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NASA unveils Artemis

NASA recently released the logo for its Artemis Program to return humans to the Moon by 2024. The program will feature several missions by the new Space Launch System rocket, which is powered, in part, by rocket engines and stages tested at Stennis Space Center. Through Artemis, NASA will

send the next man and first woman to the Moon. The logo for the new program builds on artwork used for the Apollo Program that sent the first – and only – humans to the Moon in late 1960s and early 1970s. See subsequent pages for information about Artemis and Stennis' role in the program.

Ai-yeee! What a month we have had – and it is just the start to busier and more exciting times. As my grand gator used to say, “Better tie your dancing shoes tight; the band is about to crank it up the fais do do.” Ark!

Last month, the world commemorated the 50th anniversary of the Apollo 11 mission that landed the first humans on the Moon in 1969. Stennis played a critical role in that mission by testing the Saturn V rocket stages that launched the astronauts to the lunar surface.

Everyone was still catching their breaths from that celebration when NASA Administrator Jim Bridenstine announced July 25 that NASA was moving ahead with “Green Run” testing of its new Space Launch System core stage. The rocket will return humans to the Moon – including the first woman – and NASA once more is turning to Stennis to make sure all is set for launch.

There was discussion about skipping core stage testing in order to tighten up the Space Launch System mission schedule. However, the administrator’s announcement made it official and gave everyone at Stennis a reason to break into renewed dancing. Next spring,

NASA will take a giant step forward in its return to deep space with a hotfire test of the Space Launch System flight core stage on the B-2 Test Stand at Stennis!

As the administrator noted, testing the core stage before it launches on the first mission is a way to ensure astronaut safety, to increase the probability of success in NASA’s Artemis Program to reach the Moon by 2024 and to identify – and address – any possible stage issues and problems now instead of later.

The administrator could have added that the decision to proceed with “Green Run” also is a testament to the Stennis’ testing experience and leadership. For more than 50 years, the team at Stennis has built an amazing record – stages and engines tested here fly as required.

No space mission ever has failed due to malfunction of a stage or engine tested at Stennis. Compare that to my golf game. I can guarantee launch off of the tee box – but ole Gator is still working on ensuring the ball will fly as needed. Ark! Maybe I should get some Stennis operators to give me pointers.

In the meanwhile, I need to find my dancing shoes.



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NASA's Artemis Program set to return humans to the Moon

NASA is committed to landing American astronauts, including the first woman and the next man, on the Moon by 2024. Through the Artemis lunar exploration program, NASA will use innovative new technologies and systems to explore more of the Moon than ever before. It will collaborate with commercial and international partners to establish sustainable missions by 2028. And then, it will use what is learned on and around the Moon to take the next giant leap – sending astronauts to Mars.

Why Go to the Moon?

With the Artemis program, NASA will:

- Demonstrate new technologies, capabilities and business approaches needed for future exploration, including Mars.
- Establish American leadership and a strategic presence on the Moon while expanding our U.S. global economic impact.
- Broaden commercial and international partnerships.
- Inspire a new generation and encourage careers in STEM.

How Do We Get There?

NASA's powerful new rocket, the Space Launch System (SLS), will send astronauts aboard the Orion spacecraft a quarter million miles from Earth to lunar orbit. Astronauts will dock Orion at the Gateway, where they will live and work around the Moon. The crew will take expeditions from Gateway to the surface of the Moon in a new human landing system before returning to the orbital outpost. Crew will ultimately return to Earth aboard Orion.

When Will We Get There?

Ahead of the human return to the Moon, NASA will send a suite of science instru-



ments and technology demonstrations to the lunar surface through commercial Moon deliveries.

The agency will fly two missions around the Moon to test its deep space exploration systems. NASA is working toward launching Artemis 1 in 2020, an uncrewed flight to test the SLS and Orion spacecraft together. Artemis 2, the first SLS and Orion flight with crew, is targeted for launch in 2022. NASA will land astronauts on the Moon by 2024 on the Artemis 3 mission and about once a year thereafter.

What Will We Do There?

Mars remains the horizon goal, but NASA

has set its sights first on exploring the entire surface of the Moon with human and robotic explorers. It will send astronauts to new locations, starting with the lunar South Pole. At the Moon, NASA will:

- Find and use water and other critical resources needed for longterm exploration.
- Investigate the Moon's mysteries and learn more about this home planet and the universe.
- Learn how to live and operate on the surface of another celestial body where astronauts are just three days from home.

- Prove the technologies needed before sending astronauts on missions to Mars, which can take up to three years roundtrip.

Where Did The Name Artemis Come From?

Artemis was the twin sister of Apollo and goddess of the Moon in Greek mythology. Now, she personifies the path to the Moon as the name of NASA's program to return astronauts to the lunar surface by 2024, including the first woman and the next man.

When they land, American astronauts will step foot where no human has ever been before: the Moon's South Pole.

NASA has led the charge in space exploration for 60 years, and even as it marked the 50th anniversary of the first Moon landing, the agency was preparing for its next giant leap with the Artemis Program.

