National Aeronautics and Space Administration

SPACE LAUNCH SYSTEM

ARTEMIS II ASTRONAUTS, MEET YOUR RIDE

OCTOBER – DECEMBER 2023 HIGHLIGHTS

ARTEMIS II ASTRONAUTS, MEET YOUR RIDE

During recent visits to NASA's Michoud Assembly Facility in New Orleans and NASA's Marshall Space Flight Center in Huntsville, Alabama, the astronauts who will fly the Artemis II mission received an up-close tour of elements of the NASA SLS (Space Launch System) rocket that will launch them to the Moon. The Nov. 16 visit to Michoud occurred on the one-year anniversary of the successful Artemis I launch. NASA astronauts Reid Wiseman (commander) and Christina Koch (mission specialist) along with CSA astronaut Jeremy Hansen (mission specialist) saw the 212-foot core stage, outfitted with its four RS-25 liquid-propelled engines. Along with Artemis II Pilot Victor Glover, the astronauts will fly around the Moon to test NASA's Orion spacecraft.

NASA, Boeing, the core stage lead contractor, along with Aerojet Rocketdyne, an L3Harris Technologies company and the RS-25 engines lead contractor, are conducting final integrated testing on the fully assembled rocket stage. At launch and during ascent to space, the Artemis astronauts inside Orion will feel the power of the SLS rocket's four RS-25 engines producing more than 2 million pounds of thrust for eight minutes. The super-heavy lift rocket's twin solid rocket boosters, which flank either side of the core stage, will each add an additional 3.6 million pounds of thrust for two minutes.

The Orion stage adapter (OSA) is a ring structure that connects Orion to the SLS rocket's interim cryogenic propulsion stage and is fully manufactured at Marshall. At 5 feet tall and weighing 1,800 pounds, the adapter is the smallest major element of the SLS rocket. The adapter's diaphragm serves as a barrier to prevent gases created during launch from entering the spacecraft.

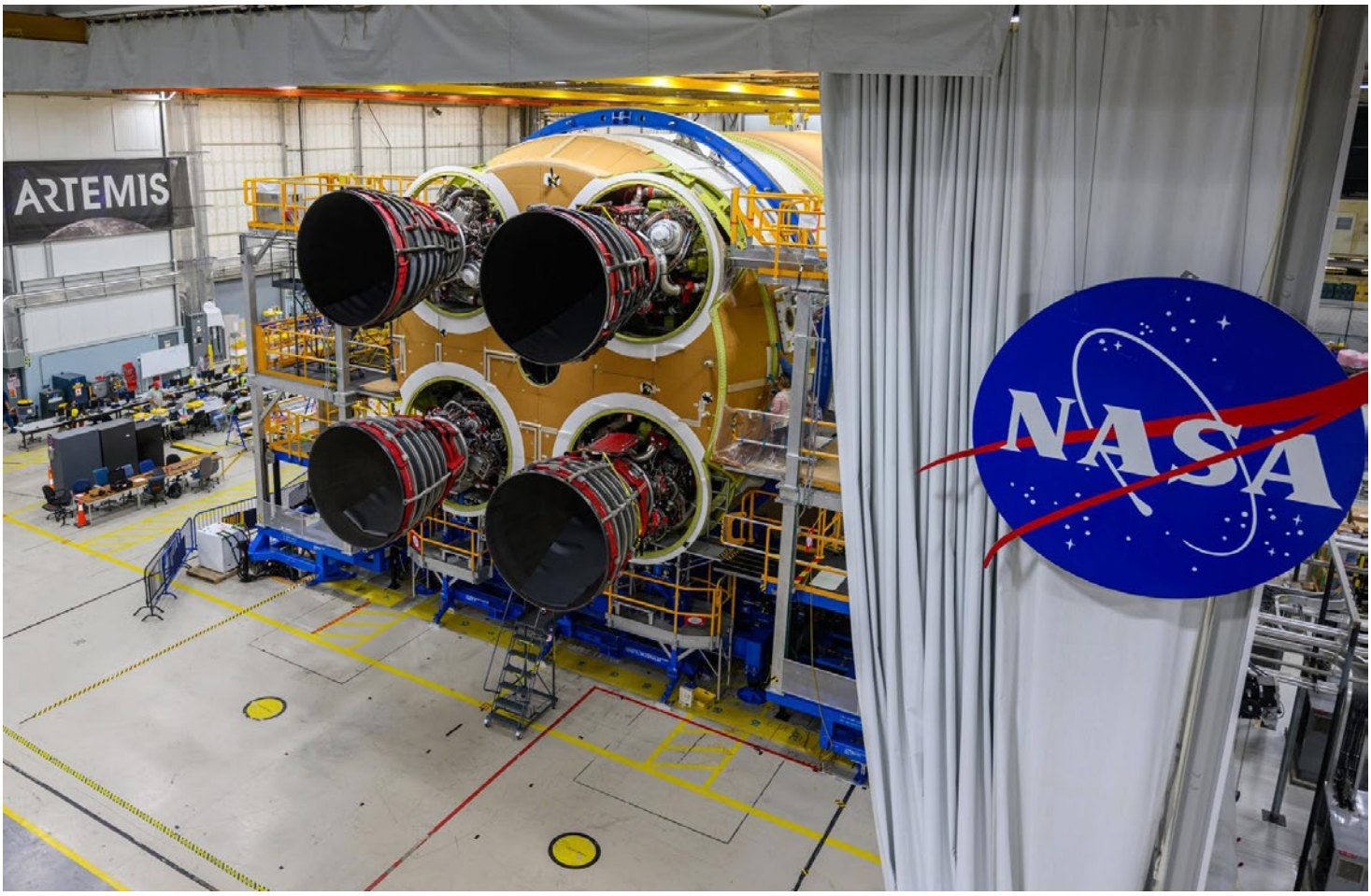
Read more: **go.nasa.gov/3SjMnff** and **go.nasa.gov/47URIzv**

