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 STENNIS SPACE CENTER

Stennis Space Center Virtual Tour

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Go on a behind-the-scenes virtual tour of John C. Stennis Space Center, America's largest rocket engine test facility, to see how we helped to power NASA's human spaceflight programs and more!

It is possible to tour Stennis Space Center even during times of restricted activity. A newly posted virtual tour provides a close look at the nation's largest rocket propulsion test site, taking viewers to the facilities that tested the rocket stages that carried humans to the Moon in the 1960 and 1970s, as well as all of the engines that powered 135 space shuttle missions from 1981 to 2011. To take the "tour," visit [here](#).

I was lying in my old hammock – strung between two cypress trees at the edge of the bayou – after finishing up some telework tasks when the biggest bullfrog I had seen in a while splashed into the water beside me, kerplopping so loud that I almost flipped myself right down on the ground.

An old Japanese haiku came to mind – “An old silent pond. / Into the pond a frog jumps. / Splash! Silence again.” I wondered if maybe that Japanese poet had been lying in his own hammock out by his koi pond when he came up with those lines. Ark!

In school, I had wondered how those three lines could be considered poetry. They were so ordinary – and about something so ordinary. However, with this COVID-19 situation, the meaning seems a bit clearer. Maybe they were calling us to do what many of us are doing right now – slowing down a little, staying more at home, noticing more of the life around us.

“Life moves pretty fast; if you don’t stop and look around once in a while, you could miss it,” Papagator used to tell me. Or was it Ferris Bueller? Maybe Ferris was quoting Papagator in his movie. Ark!

Regardless, the thought is true. Most of us spend so much time commuting, rushing, hurrying and filling our hours with busyness that we often end a day wondering where it went. Before we know it, days become weeks becomes months become ... you get the idea.

It seems COVID-19 has made many folks change that pattern a bit, even as they telework and continue to perform necessary work. It is interesting to hear people talk about how they are spending their time these days, the little things they are rediscovering, only to discover they never really were little things after all.

As NASA, Stennis and life-in-general moves toward some form of new and normal routine, it will be interesting to see how many people make room to continue some of those “little things.”

I have my own list of things I do not want to lose again, like enjoying more family meals, reading more to my own grandgators and taking quiet walks more often. I have even tried to take up a new hobby – writing poetry. Check out this haiku – “The sun rose today / Just like it did yesterday / And the day before.” Imagine – Gator is a poet. Ark!



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Access monthly copies at: www.nasa.gov/centers/stennis/news/publications/index.html

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

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Managing Editor – Valerie Buckingham