Artemis, name after the twin sister of Apollo who is also goddess of the Moon and the hunt, encompasses all of NASA's efforts to return humans to the Moon – which will prepare and propel the agency on to Mars. Through the Artemis Program, NASA will see the first woman and the next man walk on the surface of the Moon. As the “torch bringer,” literally and figuratively, Artemis will light the way to Mars.

With this in mind, NASA recently unveiled the new Artemis Program identity, a bold look that embodies the determination of the men and women who will carry missions forward. They will explore regions of the Moon never visited before, unlock mysteries of the universe and test the technology that will extend the bounds of humanity farther into the solar system.

The new identity draws inspiration from the Apollo program logo and mission patch. Using an “A” as the primary visual and a trajectory from Earth to the Moon, NASA honors all that the Apollo Program achieved. However, through Artemis, the agency will forge a new path, pursue lunar exploration like never before and pave the way to Mars.

With Earth Blue, Rocket Red and Lunar Silver for colors, every part of the identity has meaning:

- **THE “A:”** The “A” symbolizes an arrowhead from Artemis’ quiver and represents launch.
- **TIP OF THE “A:”** The tip of the “A” of Artemis points beyond the Moon and signifies that efforts at the Moon are not the conclusion but rather the preparation for all that lies beyond.
- **EARTH CRESCENT:** The crescent of the Earth at the bottom shows missions from humanity’s perspective. From Earth, humans go. Back to Earth all that they learn and develop will return. This crescent also visualizes Artemis’ bow as the source from which all energy and effort is sent.
- **TRAJECTORY:** The trajectory moves from left to right through the crossbar of the “A” opposite that of Apollo, thus highlighting the distinct differences in this return to the Moon. The trajectory is red to symbolize the path to Mars.
- **MOON:** The Moon is the next destination and a stepping stone for Mars. It is the focus of all Artemis efforts.



NASA plans 'Green Run' test of SLS core stage at Stennis

NASA Administrator Jim Bridenstine announced July 25 the agency will conduct a “Green Run” core stage test for the Space Launch System rocket ahead of the upcoming Artemis 1 lunar mission.

This is how the Green Run will work:

The first eight minutes of every Artemis mission with NASA's Space Launch System (SLS) rocket will begin with core stage and solid rocket boosters producing 8.8 million pounds of thrust to launch the agency's Orion spacecraft to the Moon. NASA will test the rocket's 212-foot tall core stage – the tallest rocket stage the agency has ever built – with a “Green Run” test on Earth before launch day to help ensure mission success and pave the way for future Artemis missions carrying crew to the Moon. Missions at the Moon will be a stepping stone to prepare for human exploration of Mars.

During the Green Run testing, engineers will install the core stage that will send Orion to the Moon in the B-2 Test Stand at NASA's Stennis Space Center for a series of tests that will build like a crescendo over several months. The term “green” refers to the new hardware that will work together to power the stage. “Run” refers to operating all the components together simultaneously for the first time. Many aspects will be carried out for the first time, such as fueling and pressurizing the stage. The test series will culminate with firing up all four RS-25 engines to demonstrate that the engines, tanks, fuel lines, valves, pressurization system and software can all perform together just as they will on launch day.

“The SLS core stage is an engineering feat that includes not only the largest rocket propellant tanks ever built but also sophisticated avionics and main propulsion systems,” said Lisa Bates, SLS deputy stages manager. “While the rocket is designed to evolve over time for different mission objectives, the core stage design will remain basically the same. The Green Run acceptance test gives NASA the confidence needed to know the new core stage will perform again and again as it is intended.”

The SLS core stage includes state-of-the-art avionics, miles of cables, and propulsion systems and two huge liquid propellant tanks that collectively hold 733,000 gallons of liquid oxygen and liquid hydrogen to power the four RS-25 engines. Together, they will produce more than 2 million pounds of thrust to help send Artemis 1 beyond Earth's orbit to the Moon.

The test program for the core stage at Stennis will begin with installing the stage into the test stand. Then, engineers

will turn the components on one by one through a series of initial tests and functional checks designed to identify any issues. Those tests and checks will culminate in a full test fire. In addition to information about core stage ignition and operation, the results of the test will provide important data that will confirm how the system reacts as the fuel is depleted from the propellant tanks.

“With Green Run, we verify each individual component operates well within the core stage system,” said Bates. “It's more than testing. It's the first time the stage will come to life and be fully operational from the avionics in the top of the core stage to the engines at the bottom.”

The test series is a collaborative effort between a number of NASA field centers, programs and contractors. The entire stage was built and manufactured at NASA's Michoud Assembly Facility in New Orleans. The structural test articles, also built at Michoud, were shipped to NASA's Marshall Space Flight Center in Huntsville, Alabama, for structural testing. The work done by Marshall's test teams certifies the structural integrity of the rocket's core stage, while Green Run will show that the integrated stage operates correctly. The Stennis teams renovated the historic B-2 Test Stand used to test stages for multiple programs, including the Saturn V and the space shuttle propulsion system in the 1960s and 1970s.

“Green Run is a historic moment for NASA and Stennis for a number of reasons,” said Dr. Richard Gilbrech, Stennis Space Center director. “For the first time in NASA's history, a launch vehicle will use flight hardware for its first test, and the Stennis test stands will once again test the core stage for Moon missions.”

