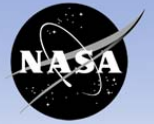


National Aeronautics and Space Administration



# LAGNIAPPE

John C. Stennis Space Center

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June 2020

## Astronauts launch from American soil



A SpaceX Falcon 9 rocket carrying the company's Crew Dragon spacecraft launches May 30 from Launch Complex 39A at NASA's Kennedy Space Center on NASA's SpaceX Demo-2 mission to the International Space Station with NASA astronauts Robert Behnken and Douglas Hurley onboard. The launch marked the first time astronauts have flown to space from American soil since the final shuttle mission in 2011. (See page 5)

Sitting back against a spreading shade tree on an early summer evening, watching the reflection of the sun slip lower and lower in the sky, its rays dancing across the bayou water, sure has a way of causing your mind to wander and even wonder sometimes.

That is just what I found myself – and my mind – one recent evening, thoughts drifting by, half-forgotten song lyrics, fleeting remembrances of things I need to do and so on. At one point, a few lines from an old Chaim Potok novel surfaced. “All beginnings are hard. You cannot swallow all the world at one time. Especially a beginning that you make by yourself. That’s the hardest beginning of all.”

As happens sometimes, those lines inspired another thought that led to another that led to ... you get the idea. Before I could stop myself, my mind had stopped wandering and actually begun thinking, which I spend a lot of lazy evenings trying not to do. Ark!

I thought back to the first of this year and the arrival of the Space Launch System core stage at Stennis for the beginning of the Green Run series of tests to demonstrate the flight readiness of the rocket unit.

Everything went pretty smoothly through installation of the stage and the first structural modal test. Then ... COVID-19. No one could have predicted Green Run activities would be suspended for almost two months.

Talk about a hard beginning.

However, safety and health procedures in place, Green Run activity is ramping back up now. The second of eight tests should be completed this month, marking another step in the countdown to the big hot fire test down the line. Take that you old COVID-19 virus. Ark!

Yes, this year’s beginning has been hard, just as Mr. Potok warned, but it has not been the hardest sort because it has not been done alone. When we look back later, I think one of the great stories of 2020 will be how the NASA and Stennis family, once again, pulled together in the midst of the pandemic and, now, during the days of social unrest across the country – not just to get work done but to care for one another.

Family. Now, there is a thought fit for any sort of evening, one absolutely worth remembrance and thought – and, most surely of all, something to inspire wonder.

Photo: Sept. 19, 2012



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## NASA's MOON to MARS MISSION

## Green Run tests focus on critical systems for Artemis I mission

**O**ne day in the sooner-rather-than-later future, people across the nation will rearrange daily schedules to witness a long-anticipated event – the maiden launch of NASA's new Space Launch System (SLS) rocket.

A pair of solid rocket boosters and four RS-25 engines will fire at a south Florida launchpad to generate more than 8 million pounds of thrust, lifting the 321-foot SLS rocket into the sky on its way to the Moon and back.

The launch will herald the beginning of a new great era of space exploration, one set on establishing a sustainable presence on the Moon and placing human footprints on Mars.

In no small part, success of the new era rests on hard work provided by Stennis Space Center, which is testing the rocket engines and SLS core stage that will power the new rocket to unprecedented destinations.

Lagniappe is featuring a series of articles under the "Go ... Go! ... Go!" heading that detail aspects of NASA's next step into deep space and Stennis' role in making such missions possible. The following represents the latest installment.

NASA recently resumed work on a series of tests to bring the [Space Launch System \(SLS\)](#) rocket core stage to life for the first time, allowing engineers to evaluate the new complex stage that will launch the [Artemis I](#) lunar mission.

In January, engineers began activating the stage's components one by one over several months through a series of initial tests and functional checks designed to identify any issues. Those tests and checks collectively called [Green Run](#) will culminate in a test fire replicating the stage's first flight.

"Green Run is the step-by-step testing and analysis of the new SLS rocket core stage that will send astronauts to the Moon," said Richard Sheppard, the SLS Stages Green Run Test Lead from NASA's Marshall Space Flight Center. "This testing will reduce risks for, not only the first flight, but also for the Artemis mission that will land astronauts on the Moon in 2024."

The Green Run test series, conducted on the historic [B-2 Test Stand](#) at Stennis Space Center, is a collaborative effort between the SLS program, the Stennis test team, core stage manufacturer Boeing and engine

manufacturer Aerojet Rocketdyne. On March 18, work was temporarily suspended when Stennis went to Stage 4 on the Agency Response Framework in response to a rise in COVID-19 cases in the area.

Prior to pausing test operations, engineers completed the modal test, the first of the eight tests in the Green Run series, to understand the vibration characteristics of the core stage. Work slowly and methodically resumed in May, with Stennis transitioning to from Stage 4 response to Stage 3 on May 27. Initial work focused on preparing the stand to resume testing.

"The team connected the facility with the rocket earlier this year, both electrically and mechanically," said Ryan McKibben, Green Run test conductor at Stennis. "We are now preparing for the second test, which will power on the vehicle's avionics and the three computers that control the rocket's flight as it soars into space."

The avionics power-up test is set to be conducted this month. Avionics are distributed throughout the stage. Engineers at Marshall designed software similar to the flight software for Green Run. A special stage controller is being used to simulate the Launch Control Center operations that will control the actual launch at Kennedy Space Center.

"The core stage avionics along with Green Run software have successfully completed tests in our test laboratories at Marshall, said Lisa Espy, the core stage avionics lead at Marshall. "I am excited to see the flight systems come to life that will control the rocket as it sends the first Artemis mission to the Moon."

Green Run tests minimize risk to the core stage and ensure the stage satisfies design objectives and validates design models. The series includes eight tests focused on both individual and integrated systems (see graphic illustration of test series on page 4):

- **Test 1 – Modal Test.** The first test in the Green Run series, a modal test was conducted in January. This test used shakers to impart dynamic forces on the suspended stage to identify primary bending modes of the stage. Information from the modal test will help engineers verify vehicle models needed for the operation of the rocket's guidance, navigation and control systems.

- **Test 2 – Avionics.** The rocket's avionics, which are distributed throughout the stage, will be turned on and checked out. This includes not only flight computers and electronics that control the rocket but also those that collect flight data and monitor the overall health of the core stage.