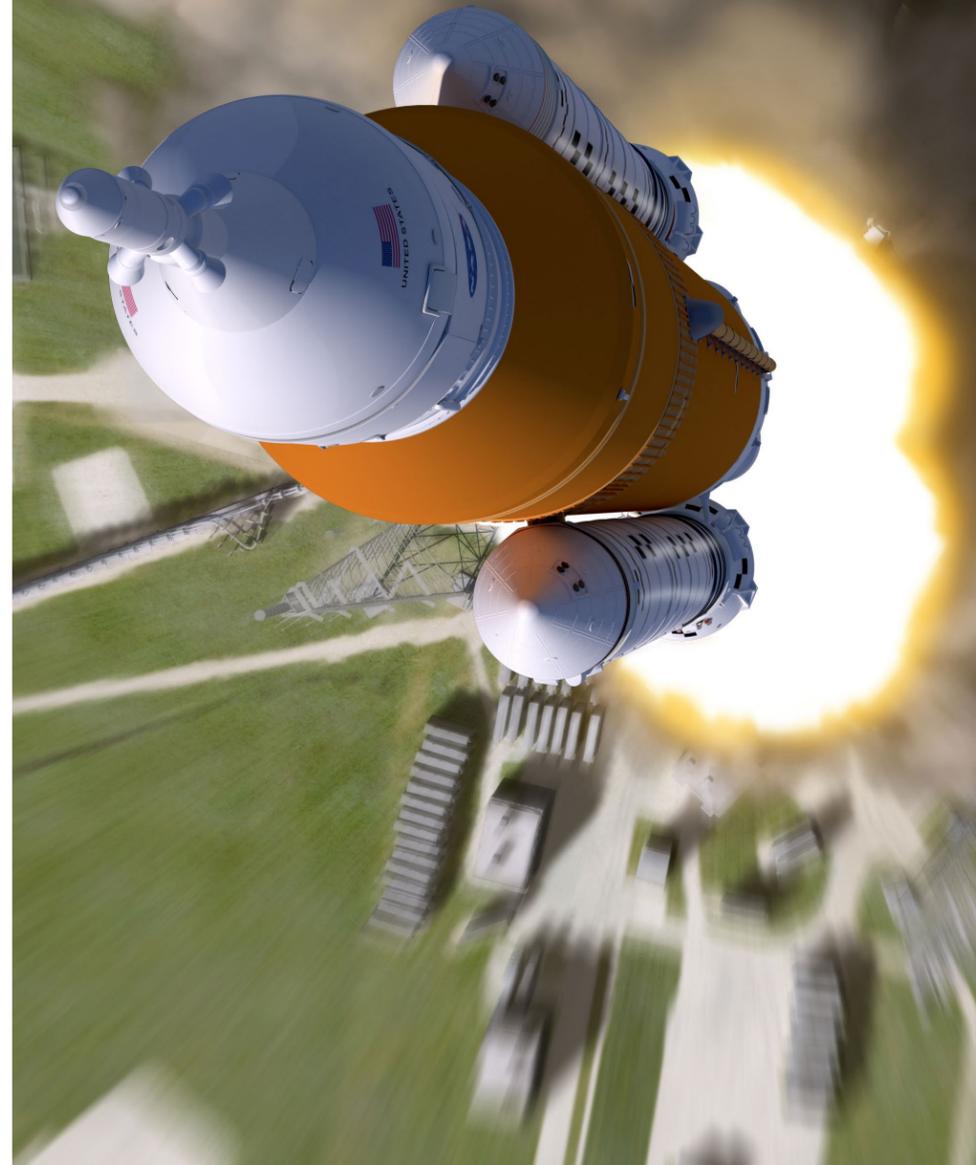
Editor – Lacy Thompson

Staff Photographer – Danny Nowlin



NASA's MOON to MARS MISSION

GO...
GO...
GO!



NASA takes preliminary steps to resume core stage activity

One 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 resumed [Green Run](#) testing activities on the first flight stage of its [Space Launch System](#) (SLS) rocket throughout the week of May 11, with the return of limited crews to perform work at the agency's Stennis Space Center.

"This is an important step toward resuming the critical work to support [NASA's Artemis program](#) that will land the first woman and the next man on the south pole of the [Moon by 2024](#)," Stennis Center Director Rick Gilbrech said. "Though Stennis remains in Stage 4 of NASA's COVID-19 Response Framework, we assessed state and local conditions and worked with agency leadership to develop a plan to safely and methodically increase critical on-site work toward the launch of the next great era of space exploration."

Stennis moved to Stage 4 on March 20, with only personnel needed to perform mission essential activities related to the safety and security of the center allowed on site. NASA's Marshall Space Flight Center in Huntsville, Alabama, and its Michoud Assembly Facility in New Orleans, which are building SLS, also are in Stage 4.

"The test facility has been in standby mode, so we allotted two days to reestablish some facility support of mechanical and electrical systems that will also assist the vehicle contractors in performing their operations," said Barry Robinson, project manager for the [B-2 Test Stand](#) SLS core stage Green Run testing at Stennis.



Stennis Space Center employees Cheley Carpenter (l) and Shelton Dunn, both with Syncom Space Services, work at the B-2 Test Stand after limited activities resumed at the facility.

[Click image to enlarge](#)

Reestablishing, or "waking up," the Stennis B-2 Test Stand systems in the days ahead included restoring facility power and controls, as well as ensuring pressurized gas systems are at proper levels for SLS operators to proceed with testing activities.

"Michoud has been cleaning and preparing the rocket manufacturing facility for critical production restart

of the SLS core stage and the [Orion capsule](#)," said Michoud Director Robert Champion.

According to Julie Bassler, SLS stages project manager responsible for the core stage work at Stennis, Michoud and Marshall, Marshall also is resuming critical flight software and hardware testing.

Returning workers were trained on general safety procedures, personal protective equipment requirements, and self-monitoring. Site personnel also installed signs and markings to indicate where employees should stand and sit during upcoming activities.

"We want to make sure employees are armed with the appropriate information to be effective on the job and return safely to their families," Robinson said.

All sites are closely following CDC guidance to safely operate and protect the health and welfare of all employees. Michoud plans to transition to Stage 3 and operate in that stage for 30 days, in coordination with local government plans. Marshall remains at Stage 4.