Historically, other NASA rockets built to carry astronauts have used main propulsion test articles to test the integrated engines and main propulsion system. The SLS program is performing the stage testing with flight hardware.

Once the validation of the stage is complete, the entire stage will be checked out, refurbished as needed and, then, shipped to NASA's Kennedy Space Center in Florida for the Artemis 1 launch. The next time the core stage engines roar to life will be on the launch pad at Kennedy.

NASA is working to land the first woman and next man on the Moon by 2024. SLS and Orion, along with the Gateway in orbit around the Moon, are NASA's backbone for deep space exploration. SLS is the only rocket that can send Orion, astronauts and supplies to the Moon on a single mission.



NASA plans to test the Space Launch System core stage that will help launch the Artemis 1 mission on the B-2 Test Stand at Stennis Space Center in 2020. Preparing for testing the SLS flight stage has required major modifications of all areas of the

test stand, as well as replacement of the Stennis high pressure industrial water system and upgrading of the site gas facility. Following testing, the core stage will be delivered by barge to Kennedy Space Center for preparation and launch.

NASA's MOON to MARS MISSION



Stennis Space Center to play key role as NASA moves 'Forward to the Moon'

Note: The following is an op-ed by Dr. Rick Gilbrech, director of NASA's Stennis Space Center, written in response to NASA's decision on July 25 to proceed with testing of the new Space Launch System core stage at the south Mississippi site.

On July 20, we recognized a pivotal moment in my life, the 50th anniversary of the Apollo 11 mission that landed the first humans on the Moon. It is one of the most extraordinary feats of humankind, an embodiment of ingenuity and desire for exploration. As a child of the Apollo generation, I know firsthand the excitement of the nation when, at the age of seven, I witnessed Americans and the world rally together with enthusiasm for mankind's first steps on another heavenly body. That event set my life onto a new and unalterable path to work for NASA and be part of human space exploration. Stennis Space Center played a critical role in my career and in that historic accomplishment.

Stennis was built to test the very rocket stages that launched those first humans to the Moon. On April 23, 1966, the site conducted its first test of Saturn V rocket stage on the A-2 Test Stand. Mississippi had officially entered the Space Age, and our nation was on its way to the Moon.

NASA Administrator Jim Bridenstine announced on July 25 that Stennis will test the Space Launch System core stage, also known as "Green Run" test, as previously planned. The agency conducted a thorough analysis of the core stage test, and Stennis weighed in on the analysis. We are very excited about the decision to continue with the test.

Our Mississippi delegations in Washington D.C. praised this decision, reinforcing Mississippi's vital role in human space exploration. We have been preparing with upgrades and modifications to the B-2 Test Stand, high pressure industrial water system and gas facility. With all modifications complete, Stennis is ready to test the core stage and support the agency in whatever way needed – just as we have for 58 years.

Our predecessors faced many challenges 61 years ago when they were establishing NASA and developing a space program. They were relentless in achieving the required results for mission success. The Stennis employees were no different. Even when faced with new tasks

that had never been attempted, like putting a human on the Moon for the first time in history, our employees rose to the challenge every time. Working long hours, holidays, weekends and through harsh weather conditions to ensure success demonstrated the level of tenacity of our employees. Mississippi is one of the few states that have had their footprints in the space program since the early days.

Stennis has tested NASA's rocket engines, stages and components since that early April morning in 1966. After the Apollo Program ended, the center tested the space shuttle main engines for 34 years, concluding in 2009. In 2015, we began testing RS-25 engines for NASA's new Artemis Program to send humans forward to the Moon and, ultimately, carry them on to Mars.

Artemis is the name of NASA's program to return astronauts to the lunar surface by 2024, including the first woman and the next man. When they land, our American astronauts will step foot where no human has ever been before: the Moon's South Pole. We are the Artemis generation, and everyone should be excited for our country and our spacefaring international partners.

Stennis will continue to test the RS-25 engines that will be used to power the new Space Launch System rocket on its Artemis missions. In 2020, we will be testing the SLS core stage. Working with U.S. companies and international partners, NASA will push the boundaries of human exploration forward to the Moon for this program. As a result of Artemis, NASA will be able to establish a sustainable human presence on the Moon by 2028 to uncover new scientific discoveries, demonstrate new technological advancements and lay the foundation for private companies to build a lunar economy.

Once more, it is an assignment of considerable difficulty and challenge. However, Stennis employees are responding – and will continue to respond – with the commitment and ingenuity needed for mission success. Just as it did 50 years ago, this nation will travel to the Moon and deep space through south Mississippi.

Stennis continues to make history – from that first test 53 years ago to today as humans prepare to travel deeper into space than ever before. I ask you to join with us at Stennis in the enthusiasm and American spirit as we go forward to the Moon – and beyond!

NASA's MOON to MARS MISSION



'Test like you fly' – NASA infographic explains core stage 'Green Run' testing

Before NASA's deep space rocket, the Space Launch System (SLS), launches from NASA's Kennedy Space Center in Florida to send NASA's Orion spacecraft to the Moon, its core stage design will be tested in a series of tests called Green Run.

NASA Administrator Jim Bridenstine announced the decision to proceed with the so-called Green Run testing via Twitter on July 25. In the much-anticipated tweet, Bridenstine outlined three key reasons for the testing:

- Astronaut safety is our #1 priority.
- Increases probability of a successful Moon landing in 2024.
- It is important to discover issues earlier rather than later.