- **Test 3 – Fail-Safes.** Engineers will check out all the safety systems that shut down operations during testing. To do this, they will simulate potential issues.

- **Test 4 – Propulsion.** This will be the first test of each of the main propulsion system components that connect to the engines. Command and control operations will be verified, and the core stage will be checked for leaks in fluid or gas.

- **Test 5 – Thrust Vector Controls.** Engineers will ensure that the thrust vector control system can move the four engines and check all the related hydraulic systems.

- **Test 6 – Countdown.** This test simulates the launch countdown, including step-by-step fueling procedures. Core stage avionics are powered on, and propellant loading and pressurization are simulated. The test team will exercise and validate the countdown timeline and sequence of events.

- **Test 7 – "Wet" Dress Rehearsal.** Engineers will demonstrate loading, controlling and draining more than 700,000 gallons of cryogenic propellants into the two test stand run tanks and then returning the stage to a safe condition.

- **Test 8 – Hot Fire.** The core stage's four [RS-25 engines](#) will operated for up to eight minutes, generating 1.6 million pounds of thrust, the amount of thrust the engines produce at sea level on the launch pad at liftoff.

Following the hot fire test at Stennis, engineers will refurbish the core stage and configure it for its journey aboard the Pegasus barge to Kennedy Space Center for launch preparations. The next time the four RS-25 engines fire, the SLS will launch in an epic debut of Artemis I – the first in a series of increasingly complex missions that will enable human exploration to the Moon and Mars.



GO...  
GO...  
GO!

## NASA's MOON to MARS MISSION



SPACE LAUNCH SYSTEM

# ARTEMIS TESTING: GREEN RUN CHECKLIST

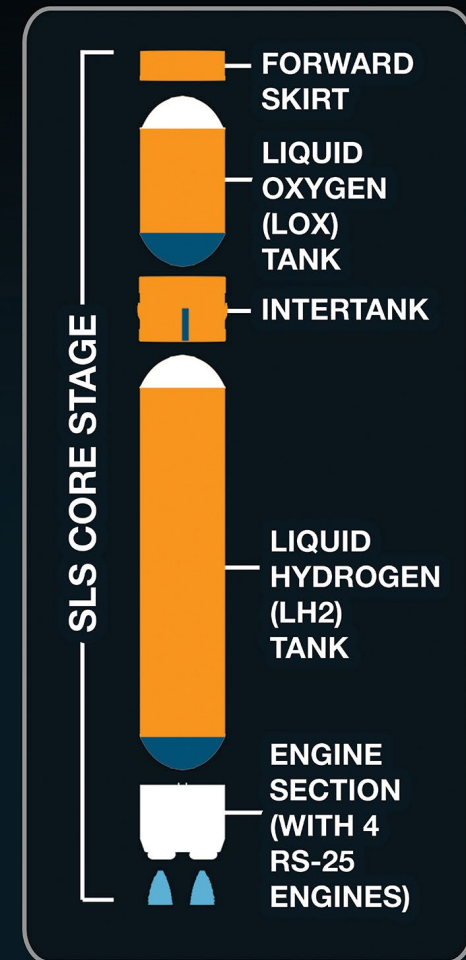
National Aeronautics and  
Space Administration



## TESTING THE WORLD'S LARGEST ROCKET STAGE

A total of eight Green Run tests minimize risk to the **ARTEMIS I** core stage and ensure the flight hardware satisfies design objectives and validates design models:

- |               |  |                                     |
|---------------|--|-------------------------------------|
| <b>TEST 1</b> | Apply forces simulating launch to the unpowered, suspended core stage.                       | <input checked="" type="checkbox"/> |
| <b>TEST 2</b> | Turn on and check out core stage avionics.   | <input type="checkbox"/>            |
| <b>TEST 3</b> | Simulate potential issues to test systems that shut down other systems if there's a problem. | <input type="checkbox"/>            |
| <b>TEST 4</b> | Test main propulsion system components that connect to the engines.                          | <input type="checkbox"/>            |
| <b>TEST 5</b> | Test thrust vector controls and check out all the related hydraulic systems.                 | <input type="checkbox"/>            |
| <b>TEST 6</b> | Simulate launch countdown to validate countdown timeline and sequence of events.             | <input type="checkbox"/>            |
| <b>TEST 7</b> | Load and drain more than 700,000 pounds of cryogenic propellants.                            | <input type="checkbox"/>            |
| <b>TEST 8</b> | Fire all four RS-25 engines for up to 8 minutes.   | <input type="checkbox"/>            |



# #ARTEMIS

## NASA's MOON to MARS MISSION

# Historic flight – ISS welcomes first SpaceX Crew Dragon spacecraft with NASA astronauts

For the first time in history, NASA astronauts have launched from American soil in a commercially built and operated American crew spacecraft to the International Space Station. The SpaceX Crew Dragon spacecraft carrying NASA astronauts Robert Behnken and Douglas Hurley lifted off May 30 at 2:22 p.m. CDT on the company's Falcon 9 rocket from Launch Complex 39A at NASA's Kennedy Space Center in Florida.

"Today a new era in human spaceflight begins as we once again launched American astronauts on American rockets from American soil on their way to the International Space Station, our national lab orbiting Earth," NASA Administrator Jim Bridenstine said. "I thank and congratulate Bob Behnken, Doug Hurley, and the SpaceX and NASA teams for this significant achievement for the United States. The launch of this commercial space system designed for humans is a phenomenal demonstration of American excellence and is an important step on our path to expand human exploration to the Moon and Mars."

Known as NASA's SpaceX Demo-2, the mission is an end-to-end test flight to validate the SpaceX crew transportation system, including launch, in-orbit, docking and landing operations. This is SpaceX's second spaceflight test of its Crew Dragon and its first test with astronauts aboard, which will pave the way for its certification for regular crew flights to the station as part of NASA's Commercial Crew Program.

"This is a dream come true for me and everyone at SpaceX," said Elon Musk, chief engineer at SpaceX. "It is the culmination of an incredible amount of work by the SpaceX team, by NASA and by a number of other partners in the process of making this happen. You can look at this as the results of a hundred thousand people roughly when you add up all the suppliers and everyone working incredibly hard to make this day happen."

The program demonstrates NASA's commitment to investing in commercial companies through public-private partnerships and builds on the success of American companies, including SpaceX, already delivering cargo to the space station.