Artemis II astronauts Victor Glover, left, and Jeremy Hansen, right, view and sign the Artemis II Orion stage adapter (OSA) for NASA's SLS (Space Launch System) rocket at NASA's Marshall Space Flight Center in Huntsville, Alabama, during a visit Nov. 27. The adapter connects Orion to the SLS.

SLS Flight Software Lead Engineer Dan Mitchell, left, shows Reid Wiseman and Christina Koch the Software Integration Laboratory (SIL) at NASA's Marshall Space Flight Center in Huntsville, Alabama, during a visit Nov. 27. The SIL is used to test the software that flies SLS.

The Artemis II crew, Jeremy Hansen, Christina Koch, Victor Glover, and Reid Wiseman (left to right) meets with the workforce at NASA's Marshall Space Flight Center in Huntsville, Alabama, during a visit to the center Nov. 27.

NASA PREPARES ARTEMIS II MOON ROCKET CORE STAGE FOR FINAL ASSEMBLY PHASE



All four RS-25 engines have been installed and integrated onto the SLS core stage for NASA's Artemis II mission. The installation of the engines signals the core stage nearly is finished with assembly and will soon be ready for shipment to NASA's Kennedy Space Center in Florida. During launch, the rocket's engines provide more than two million pounds of combined thrust.

NASA and its partners fully secured and integrated the four RS-25 engines onto the core stage of the agency's SLS rocket for the Artemis II flight test Oct. 6. The core stage, and its engines, is the backbone of the SLS super-heavy lift rocket that will power the flight test, the first crewed mission to the Moon under the Artemis campaign.

Engineers are performing final integration testing at Michoud in preparation for acceptance ahead of shipment of the stage to Kennedy in the coming months. Once testing of the stage is complete and the hardware passes its acceptance review, the core stage will be readied for shipping to Kennedy via the agency's Pegasus barge, based at Michoud.

Read more: **go.nasa.gov/3HzowDs**

NASA CONDUCTS FIRST HOT FIRE OF NEW RS-25 CERTIFICATION TEST SERIES

NASA completed a full-duration, 550-second hot fire of the RS-25 certification engine Oct. 17, beginning a critical test series to support future SLS missions to deep space as NASA explores the secrets of the universe for the benefit of all.