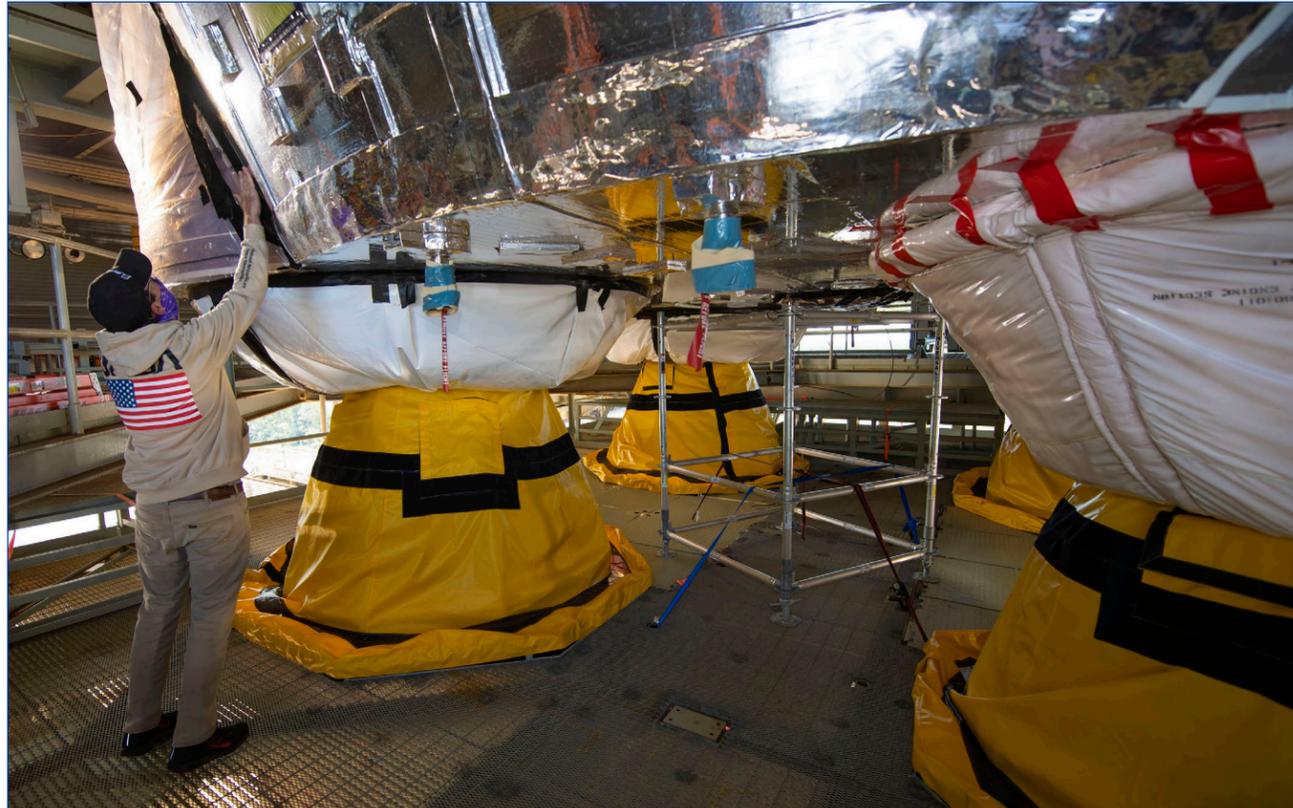
Stennis plans for 30 days of limited crew activity on site in anticipation of the center's transition from Stage 4 to Stage 3. Once that transition occurs, increases to on-site work will continue slowly and methodically. The focus then will shift to preparing for the avionics power-up test – the next in a series of core stage Green Run testing milestones. According to Robinson, it's too early to calculate a precise schedule for the various test milestones.

"Like so many others, in so many places, we're operating under a new normal. We're working now to determine exactly what that looks like," he explained. "The virus, and our knowledge of safety as it relates to the virus, will dictate any changes we consider and implement. We will adjust tasks based on the most current information and guidance."

Green Run represents the first top-to-bottom integrated test of all flight core stage systems prior to its maiden [Artemis I](#) flight. All testing will be conducted on the B-2 Test Stand in the coming months and will culminate with an eight-minute, full-duration hot fire of the core stage with its four [RS-25 engines](#), as during an actual launch.

NASA's MOON to MARS MISSION

Teams return to B-2 Test Stand to resume limited Space Launch System core stage activity

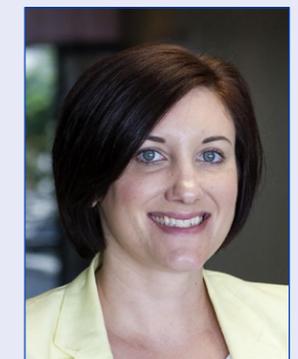


Limited teams returned to Stennis Space Center the week of May 11 to resume some core stage activities at the B-2 Test Stand. Team members included contractor employees, Boeing employees (left photo); Scott Jensen (bottom left photo, l) and Tristan Mooney; and B-2 Test Stand Director Ryan Roberts (right photo). Stennis has been at a COVID-19 Stage 4 response level, which restricted access and work performed at the site. Numerous safety precautions have been taken to protect the safety and health of returning employees.

Click images to enlarge



HEROES – Stennis employees cited for SLS efforts



Five Stennis Space Center employees were recognized as a NASA Human Exploration and Operations Mission Directorate HE²O the week of May 11 for their work to move the agency closer to its return to the Moon by 2024. The NASA directorate is counting down until the end of 2024 by naming a HE²O for each day. Barry Robinson (l to r), project manager for the B-2 Test Stand Space Launch System (SLS) core stage Green Run testing at Stennis was recognized as the Day 1695 HE²O on May 11. The announcement cited Robinson and his team for completing all designs, procurement and construction on the B-2 Test Stand in preparation for Green Run testing and for enhancing the capabilities of five other support facilities in the process. Ryan Roberts, B-2 Test Stand director, was recognized as the Day 1964 HE²O on May 12. Roberts was cited for his energy, dedication and perseverance as his

test stand team prepared for the arrival and installation of the SLS core stage. Dawn Davis, chief of the Electrical Engineering Branch for the Stennis Engineering and Test Directorate, was recognized as the Day 1963 HE²O on May 13. She was cited for exceptional leadership and support to the SLS core stage Green Run Test project and for embodying the "I Made It Happen" motto. Brennan Sanders was recognized as the Day 1962 HE²O on May 14. Sanders was praised for leadership of construction refurbishment work on the B-2 Test Stand, ensuring the smooth arrival of the SLS core stage. Melissa Wagner, a contract specialist in the Stennis Office of Procurement, was cited as the Day 1961 HE²O on May 15. She was recognized for coordinating and ensuring the delivery of propellants to Stennis, ensuring enough was on hand for the arrival of the SLS core stage and for other Artemis program needs.