SpaceX controlled the launch of the Falcon 9 rocket from Kennedy's Launch Control Center Firing Room 4, the former space shuttle control room, which SpaceX has leased as its primary launch control center. As Crew Dragon ascended into space, SpaceX commanded the spacecraft from its mission control center in Hawthorne, California. NASA teams are monitoring space station operations throughout the flight from Mission Control Center at the agency's Johnson Space Center in Texas.

The SpaceX Crew Dragon spacecraft docked to the space station the morning of May 31. During the operation, Behnken and Hurley worked with SpaceX mission control to verify the spacecraft performed as intended by testing the environmental

control system, the displays and control system, and by maneuvering the thrusters, among other things. Crew Dragon is designed to dock autonomously, but the crews onboard the spacecraft and the space station monitored the performance of the spacecraft as it approached and docked to the station's Harmony module.

After successfully docking, the crew was welcomed aboard the International Space Station, becoming members of the Expedition 63 crew. "The whole world saw this mission, and we are so, so proud of everything you've done for our country and,

landers. All of this is leading up to an amazing day where we have humans living and working for long periods of time on the surface of the Moon, and doing it with a purpose. And that purpose, of course, is to go to Mars."

After reaching orbit, Behnken and Hurley named their Crew Dragon spacecraft "Endeavour" as a tribute to the first space shuttle each astronaut had flown aboard. "Dragon was huffing and puffing all the way into orbit, and we were definitely driving or riding a Dragon all the way up," Behnken said during the welcoming ceremony inside the space station's Harmony module. "While we're on-board the space station with a new spacecraft, we do hope to put her through her paces. So the good ship Endeavour is going to get a lot of checkout over the next week or two here, and hopefully we'll be able to declare her operational."

"It's great to get the United States back in the crewed launch business and we're just really glad to be onboard this magnificent complex. We're just happy to be here, ..." Hurley added. "We had a couple of opportunities to take it (Dragon) out for a spin so to speak, once after we got into orbit last night and today about 20 minutes before we docked. My compliments to the folks back at Hawthorne and SpaceX on how it flew. We couldn't be happier about the performance of the vehicle."

The crew will remain busy as they continue to test and demonstrate the capabilities of Dragon Endeavour while it is docked to the space station. The Crew Dragon being used for this flight test can stay in orbit about 110 days, and the specific mission duration will be determined based on the readiness of the next commercial crew launch. The operational Crew Dragon spacecraft will be capable of staying in orbit for at least 210 days as a NASA requirement.

At the end of the mission, Behnken and Hurley will board the spacecraft, which will autonomously undock, depart the space station and return to Earth through a parachute-assisted splashdown in the Atlantic Ocean, where the SpaceX recovery ship crew will pick up the crew and return them to Cape Canaveral.

NASA's Commercial Crew Program is working with SpaceX and Boeing to design, build, test and operate safe, reliable and cost-effective human transportation systems to low-Earth orbit. Both companies are focused on test missions, including abort system demonstrations and crew flight tests, ahead of regularly flying crew missions to the space station. Both companies' crewed flights will be the first times in history NASA has sent astronauts to space on systems owned, built, tested and operated by private companies.

View or listen to the SpaceX Dragon Demo-2 welcoming ceremony on ISS [here](#).

Learn more about NASA's Commercial Crew program [here](#).



The International Space Station's two newest crew members, NASA astronauts (from left) Bob Behnken and Doug Hurley, are pictured having just entered the orbiting lab shortly after arriving aboard the SpaceX Crew Dragon spacecraft.

in fact, to inspire the world," Bridenstine told the crew from the floor of Mission Control in Houston following the successful docking operation. "This represents a transition in how we do spaceflight from the United States of America. NASA is not going to purchase, own and operate rockets and capsules the way we used to; we're going to partner with commercial industry.

"This model is going to apply when we go to the Moon," Bridenstine said. "When we go to the Moon we're going to land on the surface of the Moon with commercial

## NASA's MOON to MARS MISSION

# Stennis engineers involved in testing, review work for Demo-2 launch

When the SpaceX Demo-2 spacecraft launched May 30 from Florida, the entire country had reason to watch. The historic mission marked the first time NASA astronauts launched to space on a commercial spacecraft and the first launch of astronauts to space from American soil since the final shuttle mission in 2011.

History notwithstanding, a pair of Stennis Space Center engineers had added reason to watch the launch. Stennis Deputy Director Randy Galloway and NASA engineer Danny Allgood both contributed in the testing and review process leading up to the historic mission.

Galloway served as a member of the flight readiness review board that gave final approval May 22 to proceed with the scheduled launch of the Crew Dragon spacecraft on a Falcon 9 rocket. The review is a critical step in launch preparations to ensure all issues and concerns have been addressed and launch operations can proceed.



NASA's SpaceX Demo-2 mission launches May 30 from Launch Complex 39A at Kennedy Space Center in Florida, carrying astronauts to space from American soil for the first time since 2011.

The review focused on the technical readiness for launch and covered various aspects of the operation, including as the status of the Crew Dragon spacecraft, the Falcon 9 rocket and the ground systems in the launch complex. It also assessed the readiness of the International Space Station program and its partners to support the mission.

“We had a very successful flight readiness review, in that we did a thorough review of all of the systems and all the risks, and it was unanimous on the board that we are go for launch,” NASA As-

sociate Administrator Steve Jurczyk, who led the review, said at a briefing following the decision to proceed.

In addition to Galloway's effort, Allgood was involved in some critical testing prior to the launch. The work related to the Crew Dragon's emergency abort system, which ensures the safety of the astronauts in the event of a rocket malfunction. The system jettisons the capsule – with the astronauts aboard – away from the rocket in such an instance.

conducted modeling of the tests.

“The testing and modeling I was directly involved in was very challenging as it had never been attempted before,” he said. “There was no experimental data available for this particular situation and no previous modeling that could help guide our analyses. So, it truly was first-of-its-kind work.”

Allgood spent four months focused on the project, using tools developed by a small busi-

ness was ready to fly on the mission.

The work also illustrated the value of Stennis experience and expertise to NASA, Galloway noted. “Even though Stennis is focused on propulsion testing, the work we do is applicable to various areas and issues,” he noted. “In this case, we showed that we understand the physics of fluid flows and have the tools and expertise to apply that expertise broadly when the agency needs it.”