NASA conducted the first hot fire of a new RS-25 test series Oct. 17, beginning the final round of certification testing ahead of production of an updated set of the engines for SLS. The new engines will help power future Artemis missions to the Moon and beyond, beginning with Artemis V.

Operators fired the RS-25 engine for more than nine minutes (550 seconds), longer than the 500 seconds engines must fire during an actual mission, on the Fred Haise Test Stand at NASA's Stennis Space Center, near Bay St. Louis, Mississippi. Operators also fired the engine up to the 111% power level needed during an SLS launch. The hot fire marked the first in a series of 12 tests scheduled to end in early 2024. The tests are a key step for lead SLS engines contractor Aerojet Rocketdyne, an L3Harris Technologies company.

Read more: **go.nasa.gov/49aAKOp**

EARLY PRODUCTION CONTINUES ON EXPLORATION UPPER STAGE FOR NASA MOON ROCKET

Technicians at NASA's Michoud Assembly Facility in New Orleans have completed a major portion of a weld confidence article for the exploration upper stage of SLS's Block 1B configuration.

Technicians at Michoud have completed a major portion of a weld confidence article for the exploration upper stage of SLS. The hardware was rotated to a horizontal position and moved to another part of the facility Oct. 24.

The weld confidence article forms part of the liquid oxygen tank for the SLS rocket's exploration upper stage and is the fifth of seven weld confidence articles engineers are manufacturing for the evolved SLS Block 1B configuration of the rocket. Beginning with Artemis IV, SLS will evolve to its more powerful Block 1B configuration with the more powerful rocket's exploration upper stage and that gives the rocket the capability to launch 40% more payload to the Moon and with Artemis astronauts inside NASA's Orion spacecraft.

Teams use weld confidence articles to verify welding procedures, interfaces between the tooling and hardware, and structural integrity of the welds.

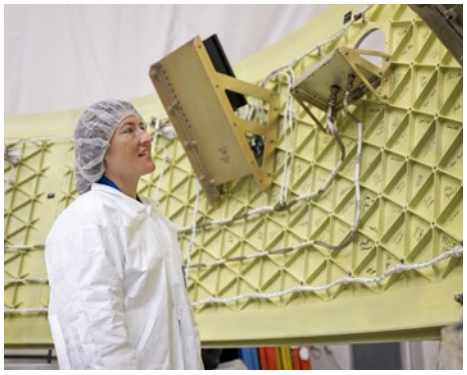
Read more: **go.nasa.gov/3vVC7SY**

ARTEMIS II CREW SIGNS NASA MOON ROCKET HARDWARE AT MARSHALL

Artemis II NASA astronauts Victor Glover, Reid Wiseman, and Christina Koch of NASA, and CSA (Canadian Space Agency) astronaut Jeremy Hansen signed the OSA for the SLS at Marshall Nov. 27. The hardware is the topmost portion of the SLS rocket that they will launch atop during Artemis II when the four astronauts inside NASA's Orion spacecraft will venture around the Moon.

NASA is working to land the first woman and first person of color on the Moon under Artemis. SLS is part of NASA's backbone for deep space exploration, along with the Orion spacecraft, advanced spacesuits and rovers, the Gateway in orbit around the Moon, and commercial human landing systems. SLS is the only rocket that can send Orion, astronauts, and supplies to the Moon in a single launch. Through Artemis, NASA will explore more of the lunar surface than ever before and prepare for the next giant leap: sending astronauts to Mars.

Read more: **go.nasa.gov/47URIzv**



Artemis II astronauts Reid Wiseman, Christina Koch, Jeremy Hansen, and Victor Glover sign the SLS Orion stage adapter for the Artemis II mission during their visit at NASA's Marshall Space Flight Center in Huntsville, Alabama, Nov. 27.

ARTEMIS II BOOSTER SURGES AHEAD AT NASA'S KENNEDY SPACE CENTER

Engineers and technicians process and inspect the propellant of the right forward center segment of SLS solid rocket boosters for the Artemis II mission inside the Rotation, Processing and Surge Facility (RPSF) at NASA's Kennedy Space Center in Florida Monday, Nov. 27.