NASA's MOON to MARS MISSION

NASA awards contract for additional RS-25 engines

NASA has awarded a contract to Aerojet Rocketdyne of Sacramento, California, to manufacture 18 additional [Space Launch System \(SLS\)](#) RS-25 rocket engines to support Artemis missions to the Moon.

Four [RS-25 engines](#) will help launch NASA's new SLS rocket on deep space missions. Aerojet Rocketdyne operates an engine assembly facility at Stennis Space Center where the engines are assembled and prepared for testing at the site. After testing, the engines return to the facility for prep work and shipping prior to use on SLS launches.

The follow-on contract to produce 18 engines is valued at \$1.79 billion. This includes labor to build and test the engines, produce tooling and support SLS flights powered by the engines. This modifies the initial contract awarded in November 2015 to recertify and produce six new RS-25 engines and brings the total contract value to almost \$3.5 billion with a period of performance through Sept. 30, 2029, and a total of 24 engines to support as many as six additional SLS flights.

"This contract allows NASA to work with Aerojet Rocketdyne to build the rocket engines needed for future missions," said John Honeycutt, SLS program manager at NASA's Marshall Space Flight Center. "The same reliable engines that launched more than 100 space shuttle missions have been modified to be even more powerful to launch the next astronauts who will set foot on the lunar surface."

Each SLS rocket uses four RS-25 engines, providing a total of 2 million pounds of combined thrust. The SLS rocket leverages the assets, capabilities and experience of NASA's Space Shuttle Program, using 16 existing RS-25 shuttle engines for the first four SLS missions. These engines were updated with new controllers – the brains that control the engine – and upgraded and tested at Stennis Space Center to fly at the higher performance level necessary to launch the SLS, which is much larger and more powerful than the shuttle.

The rocket engines are mounted at the base of the 212-foot-tall core stage, which holds more than 700,000 gallons of propellant and provides the flight computers that control the rocket's flight. The engines for the Artemis I mission to the Moon have already been assembled as part of the core stage, which is undergoing Green Run testing on the B-2 Test Stand at Stennis.

"We've already begun production on the first six new RS-25 engines," said Johnny Heflin, the SLS engines manager. "Aerojet Rocketdyne has restarted the production lines, established a supplier base and is building engines using advanced techniques that reduce both the cost and time for manufacturing each engine."



An RS-25 engine sits at the A-1 Test Stand at Stennis Space Center prior to complete installation and testing.

The engines are built at Aerojet Rocketdyne's factory in Canoga Park, California. Working with NASA, the company has implemented a plan to reduce cost of the engines as much as 30 percent by using more advanced manufacturing techniques to modify some components. Some of the modified components have already been tested during engine hot fires that replicate the conditions of flight. The new digital controllers are built by Honeywell Aerospace in Clearwater, Florida, a major subcontractor to Aerojet Rocketdyne.

The SLS rocket, Orion spacecraft, Gateway and Human Landing System are part of NASA's backbone for deep space exploration. Work is well underway on the Artemis I and II rockets. The Artemis I core stage is at Stennis to undergo Green Run testing, an integrated test of the stage that culminates with the firing of all four RS-25 engines. Following the test, NASA's Pegasus barge will take the core stage to Kennedy Space Center, where it will be integrated with other parts of the rocket and Orion for the Artemis I test flight.

The [Artemis program](#) is the next step in human space exploration. It is part of America's broader Moon to Mars exploration approach, in which astronauts will explore the Moon and gain experience to enable humanity's next giant leap, sending humans to Mars.



Astronauts prepare for SpaceX Demo-2 launch

NASA astronauts Doug Hurley and Bob Behnken familiarize themselves with SpaceX's Crew Dragon spacecraft that will transport them to the International Space Station as part of NASA's Commercial Crew Program. The astronauts entered quarantine May 13, in preparation for their upcoming

flight from Kennedy Space Center in Florida, scheduled for May 27. It will mark the first launch of astronauts from American soil since the Space Shuttle Program ended in 2011. The Crew Dragon spacecraft mission is set to launch on the SpaceX Falcon 9 rocket May 27 at 3:33 p.m. CDT.

NASA in the News

NASA selects companies to design landers

NASA has selected three U.S. companies to design and develop human landing systems for the agency's Artemis program, one of which will land the first woman and next man on the surface of the Moon by 2024. The human landing system awards under the Next Space Technologies for Exploration Partnerships (NextSTEP-2) are firm-fixed price, milestone-based contracts. The total combined value for all awarded contracts is \$967 million for the 10-month base period. The following companies were selected to design and build human landing systems: Blue Origin of Kent, Washington, is developing the Integrated Lander Vehicle to be launched on its own New Glenn Rocket System and ULA Vulcan launch system; Dynetics of Huntsville, Alabama, is developing the Dynetics Human Landing System, a single structure providing the ascent and descent capabilities that will launch on the ULA Vulcan launch system; and SpaceX of Hawthorne, California, is developing the Starship, a fully integrated lander that will use the SpaceX Super Heavy rocket. Learn more about each concept [here](#). Learn more about America's Moon to Mars exploration approach [here](#).