"Green Run" is the term used to indicate testing of new hardware – and all of its components – for the first time and in the same way it must actually operate on a mission.

The core stage design will be used for all configurations of the SLS rocket, and the tests at Stennis Space Center in south Mississippi will provide critical data needed to verify the stage is ready for the first and future Artemis missions.

During Green Run testing, the rocket's massive, 212-foot-tall core stage – the same flight hardware that will send Artemis 1 to the Moon – will be installed vertically (standing just as it will during a launch) on the B-2 Test Stand at Stennis. Preparation for the testing has required major modification of stand.

Core stage systems will be tested just as during an actual launch – propellant will flow through the rocket's two propellant tanks, the avionics and flight computers will operate all the systems and all four RS-25 engines will fire simultaneously to generate a combined 2 million pounds of thrust.

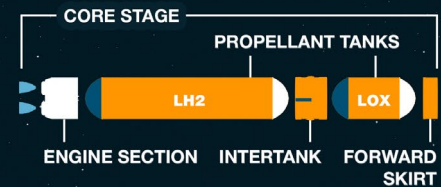
The core stage is being manufactured at NASA's Michoud Assembly Facility in New Orleans. Upon completion in December 2019, it will be transported by barge to Stennis, following the same route used to deliver Apollo rocket stages to the site.

NASA is working to land the first woman and next man on the Moon by 2024 as part of its recently-named Artemis Program. SLS and Orion, along with the Gateway in orbit around Moon, are NASA's backbone for deep space exploration.

To download a full-size version of the core stage testing graphic, visit online at: <https://go.usa.gov/xyJH2>.

ARTEMIS TESTING: TEST LIKE YOU FLY

SPACE LAUNCH SYSTEM (SLS) Testing the World's Largest Rocket Stage



GREEN: New, untested rocket hardware

GREEN RUN: First full test of all the SLS core stage flight hardware



WHY?

The core stage is the complex, **NEW** part of the SLS rocket. It helps launch every SLS mission, beyond Earth's orbit and to the Moon.

WHAT IS TESTED?

• Three flight computers, more than 50 avionics units, navigation and control systems and flight software controlling the first **8 MINUTES** of flight.



• Two propellant tanks with more than **700,000 GALLONS** (2.177 million pounds) of fuel.



• Propulsion systems, including **18 MILES** of cables and more than 500 sensors and systems. These systems feed fuel to four RS-25 engines that fire at the same time to produce **2 MILLION POUNDS OF THRUST**.



WHERE?

NASA's B-2 Test Stand at Stennis Space Center in Mississippi.

OBJECTIVE

Ensure success of the first flight of SLS and the Orion Spacecraft – Artemis 1 – and future missions to support landing astronauts on the Moon in **2024**.

www.nasa.gov/sls





Stennis crews prepare for arrival of SLS flight core stage



Stennis Space Center crew members at the B-2 Test Stand practice lift processes and techniques in preparation for delivery and handling of the first Space Launch System flight core stage. Teams used a functional version of the masterlink component (above photo) for exercises during the early days of August. The masterlink will connect to the B-2 boom crane on one end and to the spider component on the forward end of the core stage (left photo) for lifting the stage onto the stand for testing. After connecting the masterlink to the spider component, teams practiced lifts with the boom crane, then positioned the spider vertically for installation on the end of the Pathfinder (right photo), a core stage size-and-weight replica used to practice lifting and installation processes.



NASA's MOON to MARS MISSION

A practice lift of a Space Launch System core stage "spider" component with the B-2 Test Stand boom crane provides a panoramic view of the A Test Complex and its A-1, A-2 and A-3 stands.



NASA's MOON to MARS MISSION

A B-2 Test Stand crew uses the facility's boom crane and a ground crane to lift the Pathfinder core stage replica a few inches Aug. 12. The small lift was part of preparations for delivery of the first flight core stage of the NASA's new Space Launch System. The stage will be tested on the B-2 stand before it is shipped to Florida to help launch the uncrewed maiden mission of NASA's Artemis Program. Through Artemis, NASA plans to send the next man and the first woman to the Moon by year 2024.



Relativity engineer comes 'full circle' to Stennis

Jon Oliver's journey home – and to Stennis – began when a friend shared an article about a new company and its plans to locate a test facility in south Mississippi.

At the time, Oliver was working as a Raytheon engineer. He was not familiar with the company highlighted in the shared article – Relativity Space – but as a native of Bay St. Louis, he knew Stennis Space Center, its south Mississippi destination, well.

As a kid interested in space and in “how things work,” Oliver had visited Stennis on tours. “It was always awesome,” he said. “I always thought – this (kind of work) is something I want to do.”

Following graduation from Hancock High School, Oliver set about making that happen. He earned a degree in computer engineering technology from the University of Southern Mississippi, then began pursuing a master degree with a focus on industrial automation and controls.

About the same time, Stennis STEM (science, technology, engineering and mathematics) engagement specialist Maria Lott talked to Oliver's mother about the possibility of her son working as an Astro Camp counselor. The Stennis Office of STEM Engagement annually hosts Astro Camp sessions at INFINITY Science Center and across the Gulf Coast region for children in grades 2-10.