On May 30, Allgood watched the subsequent launch of the Demo-2 mission with both excitement because of its historic nature and apprehension because of the inherent risks associated with any human spaceflight. “I was very relieved to see when they safely made it to orbit,” he said.

Galloway watched the launch with a sense of the significance of the event. “The Commercial Crew Program is important for NASA and the nation,” he said. “It allows us to fly American astronauts from Ameri-

can soil on American rockets. It also helps us keep the International Space Station fully crewed so we can conduct research that benefits everyday life and also helps us design and prove the systems we need to send humans back to the Moon in a sustainable way and, eventually, continue on to Mars.”

NASA established the Artemis program last year to return humans, including the first woman and next man, to the Moon by 2024 in preparation for eventual crew missions to Mars.

For the latest on NASA/Stennis Space Center status, please access:

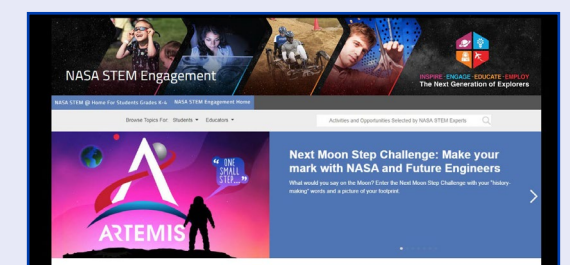
Stennis Emergency Management web page

NASA Coronavirus Response Information web page

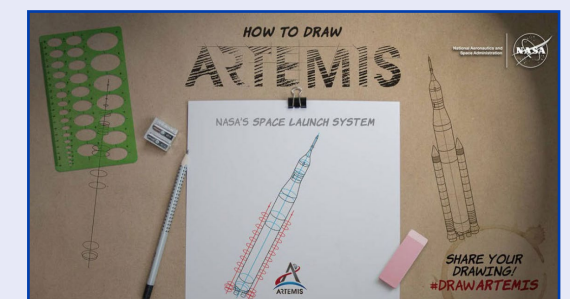
Other online resources:



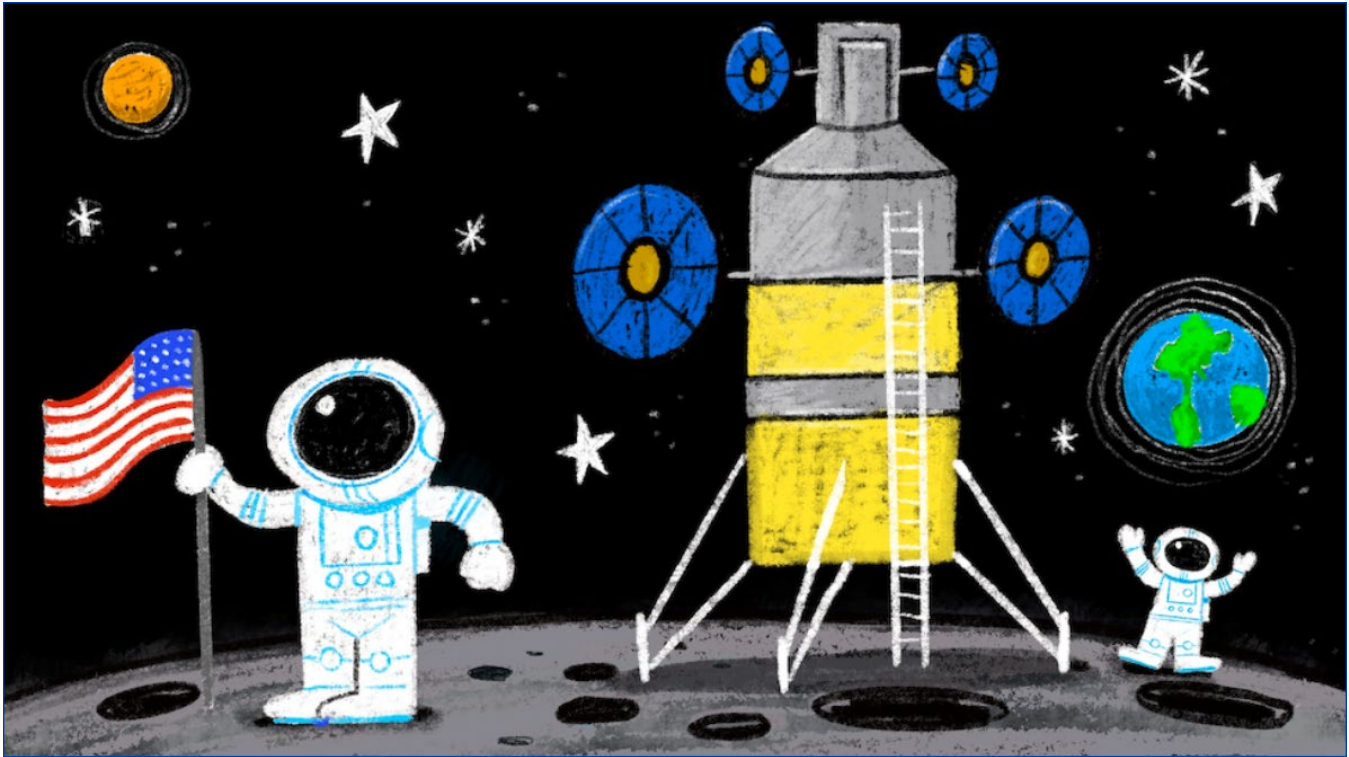
NASA at Home



NASA STEM@Home for Students



How to Draw Artemis



## NASA invites young students to color space

As part of the NASA@Home initiative, students from elementary school age and above can add their creativity to the people and technologies that have propelled humans to the Moon and beyond. Using pages available online, kids can connect the dots of the Mars Viking Lander, help Katherine

Johnson find the missing numbers, create a custom paint job for the Space Launch System and much more. They can even imagine how the next man and the first woman on the Moon will look like! Download pages here: [Activity Page / Coloring Page I / Coloring Page II / Space Crafts Page.](#)

## NASA in the News

### Hubble offers clue about early universe

New results from the Hubble Space Telescope suggest the formation of the first stars and galaxies in the early universe took place sooner than previously thought. A European team of astronomers have found no evidence of the first generation of stars, known as Population III stars, as far back as when the universe was just 500 million years old. Population III stars were forged from the primordial material that emerged from the big bang. They must have been made solely out of hydrogen, helium and lithium, the only elements that existed before processes in the cores of these stars could create heavier elements, such as oxygen, nitrogen, carbon and iron. Scientists do not yet know when or how the first stars and galaxies in the universe formed. Hubble only allows astronomers to view the universe back to within 500 million years of the big bang. In their study, the European team found no evidence of the first generation of stars during that period. These results suggest the earliest formation of stars and galaxies occurred much earlier than can be probed with Hubble. This leaves an exciting area of research for the upcoming James Webb Space Telescope.

