary grade-level test, but you fail miserably at Stennis space shuttle math.

In Stennis space shuttle math, those three numbers add up to 5,284,862. Some of you space nerds may know that number represents the miles traveled by shuttle Atlantis on the final mission of the NASA's Space Shuttle Program in July 2011.

What does that have to do with the original question and equation? You may have guessed. Atlantis flew those miles on three space shuttle main engines tested and proven flightworthy right here at Stennis Space Center – engines No. 2045, No. 2047 and No. 2060. Those three engines powered the 5-million-mile-plus, 13-day STS-135 shuttle mission that marked the last time to-date American astronauts were launched from U.S. soil. How is that for clever math?

Stennis space shuttle math is fun and results in a lot of large numbers. Everyone knows Stennis-tested engines powered all 135 shuttle missions from 1981 to 2011. However, did you know those missions represent a total of 21,152 orbits around the Earth, 1,333 days in space and 542,398,878 miles traveled?

As my grandgator always said - "That's a whole lot even if you say it fast." Ark! The numbers also are evidence of the vital role Stennis plays in this nation's space program. When plans to build the site were announced, Sen. John C. Stennis promised area folk they would be "taking part in greatness." The years have proven that true, but the greatness is not done.

You know what happened the very same month that Atlantis returned from its final mission? Stennis conducted its first test of the next-generation J-2X rocket engine. They later built on that test series to begin testing RS-25 engines that will carry humans deeper into space than ever before.

In other words, Stennis is building on its past and going strong with, to borrow a familiar phrase, "promises to keep and miles to go" before the work is done.

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FULFILLING NASA'S EXPLORATION MISSION

A-1 installs new lifting device critical to engine test work

Offsite contractors work June 28-29 to replace a key hoist on the A-1 Test Stand at Stennis Space Center. The Level 7 monorail hoist is designated as a "critical lift" device for the stand since it is used during installation and removal of rocket engines for testing. The previous 20-ton-capacity hoist had developed several electrical and mechanical issues that required it to be removed and reworked by the manufacturer. NASA studied the options, including operational risks and costs/benefits, of reworking the existing hoist or acquiring a new 10-ton-capacity lifting device. It was determined the new hoist would be the most effective and efficient solution for the stand. The replacement work involved installing a temporary beam at the end of the existing monorail beam in order to remove and install the components. The work was accomplished over the two-day period, using a mobile crane and articulating man-lift to provide the work crew with the needed access. The A-1 Test Stand currently is testing RS-25 engines for use on NASA's new Space Launch System vehicle.

Project pours new spillway pavement at A-1 stand

An offsite contractor puts finishing touches to a section of new spillway pavement at the A-1 Test Stand at Stennis Space Center during the final week of June. The existing spillway had eroded over time with voids, limit-ing the weight it could support. The replacement project involved removing the existing six-inch concrete pavement and restoring the base underneath before pouring a stronger eight-inch, reinforced slab. The result is a spillway pavement that can support heavier equipment, such as a crane, if needed for work on the stand. Altogether, the project has replaced about 210 feet of the 292-foot spillway pavement, or 260 cubic yards, with plans to complete the spillway renovation by October.