For four graduate school summers, Oliver served as a camp counselor. “It was a great time,” he said. “I definitely enjoyed it, and it altered my grad school experience as well.”

For Oliver, the experience fueled a desire to teach. He volunteered to do so while pursuing studies and hopes to resume that role someday, perhaps at a college or vo-tech level.

However, Oliver first is using his education and skills to do what he always enjoyed – make things work.

(Top right photo) Relativity Space engineer Jon Oliver speaks to a 2019 Astro Camp session at INFINITY Space Center, a Gulf Coast native, Oliver returned to his home area last year to begin working for Relativity at Stennis Space Center.

(Bottom right photo) Relativity Space engineer Jon Oliver and Stennis STEM engagement specialist Maria Lott display a poster created during an Astro Camp session in the mid-1990s, when Oliver served as a camp counselor.

After completing his master's degree, he worked for Continental Aerospace Technologies and SpaceX before joining the Raytheon team. In each instance, he filled roles related to automation processes.

Then, Stennis re-entered Oliver's life through the article about Relativity. “I researched the company and thought it was something I would like to be part of,” Oliver said, who joined the Relativity team last year.

Relativity was established in 2015 with a goal of automating the processes for building and launch small rockets as much as possible. The company is seeking to drastically simplify and speed up the timeline for rocket production and launch.

Its plan to create a process capable of producing a 3D-printed rocket to launch small satellites in about 60 days has drawn widespread attention. Last year, the company entered an agreement to develop test facilities at Stennis Space Center. This summer, it expanded that

presence with plans to locate a production facility on site.

Oliver is focused on automating the company's test stand as much as possible. “It's an amazing adventure to be involved with a company like Relativity this early in its growth,” he said. “No one else is trying to do what it is doing.”

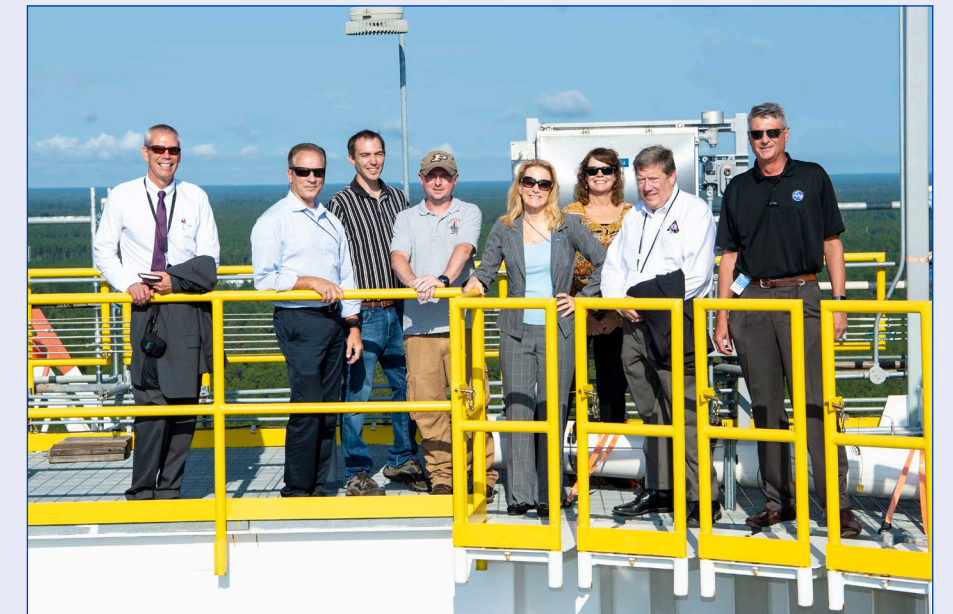
Oliver already has seen a test conducted on a Stennis stand. “What a great feeling to watch all your hard work make fire,” he said.

The Gulf Coast native has the same emotions about the opportunity to return to his home area and work at Stennis. Since returning to the Gulf Coast, Oliver has married; he met his wife Carmen while working for SpaceX in McGregor, Texas. She brought a daughter, Zoe, to the family, which also includes Oliver's son, Aaron.

The relocation also has provided a chance for Oliver to circle back to one of the key influences in his own develop-



NASA officials visit Stennis



(Top photo) NASA Acting Assistant Deputy Associate Administrator Exploration Systems Development Thomas Whitmeyer, NASA Chief of Staff Janet Karika and other guests stand atop the B-2 Test Stand during a visit to Stennis Space Center on Aug. 6. In addition to touring the stand and learning about preparations for Space Launch System core stage testing, group members also toured the Aerojet Rocketdyne Engine Assembly Facility.