### NASA names company to fly rover to Moon

NASA has awarded Astrobotic of Pittsburgh \$199.5 million to deliver NASA's Volatiles Investigating Polar Exploration Rover (VIPER) to the Moon's South Pole in late 2023. The water-seeking mobile VIPER robot will help pave the way for astronaut missions to the lunar surface beginning in 2024 and will bring NASA a step closer to developing a sustainable, longterm presence on the Moon as part of the agency's Artemis program. VIPER's flight to the Moon is part of NASA's Commercial Lunar Payload Services initiative to use industry partners to quickly deliver scientific instruments and technology demonstrations to the Moon. As part of its award, Astrobotic is responsible for end-to-end services for delivery of VIPER, including integration with its Griffin lander, launch from Earth and landing on the Moon. During its 100-Earth-day mission, VIPER will roam several miles to collect data – including the location and concentration of ice – that will be used to compile the first global water resource maps of the Moon and determine locations where water and other resources can be harvested to sustain humans during extended expeditions. For more about VIPER, visit [here](#).

# 1973 – Space shuttle opens door to Stennis future



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

In 1973, the then-Mississippi Test Facility (MTF) had a total of 1,127 employees. After the Apollo Program ended, workforces were cut as the facility faced tough times. However, an engine test project was on the horizon – the space shuttle. The space shuttle was designed as a reusable vehicle to carry humans to low-Earth orbit following the Apollo Program.

MTF jumped at the chance to test the engines that would power the shuttle fleet. An effort to have the engines manufactured at Michoud Assembly Facility in nearby New Orleans and tested at MTF went into motion. One of the companies entering bids for the project was the Lockheed Propulsion Co. of California, which embraced the idea of using Michoud and MTF to perform the work. Other companies putting in bids for the work were Thiokol Chemical Corp. of Brigham City, Utah; Aerojet Solid Propulsion Co. of Sacramento, California; and United Technology Center of Sunnyvale, California.

With bids submitted, a delegation of elected officials, community leaders and business people from Louisiana and Mississippi began lobbying for the work to come to

their states. In late 1973, the award was given to Thiokol Chemical Co. The local community around Michoud and MTF were baffled by the announcement since just a few years earlier, MTF had been named “the nation’s for most propulsion test site.”

The announcement set off a series of events that shaped the future of MTF: the protest of the solid rocket motor contract award; and calls for “full utilization of MTF” by U.S. Sen. John C. Stennis, U.S. Rep. Trent Lott and other Mississippi and Louisiana officials.



NASA officials view the first space shuttle main engine test on the A-1 Test Stand at Stennis Space Center, then known as National Space Technology Laboratories, on May 19, 1975. Stennis would continue testing main engines for space shuttle main engines for the next 34 years.

Sen. Stennis spearheaded the movement for full utilization, and on June 14, 1974, MTF was renamed the National Space Technology Laboratories (NSTL) and became an independent installation, re-reporting to NASA Headquarters. Sen. Stennis said the “efforts to increase the use of NSTL by NASA and other federal agencies (would) now be more

successful than ever before.” Site Director Jackson Balch was quite pleased with the changes, saying that “it will be kind of nice to be a member of the club.”

Just a year later, on June 24, 1975, a brief, but very important event occurred at the newly independent site, the first ignition test of a space shuttle main engine. It lasted just a second but marked the return to propulsion testing for NSTL and opened the door for testing projects to follow, including the current testing of engines that eventually will carry humans further than ever.

## Hail & Farewell

### NASA welcomes the following:

Luke Roger

Travis Sippel

Bradley Tyree

Pathway Intern

Contract Specialist

AST, Mechanical Experimental Equipment

Engineering and Test Directorate

Office of Procurement

Engineering and Test Directorate



## Office of Diversity and Equal Opportunity

### In midst of social unrest – be an ally

*If you are neutral in situations of injustice, you have chosen the side of the oppressor.*

Desmond Tutu

During these current times of social unrest in the United States, it is important to remember that it is not enough for Americans to simply not be racists; we must be actively anti-racist.

One way to do that is to become an ally to marginalized communities. An ally is a person who is not a member of a marginalized group but seeks to help end oppression of those in the groups. An ally is also a person willing to act with and for others in pursuit of equality and the fight against prejudice.

Being an ally requires a willingness to educate oneself about systemic racism in this country and challenge one's own discomfort and prejudices. Allies use their voices to influence others to consider the plight of those living a marginalized or disenfranchised experience. Strong allies listen to others who talk about their experiences, frustrations and emotions, and work to create interpersonal, societal and institutional change.

Allies talk to people in their sphere of influence and educate them on how systems of oppression affect marginalized groups. Allies call out injustice or discrimination when they see it and are willing to use privilege for good and to bring about change.

In a Facebook Live conversation, Activist DeRay Mckesson explains the following ways that allies can support marginalized communities:

- 1. Own privilege.** It is about acknowledging privilege and exploring ways to use that privilege and available resources.
- 2. Talk about what is uncomfortable and what is important.** There is no winning in silence. Real change does not come without a conversation about what needs to

be done to create change.