NASA making plans for Aug. 21 total solar eclipse

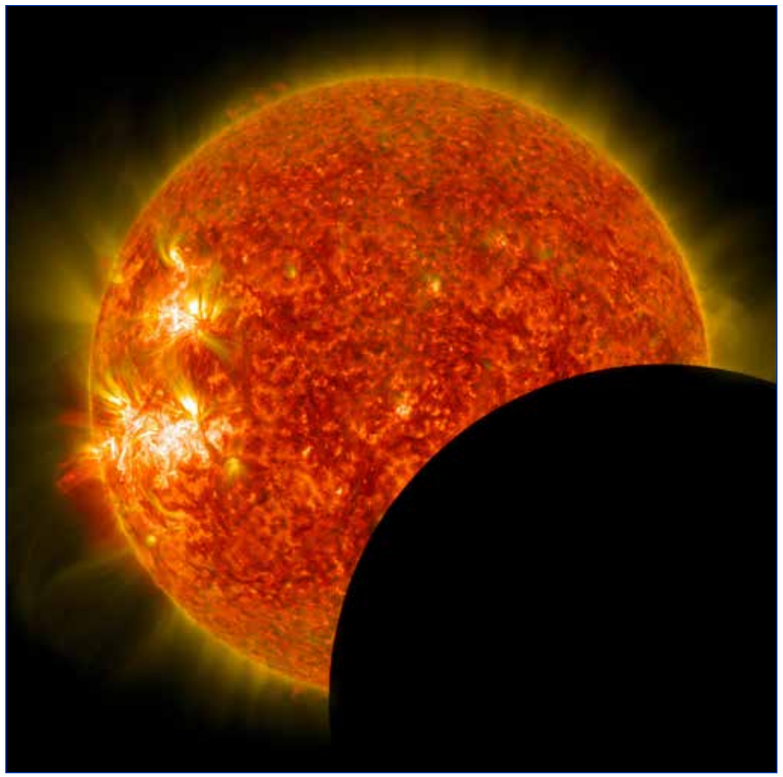
For the first time in 99 years, a total solar eclipse will occur across the entire continental United States, and NASA is preparing to share this experience of a lifetime on Aug. 21.

Viewers around the world will be provided a wealth of images captured before, during, and after the eclipse by 11 spacecraft, at least three NASA aircraft, more than 50 high-altitude balloons, and the astronauts aboard the International Space Station – each offering a unique vantage point for the celestial event.

NASA Television will air a multi-hour show, *Eclipse Across America: Through the Eyes of NASA*, with unprecedented live video of the celestial event, along with coverage of activities in parks, libraries, stadiums, festivals and museums across the nation, and on social media.

Coast to coast, from Oregon to South Carolina, 14 states will – over a span of almost two hours – experience more than two minutes of darkness in the middle of the day. When the moon completely blocks the sun, day will turn into night and make visible the otherwise hidden solar corona, the sun's atmosphere. Bright stars and planets also will become visible.

Using specialized solar viewing glasses or other equipment, everyone in North America will be able to view at least a partial eclipse lasting two to four hours.



This image of the moon crossing in front of the sun was captured on Jan. 30, 2014, by NASA's Solar Dynamics Observatory observing an eclipse from its vantage point in space.

"Never before will a celestial event be viewed by so many and explored from so many vantage points – from space, from the air, and from the ground," said Thomas Zurbuchen, associate administrator of NASA's Science Mission Directorate in Washington. "With our fellow agencies and a host of scientific organizations, NASA will continue to amplify one key message: Take time to experience the Aug. 21 eclipse, but experience it safely."

Viewing Safety

The only safe way to look directly at the uneclipsed or partially eclipsed sun is through special-purpose solar filters, such as eclipse glasses or handheld solar viewers. Homemade filters or ordinary sunglasses, even very dark ones, are not safe for looking at the sun. In the 70-mile-wide swath of the country that will experience a total eclipse, it is safe to look at the total eclipse with your naked eyes only during the brief period of totality, which will last about two minutes, depending on your location.

An alternative method for safe viewing of the partially-eclipsed sun is with a pinhole projector. With this method, sunlight streams through a small hole – such as a pencil hole in a piece of paper, or even the space between your fingers – onto a makeshift screen, such as a piece of paper or the ground. It is important to watch the screen, not the sun.

NASA and other agencies will provide information on their respective websites that include viewing safety and activities across the country, including at national parks, in addition to transportation preparations.

Studying Our Sun

Many researchers and citizen scientists will take advantage of this unique opportunity to study our sun, solar system, and Earth under rare circumstances. The sudden blocking of the sun during an eclipse reduces the light and changes the temperature on the ground, creating conditions that can affect local weather and animal behavior.

Understanding the sun has always been a top priority for space scientists. These scientists study how the sun affects space and the space environment of planets – a field known as heliophysics. As a source of light and heat for life on Earth, scientists want to understand how our sun works, why it changes, and how these changes influence life on Earth. The sun's constant stream of solar material and radiation can impact spacecraft, communications systems, and orbiting astronauts.