NASA funds Artemis Student Challenges

NASA will award nearly \$2.4 million to universities as part of the Artemis Student Challenges, a new initiative to inspire the next generation – the Artemis Generation. The six universities receiving awards will use the grants to advance the quality, relevance and overall reach of opportunities to engage students as NASA takes the first step in the next era of exploration. Each opportunity will build foundational knowledge and introduce students to topics and technologies critical to the success of the agency's Artemis program, which will land the first woman and next man on the Moon by 2024, using innovative technologies to explore more of the lunar surface than ever. Through the challenges, students will test and strengthen their skills for future mission planning and crewed space missions to other worlds. Schools receiving awards are: University of Alabama in Huntsville; University of Illinois in Urbana; University of Colorado in Boulder; University of Hawaii in Honolulu; University of California in San Diego; and University of Washington in Seattle. For more information about opportunities for students to get involved with Artemis, visit [here](#).

Hubble marks 30 years in space with tapestry of blazing starbirth

NASA celebrated the Hubble Space Telescope's 30 years of unlocking the beauty and mystery of space April 24 by unveiling a stunning new portrait of a firestorm of starbirth in a neighboring galaxy.

In the portrait, the giant red nebula and its smaller blue neighbor are part of a vast star-forming region in the Large Magellanic Cloud, a satellite galaxy of the Milky Way, located 163,000 light-years away. The image is nicknamed the "Cosmic Reef," because it resembles an undersea world.

Thirty years ago, on April 24, 1990, Hubble was carried aloft from NASA's Kennedy Space Center in Florida aboard the space shuttle Discovery, along with a five-astronaut crew. Deployed into Earth orbit a day later, the telescope opened a new eye onto the cosmos that has been transformative.

Hubble is revolutionizing modern astronomy, not only for scientists but also by taking the public on a wondrous journey of exploration and discovery. Hubble's never-ending, breathtaking celestial snapshots provide a visual shorthand for its top scientific achievements.

Unlike any space telescope before it, Hubble has made astronomy relevant, engaging and accessible for people of all ages. The space telescope's iconic imagery has redefined humans' view of the universe and their place in time and space.

"Hubble has given us stunning insights about the universe, from nearby planets to the farthest galaxies we have seen so far," said Thomas Zurbuchen, associate administrator for science at NASA Headquarters. "It was revolutionary to launch such a large telescope 30 years ago, and this astronomy powerhouse is still delivering revolutionary science today. Its spectacular images have captured the imagination for decades and will continue to inspire humanity for years to come."

Unencumbered by Earth's blurring atmosphere, the space observatory unveils the universe in unprecedented crystal-clear sharpness across a broad range of wavelengths, from ultraviolet to near-infrared light.

Hubble's top accomplishments include measuring the expansion and acceleration rate of the universe; finding that black holes are common



A colorful image resembling a cosmic version of an undersea world teeming with stars is being released to commemorate the Hubble Space Telescope's 30 years of viewing the wonders of space. In the Hubble portrait, the giant red nebula (NGC 2014) and its smaller blue neighbor (NGC 2020) are part of a vast star-

forming region in the Large Magellanic Cloud, a satellite galaxy of the Milky Way, located 163,000 light-years away. The image is nicknamed the "Cosmic Reef," because NGC 2014 resembles part of a coral reef floating in a vast sea of stars. Some of the stars in NGC 2014 are monsters. The nebula's sparkling cen-

terpiece is a grouping of bright, hefty stars, each 10 to 20 times more massive than the Sun. The seemingly isolated blue nebula at lower left (NGC 2020) has been created by a solitary mammoth star 200,000 times brighter than the Sun. The blue gas was ejected by the star through a series of eruptive event.

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Hubble Space Telescope Info

- View Hubble images online [here](#).
- Learn more about Hubble online [here](#).
- NASA named the world's first space-based optical telescope after American astronomer Edwin P. Hubble (1889-1953).
- Hubble was launched aboard shuttle Discovery on April 24, 1990. It was deployed April 25 and sent its first image on May 20.
- Hubble has been visited by space shuttle crews five times for servicing missions (1993, 1997, 1999, 2002 and 2009).
- Hubble is 43.5 feet long and weighs about 27,000 pounds. It orbits the Earth at 17,000 miles an hour at an altitude of 340 miles and takes some 95 minutes to complete an orbit. Hubble already has traveled about 4 billion miles around the Earth.
- Hubble is capable of capturing a spectrum of light from ultraviolet through infrared. Its primary mirror is 94.5 inches in diameter and weighs 1,825 pounds.
- Hubble is extremely steady, able to lock onto a target without deviating more than 7/1000th of an arcsecond, like being able to shine a laser beam on Roosevelt's head on a dime about 200 miles away.
- Hubble uses two 25-foot solar panels for power and transmits about 150 gigabits of raw science data every week.
- Hubble has made more than 1.3 million observations since 1990. Astronomers using Hubble data have published more than 15,000 scientific papers.
- Hubble can see astronomical objects with an angular size of 0.05 arcseconds, like seeing a pair of fireflies in Tokyo that are less than 10 feet apart from Washington, DC.
- Hubble has peered back into the very distant past, to locations more than 13.4 billion light-years from Earth.