- 3. Be strategic in what one says and how one says it.** This is a long-game solution. Rarely do people come out of one conversation and say that their whole worldview has changed. It is about setting a foundation, so people can change over time.
- 4. Activism is not just about protests and marches; it is also about exercising the right to vote.** Many of the things that will change people's lives are structural, so it is about voting where one is and pushing for or against legislation in one's city and town. Use institutional power to change structures and systems.
- 5. Figure out where and how to do the most good.** There is a role for everyone; people do not all need to play the same role. The cacophony of individuals all doing work together will lead to systemic change.
- 6. Start where one is.** Ask people what they need, stand in concert with those who have been doing the work for longer, listen, ask more questions than talk.
- 7. Ask oneself: "What do I want the future to look like?"** Every person needs to spend more time talking about potential solutions to current problems.
- 8. Feel the fear — and act anyway.** Make sure fear does not overpower everything else, even if fear is still present. Be willing to put something on the line to make the world a different place.

Above all, keep trying. Mistakes will be made, but keep showing up. Be compassionate and always lead with empathy. Keep learning and growing. This is the work of any ally.

*Information included in this article came from: sojo.net and ideas.ted.com.*

## For Pennsylvania transplant, Stennis has that hometown feel

Michele Beisler grew up in the small town of Saegertown, Pennsylvania, a community of about 1,000 residents only 30 miles or so from the shores of Lake Erie and a very long way from the heart of the American space program that spreads along the southern coast from Texas to Florida.

However, Beisler was acquainted with NASA and its missions, fitting for someone born during the dramatic Apollo 13 mission in 1970. As an early teen, Beisler also traveled with her family to Florida and was able to join other beachgoers in watching a space shuttle launch. A few years later in high school, she recalled learning of the Challenger accident. "The news quickly spread," she said. "At first, we thought people were joking. But our English teacher brought a TV into the classroom, and we all sat, shocked, watching the news coverage."

It is no surprise, then, that Beisler has spent the last 19 years working as a NASA engineer at Stennis Space Center. Her journey to the site dates to her collegiate years, which included four years of studies at the Penn State Behrend campus in Erie, Pennsylvania, followed by earning a masters degree at Penn State University in University Park.

At Behrend, Beisler studied mechanical engineering and was one of the first graduating classes to earn four-year bachelor degrees from the school. Previously, students finished the final two years of their degrees at the University Park campus. Completing undergraduate studies at Behrend allowed Beisler to play four years of varsity basketball for the school.

She then headed to the Penn State main campus for graduate studies, where the seeds were sown for her eventual move to Stennis. "A colleague from graduate school had finished his doctorate and became a manager in the Stennis Engineering and Test Directorate," she said. "He called me one day and said he had a good experience working with me on a project and asked if I wanted to work with him again at NASA. I immediately said yes."

Beisler arrived at Stennis in 2001 and began work as a mechanical design engineer at the E-3 Test Stand. In 2005, she became a project engineer in the Rocket Propulsion Test (RPT) Program Office, a position she continues to hold. Based at Stennis, NASA's RPT Program Office is responsible for optimizing the use of the agency's various rocket propulsion test facilities across the nation.

Her work involves a range of efforts, such as monitoring projects and reporting on activities at the White Sands Test Facility in New Mexico, leading the RPT Program risk management process, leading operations as executive coordinator of the National RPT Alliance (a collaborative between the NASA RPT Program and the Department of Defense), leading diversity and inclusion activities within the RPT Program, managing the outreach efforts at professional conferences and editing the office website.

Such work directly relates to NASA's Artemis program to return humans, including

the first woman and next man, to the Moon by 2024. "The RPT Program Office is responsible for making sure NASA RPT facilities across the agency will be ready and able to perform testing to support the Artemis program," Beisler said.

In addition to engineering, Beisler teaches self-development classes and serves as a certified development coach for NASA, an outgrowth from her study of human consciousness. "I am passionate about contributing to an environment in which all people are respected, accepted, appreciated and included," she said. "It is important to me to show up as a model of the change I wish to see in the world."

Beisler also serves as Stennis and NASA Shared Services Center Special Emphasis Program manager for the LGBTQ+ community. The acronym refers to lesbian, gay, bisexual, transgender, queer (or questioning) and other sexual/gender-related groups. Special Emphasis Programs were established some 40 years ago to focus on such groups that have historically been absent or under-represented in specific occupational categories or grade levels in the federal workplace. Several work at the NASA Shared Services Center and Stennis to highlight such groups.

Beisler has been involved in raising LGBTQ+ awareness and acceptance at Stennis since 2011 when she was invited to create a site bulletin board for LGBTQ+ Pride month (observed each June). She also has facilitated LGBTQ+ Pride month observances on site each June since 2012. As a Special Emphasis Program manager, Beisler now is responsible "to not only increase awareness but help management identify the potential barriers LGBTQ+ employees face in the workplace, so we can all work together to minimize those potential barriers."

Beisler is pleased with the Stennis culture. "Leadership and employees have repeatedly demonstrated a strong commitment to foster a work environment where diversity and inclusion are valued and prioritized."

She also is proud of her ongoing work at Stennis, which has been recognized multiple times, including with an agency Silver Snoopy award. "I am proud to contribute my talent and skills to an organization that pushes the limit of science and technology to benefit all life on planet Earth," Beisler noted.

Looking ahead, Beisler is excited to be part of the Artemis generation that will send a woman to the Moon for the first time. "I am encouraged to see the progress women have made to close the gender gap in the STEM (science, technology, engineering and mathematics) fields, although we still have a ways to go," she said.

In the meanwhile, Beisler will continue doing her part to contribute, continue spending time with Sharon, her wife of 24 years (they were officially married in 2013 when the law changed) and their newly adopted dog, and continue enjoying the chance to be part of the Stennis environment. It has that "small town feel where everyone knows each other and greets each other by name," just like her native Saegertown.



NASA engineer Michele Beisler has spent 19 years as a member of the Stennis community.

# Hurricane Guide

The 2020 hurricane season has arrived – and NASA’s John C. Stennis Space Center has prepared this four-page guide as a resource for Stennis employees. The guide offers interesting and valuable information, including a contraflow evacuation map and contact numbers for emergency situations. It also serves as an important reminder for every Stennis employee to be prepared and alert for whatever the 2020 storm season may deliver.

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## Stennis Space Center WILL NOT serve as a shelter to any workers or families (including families of ride-out personnel).

As part of their hurricane season preparation, individuals are urged to contact county/parish offices to identify available shelters in their areas.

In Mississippi and Louisiana, persons are reminded they may call 211 to obtain information about health and human services available in their areas. The number is staffed 24 hours a day in Louisiana and every day but Sundays, 7 a.m. to 6 p.m., in Mississippi. It offers information on various services, including food, clothing, shelters and transportation assistance.