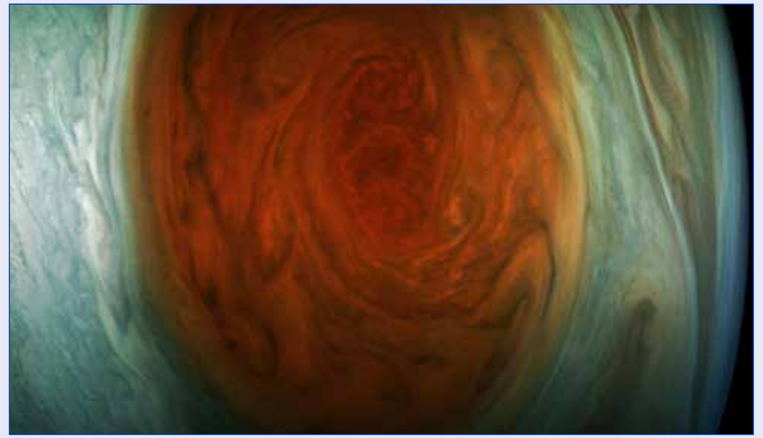
"Eclipse 2017 provides an incredible opportunity to engage the entire nation and the world, inspiring learners of all ages who have looked to the sky with curiosity and wonder," said Steven Clarke, director of NASA's Heliophysics Division in Washington.

NASA spacecraft capturing the event include: NASA's Lunar Reconnaissance Orbiter, which will turn toward Earth to track the shadow of the moon on our planet; a host of Earth-observing spacecraft, which can both observe the shadow of the moon and measure how it affects Earth's weather; and a fleet of solar observing spacecraft. NASA images and data of the eclipse will complement that collected by other scientific organizations.

For more information on viewing safety, visit: https://eclipse2017.nasa.gov/safety

For more information on eclipse activities, visit: https://eclipse2017.nasa.gov

To watch the Aug. 21 NASA TV eclipse broadcast online and access interactive web content and views from more than 60 telescopes, aircraft and balloons, visit: https://www.nasa.gov/eclipselive



This enhanced-color image of Jupiter's Great Red Spot was created by citizen scientist Gerald Eichstädt using data from the JunoCam imager on NASA's Juno spacecraft. The image is illumination adjusted and strongly enhanced to draw viewers' eyes to the iconic storm and the turbulence around it. The image was taken on July 10 as the Juno spacecraft performed its seventh close flyby of Jupiter. At the time, the spacecraft was about 6,130 miles from the tops of the clouds of the planet. JunoCam's raw images are available for the public to peruse and process into image products at: www.missionjuno.swri.edu/junocam. More information about Juno is at: https://www.nasa.gov/juno and http://missionjuno.swri.edu.

NASA in the News

NASA statement on National Space Council

Acting NASA Administrator Robert Lightfoot released the following statement, in part, on creation of the National Space Council on June 30: "I am pleased that President Trump has signed an executive order reestablishing the National Space Council. ... This high-level group advises the president and comprises the leaders of government agencies with a stake in space, including the NASA administrator, the Secretaries of State, Commerce, Defense, and others, and will be chaired by Vice President Mike Pence. It will help ensure that all aspects of the nation's space power – national security, commerce, international relations, exploration, and science – are coordinated and aligned to best serve the American people. ... The establishment of the council is another demonstration of the Trump Administration's deep interest in our work, and a testament to the importance of space exploration to our economy, our nation and the planet as a whole."" For the full statement, visit online at: https://www.nasa.gov/press-release/nasa-statement-on-national-space-council.