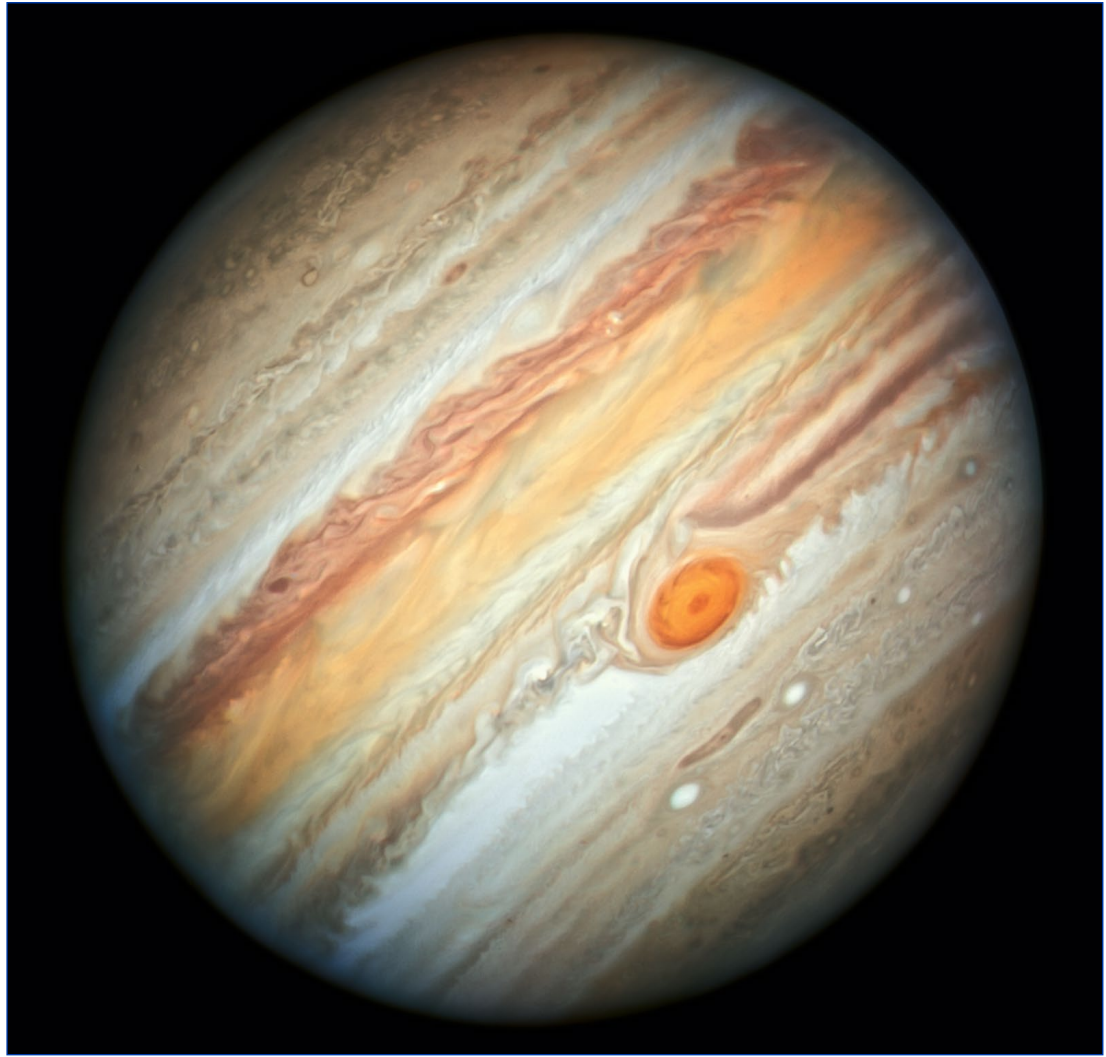
(Bottom photo) NASA chief counsels from Headquarters and various agency centers stand in front of the Pathfinder at the B-2 Test Stand at Stennis Space Center during a visit to the site July 24. The group was hosted by NASA Chief Counsel Monica Ceruti. During the visit, participants also visited the Aerojet Rocketdyne Engine Assembly Facility and took windshield tours of the Stennis A and E test complexes.



Hubble provides new look at Jupiter

A new Hubble Space Telescope view of Jupiter, taken on June 27, 2019, reveals the giant planet's trademark Great Red Spot and a more intense color palette in the clouds swirling in the turbulent atmosphere than seen in previous years.

The colors, and their changes, provide important clues to ongoing processes in Jupiter's atmosphere. The bands are created by differences in the thickness and height of ammonia ice clouds. The colorful bands, which flow in opposite directions at various latitudes, result from different atmospheric pressures. To learn more about the image – and Jupiter – click [here](#).



NASA in the News

Seven years in, Mars rover still at work

NASA's Curiosity rover has come a long way since touching down on Mars seven years ago. It has traveled a total of 13 miles and ascended 1,207 feet to its current location. Along the way, Curiosity discovered Mars had the conditions to support microbial life in the ancient past, among other things. The rover is far from done, having just drilled its 22nd sample from the Martian surface. It has a few more years before its nuclear power system degrades enough to significantly limit operations. After that, careful budgeting of its power will allow the rover to keep studying the Red Planet. Curiosity is now halfway through a region scientists call the "clay-bearing unit" on the side of Mount Sharp, inside of Gale Crater. Billions of years ago, there were streams and lakes within the crater. Water altered the sediment deposited within the lakes, leaving behind lots of clay minerals in the region. For more about NASA's Curiosity Mars rover mission and its findings, visit NASA web pages at: <https://mars.nasa.gov/msl/> or at <https://nasa.gov/msl>.