NASA funds development of small business technologies

NASA has selected 139 proposals for follow-on funding through the agency's Small Business Innovation Research (SBIR) program. The Phase II awards will provide about \$104 million to 124 small businesses located across 31 states.

The selections include three projects managed by Stennis Space Center.

NASA annually invests in U.S. small businesses with promising new technologies that can benefit space missions, as well as improve life on Earth.

"Small businesses offer innovative solutions that benefit every area of NASA and often find applications outside of the agency," said Jim Reuter, associate administrator for NASA's Space Technology Mission Directorate in Washington. "This announcement is another step forward in NASA's Moon to Mars exploration approach. The agency continues to invest in and support small businesses, as they continue to mature important technologies for future missions that can also benefit us on Earth."

The Phase II awards will help advance NASA priorities, including the Artemis program, as well as other initiatives in aeronautics, human exploration and operations, science, and space technology. The selected companies are previous NASA SBIR Phase I award recipients who successfully have established the feasibility of their proposed technologies. As Phase II awardees, the companies will develop, demonstrate and deliver their technologies.

Among the Phase II selections are a woman-owned small business in Gaithersburg, Maryland, that will develop a more reliable and highly efficient energy storage system; a small business in Knoxville, Tennessee, that will advance a lighter-weight shield material for fission power systems – a technology that could help power sustainable operations on the Moon; and a small business in Ann Arbor, Michigan, that will mature technology that could provide astronauts with a virtual assistant aboard spacecraft.

The three selected projects to be managed by Stennis, all selected for Phase I awards last June, are:

- "Highly Compatible, Additively Manufactured LOX Injectors," developed by ASRC Federal Astronautics, LLC in Huntsville, Alabama. This award continues

development of an innovative meshing technology that could be used in propellant injectors in main propulsion systems for both lunar landers and Mars ascent vehicles.

- "Cryogenic Cam Butterfly Valve," developed by C-Suite Services, LLC in Metairie, Louisiana. This award continues development of safer, more reliable and more leak-tight valves that could be used in various NASA test, launch, and flight systems.
- "Injector for LOX-GH (liquid oxygen-gaseous hydrogen) Stable Combustion at Low Pressure and High Velocity," developed by Rocket Propulsion Systems, LLC in Renton, Washington. This award continues development of a novel injector design that could be used in hydrogen-fueled combustion systems, including NASA rocket engines.

"We are encouraged by the ingenuity and creativity we've seen from these companies in their Phase I work," said Jenn Gustetic, the NASA SBIR program executive. "We have also worked hard to reduce the time selected companies wait for their first Phase II payment, knowing how critical access to capital is for our aerospace research and development firms right now. The applications of their technologies, both inside and outside of NASA, are promising, and we look forward to seeing what this next round of accelerated seed funding will do."

Phase II proposals were chosen according to their technical merit and feasibility, Phase I results, as well as the experience, qualifications and facilities of the submitting organization. Additional criteria included effectiveness of the proposed work plan and commercial potential.

NASA's SBIR program encourages small businesses to develop innovative ideas that meet the specific research and development needs of the federal government. The program is conducted in three phases: a Phase I opportunity to establish the scientific, technical and commercial merit and feasibility of the proposed innovation; a Phase II focus on the development, demonstration and delivery of the innovation; and the Phase III commercialization of innovative technologies, products and services

For more about NASA's investment in space technology, visit [here](#). For additional information about the Stennis Test Technology Branch, visit [here](#).

For the latest on NASA/Stennis Space Center status, please click on web pages below:

Stennis Emergency Management web page

NASA Response to Coronavirus web page

Other online resources:

NASA at Home

NASA STEM@Home for Students

How to Draw Artemis

NASA accountant ‘extremely proud’ of work at Stennis

E.J. Toomey is understandably excited to be working at Stennis Space Center as the site tests the rocket engines and core stage that will return humans to the Moon through NASA’s Artemis Program.

The lunar return will serve as a matching bookend for the lifelong Gulf Coast resident. Toomey’s earliest space-related memory was watching the Apollo 11 mission in 1969. Like many others, he still recalls the words spoken by Neil Armstrong as he became the first human to set foot on the Moon – “That’s one small step for (a) man, one giant leap for mankind.”

Fifty years later, Toomey works as the lead accountant in the Accounting Operations Branch of the Stennis Office of the Chief Financial Officer. In that role, he manages payroll, travel, property, cost accounting and the Standard General Ledger.

The work directly supports NASA’s effort to return humans, including the first woman, to the Moon and establish a sustainable presence. “I support the Artemis program by ensuring the Accounting Operations Branch provides accurate and timely financial information so that project managers are able to readily assess the financial performance of Artemis activities at Stennis,” he said.

Toomey is well acquainted with Stennis and the Gulf Coast area. A Waveland native and Bay St. Louis resident, he began his career at Stennis in 1982 as an accountant for the Mississippi Army Ammunition Plant that once operated on site. “The facility had just begun production and was expanding its accounting workforce,” he recalled.

In 1990, Toomey became an accountant for Johnson Controls World Services on site, then joined the NASA team in 1999. He assumed lead accountant responsibilities in 2007. “I’ve been given excellent learning and career growth opportunities while being mentored by amazing senior leadership at Stennis,” Toomey said.