Inside the Rotation, Processing and Surge Facility at Kennedy, engineers and technicians processed the right forward center segment of SLS Nov. 28. The segments will form the twin solid rocket boosters for the SLS rocket that will power NASA's Artemis II mission. The team has been inspecting each segment, after arriving via rail in September, and lifting it to a vertical position to ensure each segment is ready for integration and launch.

Read more: **go.nasa.gov/3On5nYW**

NASA CONTINUES PROGRESS ON ARTEMIS III SLS ADAPTER WITH KEY JOINT INSTALLATION

The cone-shaped launch vehicle stage adapter, which partially encloses the interim cryogenic propulsion stage and contains the separation system between the core stage and interim cryogenic propulsion stage and Orion, is in a production area.

Engineers and technicians at Marshall recently installed a key component called the frangible joint assembly onto the adapter that connects the core stage to the upper part of SLS. The cone-shaped adapter, called the launch vehicle stage adapter (LVSA), will be part of the SLS super-heavy lift rocket that will power NASA's Artemis III mission to the Moon. The frangible joint sits atop the adapter and operates as a separation mechanism. The frangible joint is designed to break apart upon command, allowing the interim cryogenic propulsion stage, Orion spacecraft, and the crew inside Orion to quickly separate from the SLS core stage and LVSA.

Read more: **go.nasa.gov/3SCR97Z**

NASA TEAMS PREPARE SLS-TO-SPACECRAFT CONNECTOR FOR ASSEMBLY

Technicians at NASA's Marshall Space Flight Center in Huntsville, Alabama, install the diaphragm of the Artemis II OSA.

Teams at Marshall recently rotated the OSA – a ring structure that connects NASA's Orion spacecraft to the interim cryogenic propulsion stage, - in preparation for the installation of its diaphragm. The installation Nov. 30 marks one of the final steps for the adapter before it is readied for shipment to Kennedy via NASA's Super Guppy cargo aircraft.

"The diaphragm is a composite, dome-shaped structure that isolates the volume above the interim cryogenic propulsion stage from that below Orion," said Brent Gaddes, lead for the Orion stage adapter, in the Spacecraft/Payload Integration & Evolution Office for the SLS Program at Marshall. "It serves as a barrier between the two, preventing the highly flammable hydrogen gas that could escape the rocket's propellant tanks from building up beneath the Orion spacecraft and its crew before and during launch."

Read more: **go.nasa.gov/3SCJfww**

I AM ARTEMIS: *ERIC BORDELON*

Eric Bordelon, a multimedia specialist at NASA's Michoud Assembly Facility in New Orleans, stands in front of a weld confidence article that forms part of the liquid oxygen tank for SLS's future exploration upper stage.

As a child, Eric Bordelon had posters of the space shuttle in his room. Now, he takes photos and video for NASA as a multimedia specialist at Michoud. Known as NASA's rocket factory, the facility is where structures for NASA's Apollo, shuttle, and now, NASA's SLS rocket and Orion spacecraft are produced for Artemis missions.

Bordelon joined the NASA team in 2007, working with the external tank program for the space shuttle at Michoud. One of Bordelon's favorite aspects of the job is being a part of the storytelling involving Michoud's rich history, including documenting the facility transition from the Space Shuttle Program to the SLS Program.

Read more: **go.nasa.gov/3umfl69**

I AM ARTEMIS: *BRUCE ASKINS*

Bruce Askins, a 42-year NASA veteran, is the infrastructure management lead for NASA's SLS Program.

Growing up, Bruce Askins was passionate about space and oceanography. His desire to explore other worlds made him want to be an astronaut. Though he did not become an astronaut, Askins has built a 42-year career at NASA, and, as the infrastructure management lead for NASA's SLS Program at Marshall, Askins plays an integral part for the next generation of explorers.

Askins and his team are the gatekeepers and protectors of data and responsible for both cybersecurity and physical security for the SLS Program. Under Askins' leadership, his team ensures all data is stored properly, that information about the rocket shared outside NASA is done with proper data markings, and access is given to those that need it.