NASA clears milestone for quieter supersonic plane

NASA has achieved a key milestone in its effort to make supersonic passenger jet travel over land a real possibility by completing the preliminary design review of its Quiet Supersonic Transport (QueSST) aircraft. QueSST is the initial design stage of NASA's planned Low-Boom Flight Demonstration (LBFD) experimental airplane, otherwise known as an X-plane. Experts and engineers from across the agency and the Lockheed Martin Corp. concluded June 30 that the QueSST design is capable of fulfilling the aircraft's mission objectives, which are to fly at supersonic speeds but create a soft "thump" instead of the disruptive sonic boom associated with supersonic flight today. NASA now can begin soliciting proposals to award a contract early next year to build the X-plane. For more, visit: https://go.nasa.gov/2tdiNif.

NASA brings space exploration to ESSENCE Fest

NASA brought space exploration to New Orleans on June 30 to July 2 during the 2017 ESSENCE Festival. With interactive exhibits and a panel presentation, NASA invited festival participants to join in the return to deep-space exploration, including plans to send astronauts to Mars. The national space agency has engaged in outreach/education efforts for several years during the festival. This year's activities included a Path to Power informational exhibit, a community outreach booth focused on STEM (science, technology, engineering and mathematics) education and a panel presentation on career and business opportunities with NASA. In addition, noted astrophysicist Hakeem Oluseyi (top left photo) visited with New Orleans-area students June 30 during the ReFresh Kids Camp activity held in conjunction with the festival. Oluseyi also spoke with media representatives. A New Orleans native, Oluseyi is a distinguished research professor of physics and space sciences at the Florida Institute of Technology since 2007 and temporarily serving as space sciences education manager in the NASA Science Mission Directorate in Washington, D.C.

Stennis employees receive Silver Snoopy awards

Astronaut Karen Nyberg (far right) presented NASA 2017 Silver Snoopy awards to several Stennis Space Center employees during an onsite ceremony June 28. Silver Snoopys are astronauts' personal award, given in recognition of contributions to flight safety and mission success and presented to less than 1 percent of the total NASA workforce annually. Recipients of the 2017 awards are shown following the ceremony with Nyberg and Stennis Director Rick Gilbrech (second from right). This year's recipients (and their companies) were: (l to r) Brennan Sanders (NASA), Brandi McKinley (NASA Shared Services Center), Raymond Williams (Syncom Space Services), Mike Poland (River Tech, LLC), Charles Broussard (SaiTech Inc.), Latisha Ladner (Syncom Space Services), Jenette Gordon (NASA), Marvin Horne (NASA), Roger Flynt (Aerojet Rocketdyne), Dwight Jones (Aerojet Rocketdyne) and Benjamin Robertson (Syncom Space Services).

Boeing interns tour Stennis facilities, tour test stand

Interns from The Boeing Company gather in the flame trench of the A-1 Test Stand during a visit to Stennis Space Center on July 5. During the afternoon visit, several dozen interns toured the A-1 stand, received a B-2 Test Stand briefing about preparations to test the core stage of NASA's new Space Launch System vehicle and visited the Aerojet Rocketdyne engline assembly facility.

Stennis hosts Information Technology Expo

Stennis Space Center employees visit display exhibits during an Information Technology (IT) Expo, sponsored by the NASA Office of the Chief Information Officer (OCIO) on June 15. Hosted by Stennis Chief Information Officer Dinna Cottrell, the event highlighted services and capabilities which are currently available through the OCIO and its support contractors. Contractors include SaiTech Inc., which provides support via the Information Technology Services Contract; DXC Technology, which provides support via the Agency Consolidated End User Services contract; and All Points LLC, which provides support via the Marshall IT Services contract. Additionally, the NASA Shared Services Center showcased the Agency's Enterprise Service Desk. Expo exhibits provided information on applications and web development, including the Range Scheduling System (RSS); video production and audio visual services that showcased 4K technology; IT security; the Lightning Detection System; Stennis multimedia services; the Stennis Data Center; and the Video Teleconferencing System (ViTS). The expo also offered an opportunity to learn about products offered by outside vendors, including Anixter, Apple, AT&T, Commscope, Corning, Hewlett Packard, DellEMC and Verizon. A pair of new technologies were showcased this year – the Stennis Innovations and Efficiencies Program (IEP) and the Voice Over Internet Protocol. The interactive IEP exhibit offered a look at "FutureLand" technologies, unique tools and equipment not currently offered. This emerging program focuses on helping the Stennis community work together to address today's mission and business needs with the innovations and technologies of tomorrow. For more information on the services or capabilities highlighted at this year's IT Expo, call the Stennis OCIO team at 228-688-OCIO (6246).