Toomey relishes his work at the rocket propulsion test

site. “I am extremely proud to work for a federal agency that has received eight consecutive years of ‘clean’ (unmodified) audit opinions,” he said.

The record is a significant one. Stennis Space Center is a unique NASA center, operating as a federal city with 5,000-plus employees and more than 50 resident agencies, organizations and companies on site. The center is a vital partner and economic engine for its surrounding areas. Among other duties, Toomey leads in compiling an annual economic impact report analyzing the financial impact of NASA and Stennis on the area. In the most recent fiscal year, the report found that Stennis had a direct global economic impact of \$850 million and a direct

economic impact of \$569 million within a 50-miles radius.

Beyond numbers, Toomey enjoys the Stennis workplace, particularly in the way it has embraced and advanced diversity. “Stennis has a very friendly culture,” he said. “I have seen significant improvement in workplace diversity within my organization and across the center.”

Toomey has been recognized for his work. In 2013, he received the NASA Exceptional Service Medal,

given to federal employees for sustained performance that embodies multiple contributions which contribute to NASA projects, programs or initiatives. The medal recognized Toomey’s work as lead accountant, noting he has assisted, led and mentored many civil servants and contractors in key areas to ensure the accuracy and integrity of NASA’s financial information.

Now, he is looking forward to what lies ahead for Stennis, particularly as it relates to the return of humans to the Moon with NASA’s new Space Launch System (SLS) rocket. Stennis is testing the first flight core stage of the new rocket, as well as the RS-25 engines that will help power all SLS launches.

“I’m excited to support testing of the core stage as NASA prepares to return to the Moon,” Toomey said. “I’m also excited to be a part of the continued growth of Stennis as a federal city.”



E.J. Toomey, shown in his COVID-19 home office, serves as lead accountant in the Accounting Operations Branch of the Stennis Office of the Chief Financial Officer.

1984 – Renovated visitors center opens at Stennis



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 the spring of 1981, New Orleans was announced as the location of the 1984 World's Fair. The National Space Technologies Laboratory (NSTL) saw an opportunity to expand the visitors center that had opened the year before and showcase NASA programs.

NSTL was in a unique position, as it was near the main Interstate people would use to get to New Orleans. Director Jerry Hlass had ideas for showcasing the center and started to execute them.

He had already supported the site's small visitors' center by having limited exhibits and programming for the public, but this was an opportunity to expand things.

Hlass called in some favors from NASA Headquarters, Kennedy Space Center and Johnson Space Center (JSC). Kennedy and NSTL worked together to secure funding for the project.

The funding was used to renovate the existing visitors center, building 1200, expand the museum and develop and implement a theme for the facility. Hlass specifically wanted to highlight the history of the center and the programs it supported.

The Johnson team helped NSTL by getting contract support specialists to come in and help develop the theme and supply artwork to support the museum.

The final product was "Space-Oceans-Earth" and the NSTL Visitors' Center opened one day before the grand opening of the World's Fair on May 12, 1984.

The first year of the renovated center was a success, with 175,000 people walking through the museum during that time.



Young visitors enjoy exhibits and activities in the former StenniSphere museum and visitors center, including opportunities (top to bottom) to view an Apollo capsule, "conduct" a rocket engine test and attempt a space shuttle landing.

Office of Diversity and Equal Opportunity

El Onizuka – all-American explorer

Future Farmers of America, 4-H, and an Eagle Scout in the Boy Scouts of America. Sounds like an all-American boyhood.

Well, it was, 20th-century style. The boy was Ellison Shoji Onizuka of Kealahou, Hawaii – a little town on the leeward side of the Big Island that was popularized in the 1933 song “My Little Grass Shack” before its later favorite son and Konawaena High School graduate immortalized it forever. Ellison was the son of Buddhist Nisei parents – second-generation Japanese Americans.

Onizuka, called “El” by his friends, later became an Air Force test pilot and flew out of, among other places, Edwards Air Force Base in the California high desert, a seedbed of astronauts. He joined the NASA astronaut team in 1978, and flew his first space mission in 1985, STS 51-C, on space shuttle Discovery.

The flight marked the first space shuttle mission for the Department of Defense. As a member of the crew, Onizuka became the first Asian American, the first person of Japanese ancestry and the first Buddhist to reach space.

The next year, he was a crew member on mission STS 51-L on the space shuttle Challenger. This time, his voyage was brief. The endeavor turned into tragedy within seconds, as Challenger exploded 73 seconds into its flight and killed all aboard.

The images of that January morning were seared into the brains of Americans. “We will never forget them, or the last time we saw them,” President Ronald Reagan said in memorializing the fallen astronauts, “as they prepared for their journey and waved goodbye and ‘slipped the surly bonds of earth’ to ‘touch the face of God.’”

The seven astronauts who died that day included white, black, Asian, male and female explorers – a space ship full of heroes that looked like America.

Only a handful of Americans have been honored with a quote in U.S. passports. However, along with the presidents and poets cited in that blue booklet is Ellison Onizuka.

“Every generation has the obligation to free men’s minds for a look at new worlds, ... to look out from a higher plateau than the last generation,” read Onizuka’s words printed on the biometric pages.