Read more: **go.nasa.gov/42plZ8w**

COMPONENT FOR TESTING FUTURE SLS MODEL INSTALLED

Crews at NASA's Stennis Space Center near Bay St. Louis, Mississippi, cleared a milestone, installing a key component in preparation for future Green Run testing of the SLS exploration upper stage. The exploration upper stage is the upper stage that will be used for future SLS rockets in the Block 1B configuration, beginning with Artemis IV.

See more here: **bit.ly/3SDa5oj**

SLS OSA "FLIPPED" FOR INSTALLATION OF DIAPHRAGM

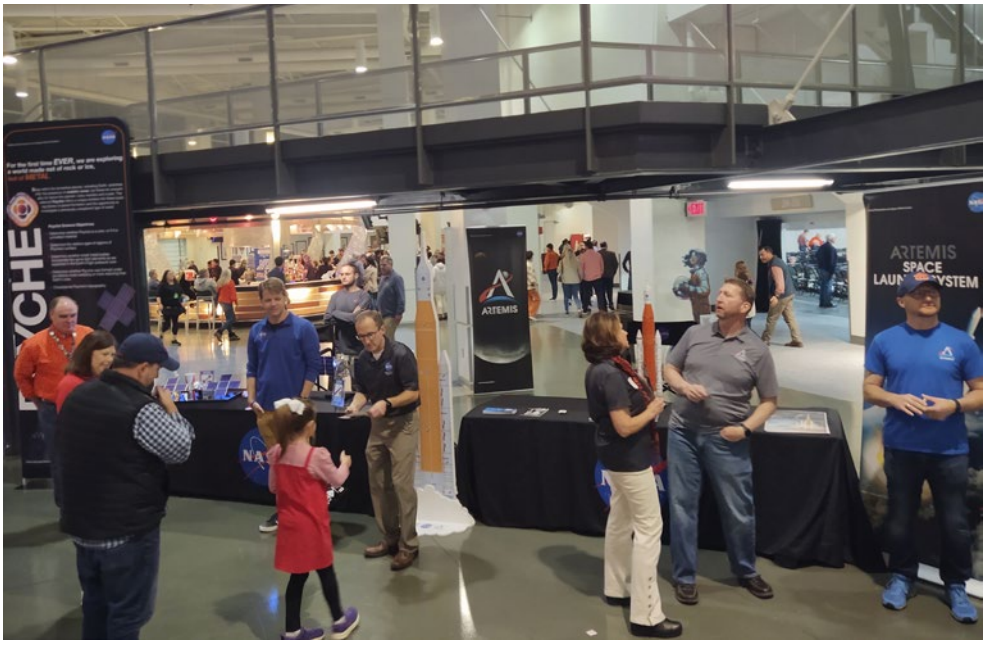
Technicians at NASA's Marshall Space Flight Center in Huntsville, Alabama, recently rotated, or "flipped," the smallest major element for NASA's SLS rocket to install a critical component Nov. 30. The 5-foot, 1,800-pound Orion stage adapter connects NASA's Orion spacecraft to the SLS rocket's interim cryogenic propulsion stage and is fully manufactured at Marshall. The recently installed diaphragm acts as a barrier to prevent gases created during the Artemis II launch from entering the spacecraft.

Watch here: **bit.ly/3SjF3A9**

TALKING SCIENCE IN THE QUEEN CITY

SLS team members participated at the Association of Science and Technology Centers conference in Charlotte, North Carolina, Oct. 7-10. Along with other members of the NASA Artemis team, they spoke with science-engagement professionals and leaders in science and technology centers and museums as well as allied organizations across North America and around the world about NASA's return of humans to the Moon.

HOOPS IN THE ROCKET CITY



SLS team members, along with colleagues from NASA's Marshall Space Flight Center in Huntsville, Alabama, met with fans and space enthusiasts before an Auburn University basketball game in Huntsville Dec. 13.

SPACEFLIGHT PARTNERS: *Manufacturing Technology. Inc.*

LOCATION: *South Bend, Indiana*

WHAT THEY DO FOR SLS:
Manufacturing Technology, Inc. (MTI) has a proud history of partnering with Aerojet Rocketdyne, an L3Harris Technologies company and NASA on several key space flights over several decades. MTI has supported NASA from inertia welding the powerhead main injector on the Space Shuttle Main Engine in the 1980s, to current friction welding support for NASA's Artemis campaign.