Stennis employees are reminded to discuss their evacuation plans with supervisors so they can be contacted after a storm or to acquire their company/agency policy on contacts after a storm.  
NOTE: If NASA employees cannot contact Stennis due to downed communications after a storm, they should call 877-776-4654 to report their status.

Employees also should monitor the [Stennis Emergency Management](#) website for updated information.

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## Protect your plan from COVID-19

### Prepare early and double-check details

COVID-19 could have affected many details related to a hurricane preparation plan.

Some public shelters may have changed. Some evacuation destinations may not be so easily accessible. Travel may be more difficult. It is critical to review and check all preparation details to make sure they remain viable.

### Expand your emergency kit

In addition to traditional items included in an emergency preparedness kit, this year’s supplies should include items (such as face masks, disinfectants, hand sanitizer) to protect individuals from COVID-19. Check CDC website for information on how to protect oneself and others from the virus.

### Stay informed

With the COVID-19 situation ever changing, it is more critical than ever to stay up-to-date on the latest news and developments. Use apps, including the [FEMA mobile app](#), and websites to receive the latest information.

## Facts and Information

- The Atlantic Ocean hurricane season extends from June 1 through November 30 each year, hitting its peak from mid-August to late October. Of the 64 major hurricanes (Category 3-5) that made landfall in the United States during the 20th century, 36 hit in September. The next busiest month was August with 15 storm strikes.
- The terms “hurricane,” “typhoon” and “cyclone” all refer to the same storm tropical cyclone phenomenon. Storms in the Atlantic and eastern Pacific Oceans are called “hurricanes.” Western Pacific Ocean storms are referred to as “typhoons.” Storms in the Indian Ocean and Bay of Bengal are “cyclones.” Australians refer to a tropical cyclone as a “willy-willy.”
- The word “hurricane” comes from “Hurican” or “Huracan,” the name of an evil Caribbean god. It also has roots to Hunraken, the Mayan god of wind, fire and storm who is said to have caused a great flood on Earth as an act of divine retribution against humans.
- A hurricane has remarkable power. It can reach as high as 40,000 to 50,000 feet into the sky, stir up millions of miles of air and produce more than 2.4 trillion gallons of rain a day. During its lifespan, a hurricane produces as much energy as several thousand atomic bombs.
- Hurricanes spin around a low-pressure center known as an “eye.” The eye may be 20-30 miles wide and remains calm and without clouds. It is surrounded by a thick “eye wall,” which represents the strongest part of the hurricane, while spiral rain bands extend out from the wall to represent the largest portion of the storm. A hurricane makes landfall when its eye crosses a coastline, not when the spiral rain bands arrive.
- The right side of a northern hemisphere hurricane is typically stronger in terms of winds, tornado potential and storm surge.
- **Storm surge** – an abnormal rise of sea/gulf water along a shore as the result, primarily, of storm winds
- **Watch notice** – issued notice that adverse conditions are *possible* in the specified watch area, usually within 48 hours. A watch may apply to thunderstorms, tornadoes, floods or hurricanes.
- **Warning notice** – issued notice that adverse conditions are *expected* in the specified warning area, usually within 36 hours. A warning may apply to thunderstorms, tornadoes, floods or hurricanes.
- Evacuated residents may choose to seek refuge in designated public shelters. Such designated shelters are operated by trained individuals and are designed to ensure the safety, security and basic needs of sheltering residents are met.
- **What to bring to a shelter.** Residents should bring a change of clothing, a blanket and a pillow for each person. Residents also should bring their disaster supply kit, including food, medications, comfort items and needs for infants or elderly persons.
- **What not to bring to a shelter.** No weapons, illegal drugs, alcohol or pets are allowed (service animals are permitted).
- Hurricanes/typhoons/cyclones kill more people than any other type of natural storm. By one estimate, the storms have killed almost 2 million people worldwide during the past two centuries.
- For hundreds of years, hurricanes either were not named or were named on a local and random basis. The United States began using female names for storms in 1953, adding male names in 1979. Separate lists are maintained for Atlantic, Eastern North Pacific and Central North Pacific storms. The lists rotate each year, with listed names in alternating (male/female or female/male) and alphabetical order.
- Names of powerful or destructive hurricanes are permanently retired (by decision of a world committee) from the naming lists and replaced as needed. Since the 1950s, 87 names have been retired, including two in 2018 (Florence and Michael).
- Names for 2020 Atlantic hurricanes are – Arthur, Bertha, Cristobal, Dolly, Edouard, Fay, Gonzalo, Hanna, Isaias, Josephine, Kyle, Laura, Marco, Nana, Omar, Paulette, Rene, Sally, Teddy, Vicky and Wilfred. The rotating naming lists can be viewed at: <http://www.nhc.noaa.gov/aboutnames.shtml>.