Onizuka’s own plateau, of course, was about as high as they come. The nation and world are fortunate that he was able to fly as high as he did, literally.

May is Asian American and Pacific Islander Heritage Month, and it should inspire everyone to remember Japanese Americans and all other Asian Americans and Pacific Islanders for their many contributions to the country.

It also should especially energize workers with the Equal Employment Opportunity Commission and other agencies, who have the challenging but satisfying mission of protecting Asian Americans and Pacific Islanders and all who work in the United States against job discrimination, including that based on race and national origin.

Ellison Shoji Onizuka was laid to rest in the Aloha State, but, fittingly, he also has a memorial at Arlington with the other Challenger astronauts. The legacy of this all-American space voyager from the melodic Kealahou, Hawaii, will inspire people forever.

Source: Asian American/Pacific Islander Heritage Month 2020 message from Equal Opportunity Commission Chair, Janet Dhillon.

For refugee, Stennis Space Center experience is ‘all about family’

So on Le’s journey to NASA’s Stennis Space Center began from a long way off – in war-torn Vietnam of the late 1960s and early 1970s. His family fled the country in 1975, re-locating to the coastal United States in Mobile, Alabama.

As a typical teenager, Le loved comic books and science fiction. He was a budding musician, playing saxophone, drums and keyboard in school. He also was part of a local band with his uncle, performing at Vietnamese weddings and special events in the Mobile area. Later, as an adult, Le crisscrossed the country, working at various locations – in paper mills, oil refineries and chemical plants.

Eventually, he received a call from a friend asking if he was ready to settle down in one job and not live out of suitcases. Le embraced the idea and applied for a position at Stennis. “It took three tries before I finally landed a position with Lockheed Martin in early 2000,” recalled Le, now a resident of Mobile, Alabama. “Looking back, it was definitely the best career decision I’ve made.”

At Lockheed, Le worked as a general maintenance engineer and as the facility systems engineer at the Stennis High Pressure Gas Facility. In 2004, he joined the NASA team on site as the facility safety engineer for the E Test Complex. In that role, he supported such efforts as the integrated powerhead demonstration project, as well as the pressure vessel program.

In 2008, Le shifted his focus fully to the latter as pressure system program manager. In that role, he is responsible for – or involved in – all things related to pressure vessels and piping. As Le noted, “all things” include design, procurement, review of specifications, vendor surveillance, installations, inspections, repairs, non-destructive examination, welding, and standards and specification documents. “I am involved in any project that has a need for pressure vessels and piping systems,” he said. “I’m usually involved in the planning stages to determine if Stennis’ pressure vessel system infrastructures can support a particular test project requirement.”

The work directly impacts NASA’s Artemis program effort to return humans, including the first woman, to the Moon by 2024. Stennis is testing the RS-25 engines that will help launch the new Space Launch System rocket on Artemis missions. It also is testing the first flight core stage that will fly on the Artemis I mission.

“I ensure Stennis’ pressure vessels and piping systems, which store and transport commodities required for engine testing, are mechanically fit for their intended services,” Le said. Those “commodities” Le speaks of are no small thing. They are the propellants – liquid hydrogen and liquid oxygen – that serve as the fuel for the en-

gine tests and the gases – hydrogen, helium, nitrogen and air – necessary to support the test stand operation. Without those “commodities,” Stennis cannot test.

If that is not responsibility enough to consider, Le also serves as a process safety management manager; represents Stennis on a NASA Layered Pressure Vessel Working Group; is a member of the Non-Destructive Examination Technical Discipline Team; and acts as lead pressure system auditor for the NASA Safety Center Institutional, Facility and Operational Safety Audit.

In addition, he maintains a list of necessary technical certifications, mentors site interns and serves as the Special Emphasis Program manager for the Asian American and Pacific Islander group. Special Emphasis Programs were established more than 40 years ago to focus on groups that have been historically absent or underrepresented in specific occupational categories or grade levels in the federal workplace. Several program managers work with center leadership and the Office of Diversity and Equal Opportunity on site to highlight affected groups.

Le has been recognized numerous times for his efforts, with achievement awards from both NASA and the Society of Asian Scientists and Engineers. He finds all areas of the work – and the workplace family culture – fulfilling. “I traveled quite a bit before coming to Stennis, and can definitely say, I have never come across a more welcoming place,” he said. “Stennis has always been a diverse place, but we are taking it to the next level with the naming of Special

Emphasis Program managers last spring.”

He is particularly proud of the safety culture at the center, which is a direct reflection of the family atmosphere. “I have worked throughout the country, and no one’s safety culture comes close to what we have here at Stennis,” he said. “I think we have such a robust safety culture because, well, we take care of our family, right?”

For his part, Le is focused on doing his job – in its many forms – properly and on enjoying his family (he and his wife have a daughter in college and a son in high school).

Looking ahead, he is excited about NASA’s return to deep space and beyond, as well as Stennis’ role in making such dreams possible. “I’m excited to see what’s the next big thing in rocket propulsion that will let our astronauts travel beyond our solar system,” he said. “I hope our desire to know ‘are we alone’ continues to push us to find the next big thing.”



Son Le, shown in the Stennis High Pressure Gas Facility, arrived at the NASA center in 2000 after fleeing Vietnam years earlier.