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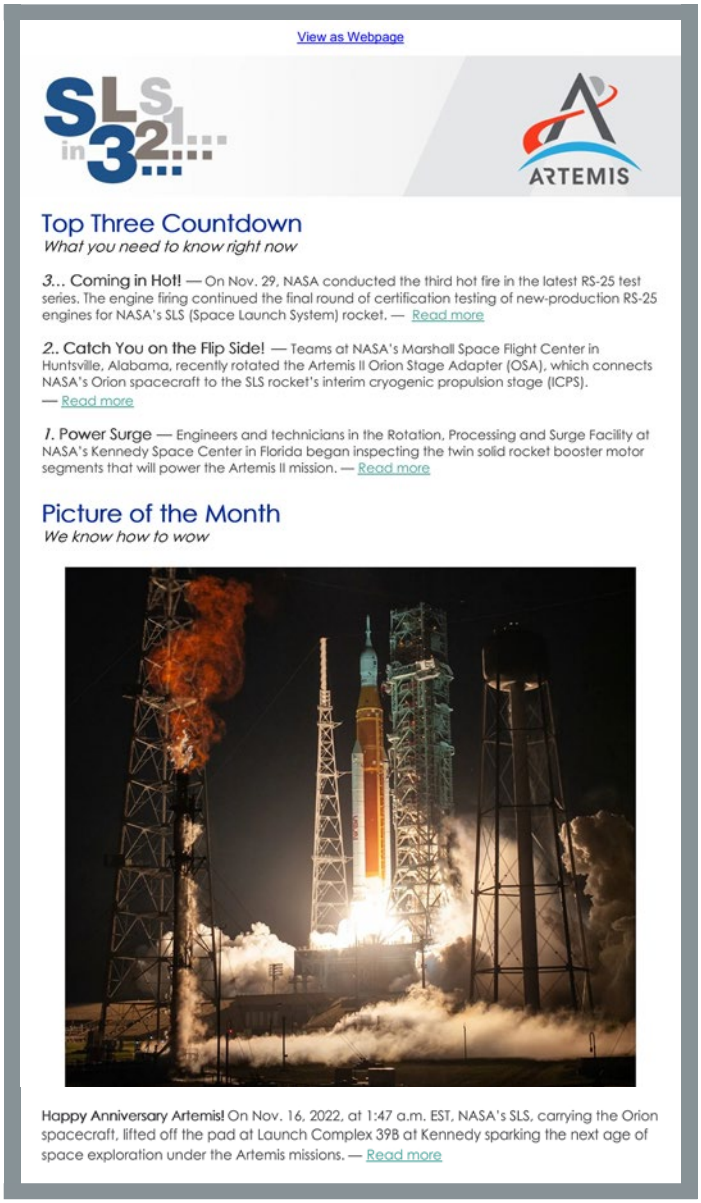

View as Webpage

SLS in 3..2..1...

ARTEMIS

Top Three Countdown

What you need to know right now

3... **Coming in Hot!** — On Nov. 29, NASA conducted the third hot fire in the latest RS-25 test series. The engine firing continued the final round of certification testing of new-production RS-25 engines for NASA's SLS (Space Launch System) rocket. — Read more

2.. **Catch You on the Flip Side!** — Teams at NASA's Marshall Space Flight Center in Huntsville, Alabama, recently rotated the Artemis II Orion Stage Adapter (OSA), which connects NASA's Orion spacecraft to the SLS rocket's interim cryogenic propulsion stage (ICPS). — Read more

1. **Power Surge** — Engineers and technicians in the Rotation, Processing and Surge Facility at NASA's Kennedy Space Center in Florida began inspecting the twin solid rocket booster motor segments that will power the Artemis II mission. — Read more

Picture of the Month

We know how to wow

Happy Anniversary Artemis! On Nov. 16, 2022, at 1:47 a.m. EST, NASA's SLS, carrying the Orion spacecraft, lifted off the pad at Launch Complex 39B at Kennedy sparking the next age of space exploration under the Artemis missions. — Read more

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