NASA plans to keep Voyagers going

NASA continues to conduct tests of its new Orion spacecraft, being built to carry astronauts on Artemis Program missions. The spacecraft's capability to safely carry crew in the face of unexpected problems was most recently demonstrated with a successful 12-minute firing of Orion's propulsion system. "With each testing campaign we conduct like this one, we're getting closer to accomplishing our missions to the Moon and beyond," said Mark Kirasich, program manager for Orion at NASA's Johnson Space Center in Houston. The Aug. 5 test was conducted at NASA's White Sands Test Facility in New Mexico. While the system never left the ground, it simulated one of the most taxing situations its engines could encounter after launch – an abort-to-orbit scenario. The Orion spacecraft initially will fly on uncrewed Artemis 1, the first, full test flight of the SLS and Orion. Subsequent Artemis missions will carry astronauts and land the first woman and next man on the Moon by 2024, while preparing for future missions to Mars. For more, click [here](#).

Stennis hosts small business showcase

Stennis employees visit with some of the business representatives participating the recent Small Business Showcase on site. Various small business vendors visited the site Aug. 7 to display their services and capabilities in the Roy S. Estess Building atrium. Stennis Associate Director John Bailey provided opening remarks for the event. Participating vendors included representatives from various professions, including online security, design, construction, renovation, water treatment and engineering.



Boeing group visits Stennis

Members of the Boeing Company Management Development Program stand at the B-2 Test Stand during a visit to the rocket engine test site July 25. During the day, the group members learned about ongoing work at Stennis and viewed site facilities, including the B-2 stand and the Aerojet Rocketdyne Engine Assembly Facility. The development group included Boeing senior managers selected for potential advancement in the company.

Hail & Farewell

NASA welcomes the following:

Shannon Sharkey
Huy Nguyen

Law Clerk
AST, Electrical Experimental Equipment

Office of the Chief Counsel
Engineering and Test Directorate

Stennis has been tested by series of storms



Note: NASA's John C. Stennis Space Center has played a pivotal role in the success of the nation's space program. The following offers a glimpse into the history of the rocket engine test center.

Hurricane season reaches its peak time in the months of August and September. Reminders to be prepared are everywhere. Not only do the people who live along the Gulf Coast need to be prepared, Stennis Space Center needs to be ready as well. Stennis has a hurricane preparedness plan that serves the site well, helping it to survive hurricanes like Betsy in 1965, Camille in 1969, Elena in 1985, Georges in 1998 and Katrina in 2005.

Hurricane Betsy was the first test of site preparedness. Betsy formed on Aug. 27, 1965. The then-Mississippi Test Facility (MTF) watched the storm as it tracked toward the Gulf Coast. The storm only inflicted minor damage on the test facility when it made landfall near Grand Isle, Louisiana, on Friday, Sept. 10, 1965, moving on into the Mississippi coast area. MTF reopened the following Monday.

Hurricane Camille made landfall at Waveland, Mississippi, on Aug. 18, 1969. At MTF, the days prior to Camille arriving were spent watching, waiting, securing hydrogen and oxygen barges, and tying down anything that might be blown away in 160 mile-per-hour winds. Camille ravaged the area and MTF, but the Gulf Coast proved to be a resilient community and quickly rebuilt.

Hurricane Elena was a tricky storm to prepare for; it had an unpredictable track, going east in the Gulf of Mexico, then doubling back to make landfall near Biloxi, Mississippi, on Sept. 2, 1985. Hurricane warnings were issued, cancelled and issued again leading up to that time. The then-National Space Technology Laboratories remained ready, and thanks to efforts of “ride-out” crews, there was little damage to the facility.

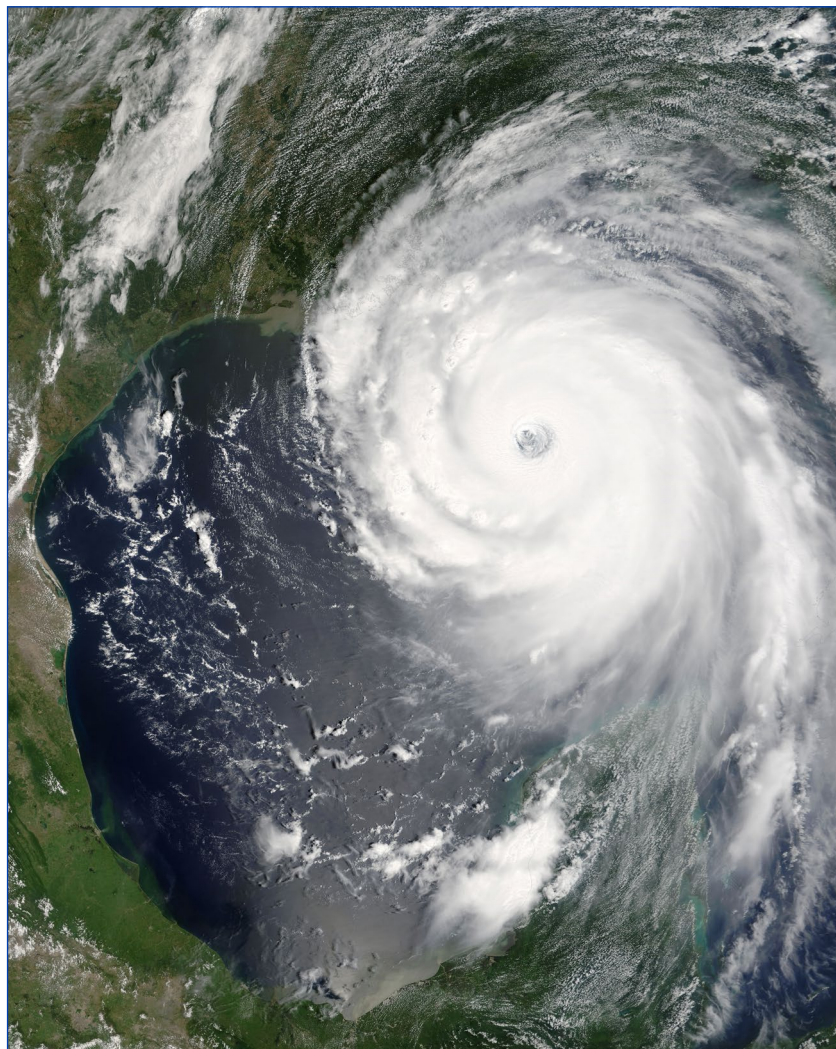
Stennis Space Center has been integral in hurricane damage assessments in the Gulf Coast area. In October 1995, when Hurricane Opal hit the Florida Panhandle, NASA's Gulf of Mexico Program, then headquartered at Stennis, helped to assess area damage caused by the storm.