Trio promotes NASA careers

NASA representatives Monica Foley (l to r) from Johnson Space Center, Alotta Taylor from Headquarters and Darryl Gaines from Johnson Space Center speak to NASA and Department of Defense interns during a visit to Stennis Space Center on June 30. The three NASA employees were in the Gulf Coast area to participate in NASA educational and outreach activities at the annual ESSENCE Festival in New Orleans. At Stennis, they spoke with interns about their NASA careers and opportunities that were available in the space agency.

Stennis hosts teachers for weeklong institute

The Stennis Space Center Office of Education hosted the NASA Network of States Institute for 33 K-12 Louisiana and Mississippi educators and administrators the week of July 10. The institute is an effort by the space agency to partner with area teachers in professional development and promotion of STEM (science, technology, engineering and mathematics). The institute features hands-on STEM activities focused on the six NASA communication priorities – Earth Right Now, MARS, the International Space Station, the solar system, aeronautics and technology. In addition to participating in the weeklong activities, participants were able to take guided tours of Stennis to learn about the work conducted at NASA's premier rocket engine testing facility.

(Top photo) Teachers from Mississippi and Louisiana gather at the B-1/B-2 Test Stand during a tour July 11.

(Bottom photo) Teachers participate in a classroom activity during the recent NASA Network of States Institute at Stennis.

University of Arkansas students visit Stennis

Students from the University of Arkansas at Pine Bluff stand in front of the Roy S. Estess Building during a visit to Stennis Space Center on July 12. The students were provided information about NASA Pathways Programs, which provide opportunities for collegians and recent graduates to experience and consider federal employment through intern and fellowship initiatives. The students also toured several Stennis facilities, including the test stand, Aerojet Rocketdyne engine assembly facility, Rolls-Royce North American facility and National Data Buoy Center.

Pascagoula-Gautier school leaders visit Stennis

Stennis Associate Director Ken Human (front) poses with members of a Pascagoula-Gautier School District leadership group during its visit to Stennis Space Center on July 11. The school leaders spent a day at Stennis, learning about ongoing work at the site and taking a bus tour of facilities. Human spoke with the group about leadership lessons learned during the Apollo Program that carried humans to the moon. The leaders concluded their visit with a tour of INFINITY Science Center.

1960s – enabling both space and Earth missions

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.

In 1968, the then Mississippi Test Facility (MTF) was not only looking in the sky toward the moon, but also out over the horizon at the ocean. The Apollo Program was going strong, but a meteorological and oceanographic project was getting under way as well, BOMEX – the Barbados Oceanographic and Meteorological Experiment.

The mission of BOMEX was to better understand how the atmosphere and the ocean react to each other. MTF was tapped to design, install, maintain and operate the computerized data management system for the BOMEX project.

While the BOMEX project was being planned, Apollo 4, the first unmanned Saturn V flight, took place Nov. 9, 1967, followed by Apollo 6 in April 1968. The first manned Apollo missions launched on Oct. 11, 1968 with Apollo 7, and Apollo 8, the first orbit of the moon launched in December of 1968. On Christmas Eve 1968, the Apollo 8 crew got the first look of the "Earthrise" across the moon.

The American people saw the Earth as they had never seen it before, making those in the United States more curious about their home than ever before and giving momentum to projects like BOMEX, designed to discover more about Earth's environment and to explore the planet's greatest mystery – the ocean.

A pair of 1969 photos show equipment being loaded for the Barbados Oceanographic and Meteorological Experiment (top) and a project ship ready to head out from Bridgetown Harbor (bottom).

Office of Diversity and Equal Opportunity

What are Special Emphasis Programs anyway?