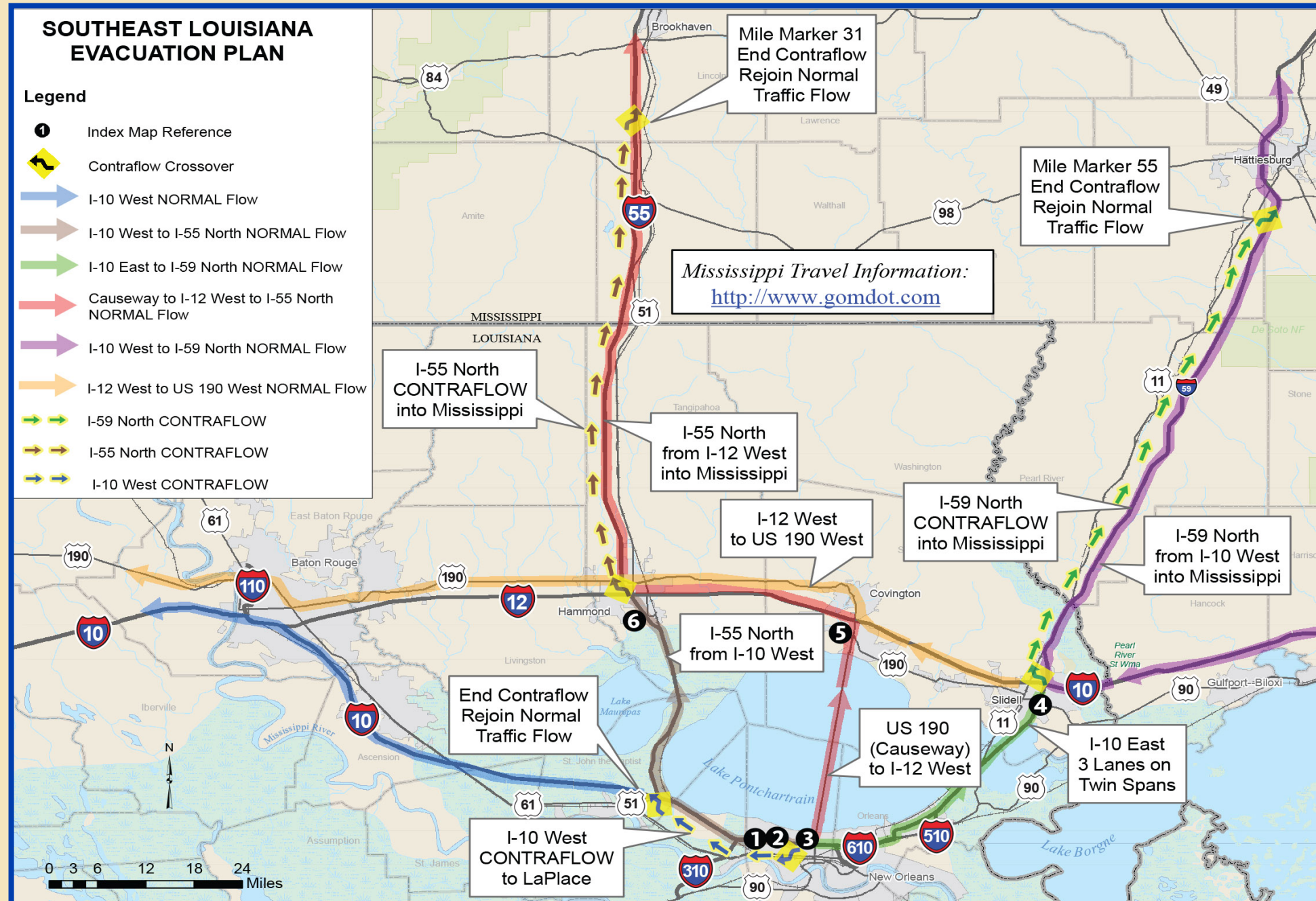
# Louisiana-Mississippi interstate contraflow plan

In an effort to assist Louisiana in the event of a mandatory hurricane evacuation, the Mississippi Department of Transportation will implement contraflow (lane reversal) for I-59 and I-55 when requested by Louisiana and approved by the Mississippi governor.

- A contraflow decision is not automatic and will only be used when absolutely necessary. Citizens should not delay evacuation plans in anticipation of contraflow.
- I-59 contraflow will begin in Louisiana, extend into Mississippi and end at mile marker 55.

- I-55 contraflow will begin in Louisiana, extend into Mississippi and end at mile marker 31.
- Exits within the contraflow sections of the interstate highways will remain open as conditions allow. Law enforcement officers will assist with traffic control.
- Shoulders of both Interstates 59 and 55 should be kept clear for emergency vehicles. Motorists needing to stop should use the next available exit.
- Motorists traveling west into Louisiana on I-10 will be routed north onto I-59 at the I-10/I-12 split.

- Tune in to public broadcasting radio stations for emergency information and road conditions.
- The following procedures will be enforced in the Hattiesburg area to avoid severe congestion:
  - Northbound traffic on Hwy. 49 may not be allowed to exit at either Hwy. 98 or I-59.
  - Northbound traffic on I-59 can only exit at Hwy. 11 (Exit 60) or west onto Hardy Street/Hwy. 98 (Exit 65).
  - Westbound traffic on Hwy. 98 will not be allowed to exit onto Hwy. 49, but directed to merge onto I-59 instead.



## Stennis Space Center resource information

SSC Emergency Management  
www.sscsos.com

SSC Site Status app  
Available at GooglePlay and iTunes online stores

## National resource information

American Red Cross  
www.redcross.org/hurricane 800-REDCROSS (733-2767)

Federal Emergency Management Agency  
www.fema.gov 800-621-FEMA (3362)

NOAA National Hurricane Center  
www.nhc.noaa.gov nhc.public.affairs@noaa.gov (email)

National Weather Service Forecast Office  
(New Orleans) www.weather.gov/lix 985-649-0429 or 504-522-7330  
(Jackson) www.weather.gov/jan 601-936-2189

U.S. Coast Guard – 8th District (Gulf of Mexico region)  
www.atlanticarea.uscg.mil/Our-Organization/District-8/

## Mississippi resource information

Mississippi Emergency Management Agency  
www.msema.org 866-519-MEMA (6362) (24 hrs) 800-222-MEMA (6362)

Mississippi Department of Transportation  
www.mdot.ms.gov www.mdottraffic.com 866-521-MDOT (6368)

Mississippi Highway Safety Patrol  
www.dps.state.ms.us 601-987-1212 (\*HP from any cell)

Mississippi Insurance Department  
www.mid.ms.gov 800-562-2957

Mississippi Power  
www.mississippipower.com 800-487-3275

Coast Electric Power  
www.coastepa.com 877-769-2372

## Louisiana resource information

Office of Homeland Security and Preparedness  
www.gohsep.la.gov www.getagameplan.org/ 225-925-7500

Louisiana Department of Transportation  
www.sp.dotd.la.gov/Pages/default.aspx 877-4LA-DOTD (452-3683)

Louisiana State Police  
www.lsp.org 800-469-4828 \*LSP (\*577) from any cell phone

Louisiana Traveler Information  
www.511la.org dial 511 in state 88-ROAD-511 (888-762-3511) outside state

Louisiana Department of Insurance  
www.ldi.louisiana.gov 800-259-5300 or 225-342-5900

Cleco Corporation  
www.cleco.com 800-622-6537

Entergy (www.energy-louisiana.com)  
800-ENTERGY (368-3749) Power outages: 800-9OUTAGE (968-8243)

Washington-St. Tammany Electric Cooperative  
www.wste.coop 985-839-3562 Power outages: 866-672-9773