Hurricane Georges was an interesting storm, making seven landfalls in all, with its seventh and final coming on Sept. 28, 1998, near Biloxi. Once again, Stennis Space Center was prepared and only had to rake up and haul off storm debris scattered across the site.

In 2005, Stennis again was as prepared as it could have been, but Hurricane Katrina was like nothing

anyone had seen. Even veterans of Hurricane Camille had never seen anything quite like it.

On Aug. 29, 2005, Katrina made landfall in southeast Louisiana and across the Gulf Coast area. Thanks to emergency and ride-out crews, Stennis, though heavily damaged, quickly was able to get up and running after the storm. Help poured in from across the country and other NASA installations. The community, once again, pulled together to rebuild.



A satellite image shows Hurricane Katrina, which struck the Gulf Coast area on Aug. 29, 2005.

Office of Diversity and Equal Opportunity

Workplace retaliation – how an ombudsman can help

This article was provided by Belfield Collymore, ombudsman for NASA Stennis Space Center.

Ombudsmen are individuals named by an organization to hear from people who believe they have experienced some form of retaliation or reprisal. Retribution can come in the form of absence of support, veiled threats, public humiliation, social ostracism, performance evaluation or termination.

There are many challenges for the individual and the ombudsman when potential reprisal exists. Climates of fear, very calculated action by individuals who exhibit retaliatory acts, cover-ups through paperwork, emotions and conflicting stories make situations complicated for individuals in the midst of such conflict.

The first step is to define retaliation. Equal employment opportunity laws state that a manager may not fire, demote, harass or otherwise “retaliate” against an individual for filing a complaint of discrimination, participating in a discrimination proceeding or otherwise opposing discrimination. The same laws that prohibit discrimination based on race, color, sex, religion, national origin, age, disability and genetic information also prohibit retaliation against individuals who oppose unlawful discrimination or participate in an employment discrimination proceeding.

According to the Equal Employment Opportunity Commission (EEOC), retaliation is the most frequently alleged basis of discrimination in the federal sector and the most common discrimination finding in federal sector cases. For example, it is unlawful to retaliate against employees for:

- Filing or being a witness in an EEO charge, complaint, investigation or lawsuit.
- Communicating with a manager about employment discrimination, including harassment.
- Answering questions during an employer investigation of alleged harassment.
- Refusing to follow orders that would result in discrimination.

- Resisting sexual advances or intervening to protect others.

Employees who perceive they are the target of reprisal – or are reluctant to address openly a legitimate concern in fear that a manager will retaliate in some way – may contact their local NASA ombudsman. The ombudsman is an independent, impartial, confidential and informal

resource who is available to listen, provide information, coach and help develop a range of responsible options.

The NASA ombudsman serves a very valuable function simply by listening to, and hearing, a visitor’s description of actual reprisal or fear of reprisal. The ombudsman may help the visitor make the distinction between reprisal and what is considered acceptable, normal practice of the organization in similar circumstances. After

identifying normal, acceptable practices, the ombudsman may help the visitor reframe the remaining issues to provide a better focus on the actions (or lack of action) that might actually be reprisal.

As a result of listening and reframing the issues, the ombudsman may explore certain aspects of the perceived reprisal informally. If the ombudsman is not in the best position to address the issues presented by the visitor, the ombudsman may refer the visitor to another appropriate person who may enable the visitor to carry the issue forward.

It is NASA’s standing policy to provide civil servants, center contractor workforce and other individuals (e.g., partners, customers) who are working on a NASA-controlled facility with an informal, independent, confidential and neutral channel to communicate and facilitate resolution of issues and concerns related to safety, organizational performance or mission success without fear of retaliation.

Information in this article came from: <https://www.eeoc.gov>