In 1972, Congress amended the Civil Rights Act of 1964 to extend the act's anti-discrimination protections to federal employees. Government agencies with responsibility for implementing the act began to focus increased attention on underrepresented groups in the federal workforce, such as racial/ethnic minorities, women and individuals with disabilities, including disabled veterans. One way in which this was done was through the establishment of Special Emphasis Programs (SEPs) to help underrepresented groups enter into the federal workforce, develop professionally, and advance within its ranks.

SEP efforts should not be misconstrued as "special" rights, quotas or "reverse discrimination." They are, rather, a good faith effort to counter past and present inequities in society that can still impact equal opportunities in the workplace.

Today, SEPs play an instrumental role in fulfilling a host of ongoing planning, reporting and implementation requirements necessary for operating a model Equal Employment Opportunity (EEO) Program as required by the U.S. Equal Employment Opportunity Commission (EEOC).

The Special Emphasis Program model has been reinvented for the 21st century NASA workplace, to help better leverage SEP synergies with the newer diversity and inclusion (D&I) model, along with the more traditional legal compliance function. The approach is fully aligned with, and supportive of, the NASA Strategic Plan and NASA Core Values, particularly as they relate to attracting and advancing a diverse workforce and enhancing inclusion in agency workplaces. D&I efforts reach out to segments of American society based on a host of individual characteristics, perspectives and backgrounds much broader than the race, gender and disability focus of traditional SEPs.

While the federal government has added a focus on D&I, EEO requirements still remain a fundamental part of efforts to enhance opportunity and inclusion for all members of the civil servant workforce. Importantly, EO and D&I are not mutually exclusive but, on the contrary, complement one another. D&I proponents recognize the value of the original SEP focus on structured and strategic ways for employee constituency groups to organize, meet and influence workforce decision-making and employment policies and practices.

Voluntary groups that have common interests with SEPs may coexist with them. Such groups may be known by various names, including employee advisory groups (AGs), advisory committees (ACs) and employee resource groups (ERGs). It is important to note that although SEPs and ERGs may share common objectives and overlapping efforts, the two roles are distinct.

The Office of Diversity & Equal Opportunity (ODEO) is responsible for administering special emphasis programs and related employee resource groups for NASA Stennis Space Center and NASA Shared Services Center civil servants. For more information on SEPs and ERGS, and ways one can get involved, please visit the ODEO office at Stennis in the Estess Building (Bldg. 1100), Room 11147 or call 688-1037.

Information in this article came from the NASA Guidance on Special Emphasis Program Management, January 2016.

Hail & Farewell

NASA bids farewell to the following:

Samone Faulkner	Public Affairs Specialist	Office of Communications

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.

Rachel Harrison-Woodard

Rachel Harrison-Woodard's first space-related memory is not good. As an elementary school student in North Biloxi, she recalls the thrill – and subsequent horror – of watching on television the launch and loss of space shuttle Challenger in 1986. However, another NASA memory is much more positive. Completing studies at Mississippi State University, Harrison-Woodard was in the school career center when a manager for a Stennis Space Center contractor entered. The manager asked if there were any engineers in the group. "I quietly raised my hand," Harrison-Woodard recalls. "He asked me if I would be interested in an interview at Stennis, and of course, I said 'Yes!' as I tried to hide my excitement. The rest is history." That history now stretches to a 17-year career at Stennis, 13 as an onsite contractor and the last four as a NASA employee. Harrison-Woodard has worked in various areas, including subsystems and systems engineering, support equipment operations/maintenance, process improvement and supervision. She now supports test operations on the Safety and Mission Assurance Directorate team, assessing and mitigating hazards, reviewing process procedures and working on process improvements. She enjoys working with others to resolve issues, especially given the diverse and intelligent people who work at Stennis. "I feel very fortunate and humble to be able to work here and support NASA missions," she says. Harrison-Woodard now lives in the Success Community in Saucier, Miss., with husband David and daughter Ella. When it comes to NASA, she looks forward both to the Space Launch System stage testing scheduled on the B-2 Test Stand and to continuing to add to her history of supporting the agency's work.