National Aeronautics and Space Administration

SPACE LAUNCH SYSTEM

JULY – SEPTEMBER 2025 HIGHLIGHTS

SLS TOPPED OFF AND READY FOR ORION

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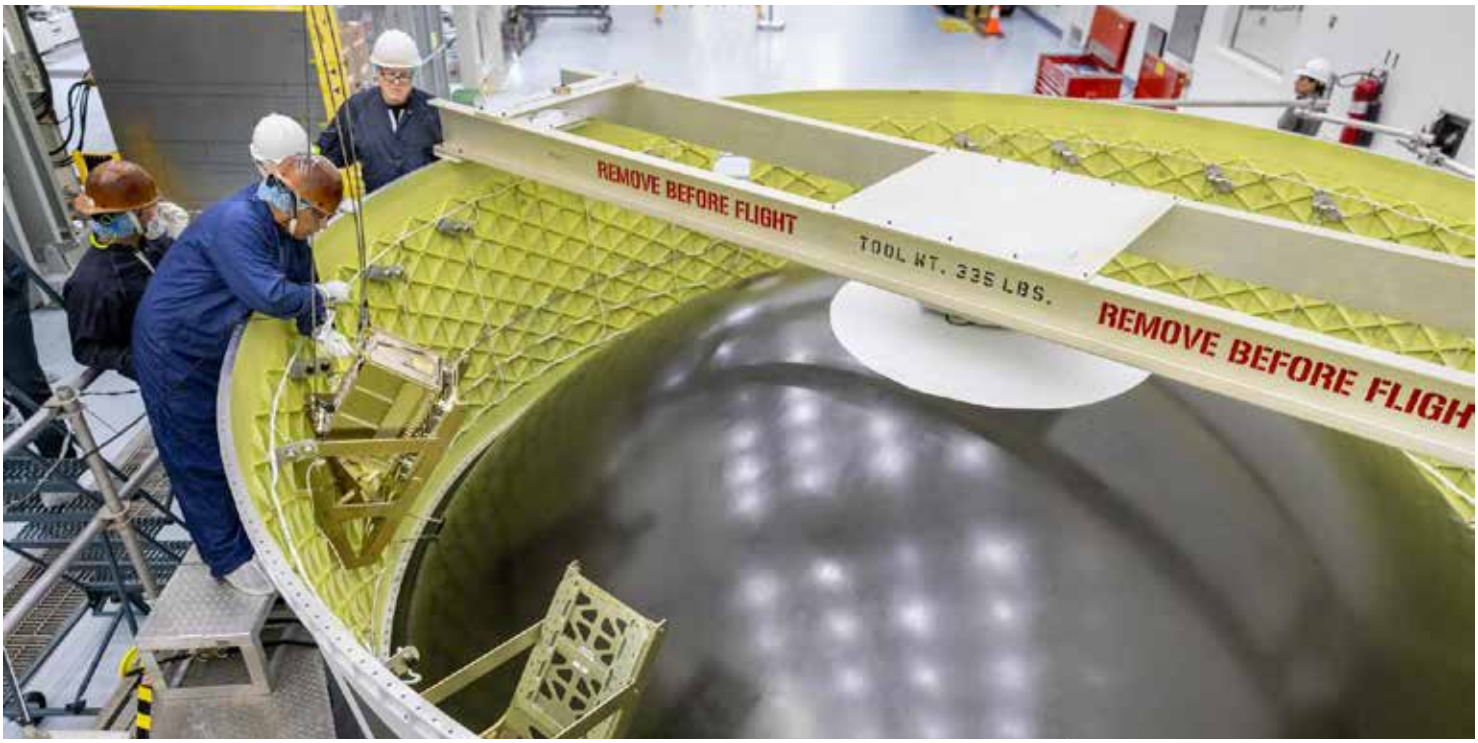
NASA mated the Artemis II Orion stage adapter with the rest of the mission's SLS (Space Launch System) rocket Sept. 30 in the Vehicle Assembly Building at NASA's Kennedy Space Center in Florida.

Built by NASA engineers at NASA's Marshall Space Flight Center in Huntsville, Alabama, the adapter connects the rocket's interim cryogenic propulsion stage to the Orion spacecraft. A composite diaphragm within the ring protects the Orion spacecraft from hazardous gases generated during launch.

Four CubeSats containing science and technology experiments will be deployed from the adapter into high Earth orbit after Orion is a safe distance away. The 12U CubeSats aboard Artemis II were developed by international partners Argentina, Germany, Saudi Arabia, and South Korea. One "U", or unit, is defined as 10 centimeters by 10 centimeters by 10 centimeters.

NASA will integrate the Orion spacecraft with the rocket in the coming weeks ahead of the mission, scheduled for no later than April 2026. Testing and simulations in preparation for the upcoming launch are taking place no later than April 2026.

Read more: **go.nasa.gov/4hastiO**



Technicians install one of four CubeSat secondary payloads into the SLS Orion stage adapter inside the Multi-Payload Processing Facility at NASA Kennedy in September.

Technicians install the Korea Astronomy and Space Science Institute (KASI) K-RadCube within the SLS Orion stage adapter inside the Multi-Payload Processing Facility at NASA's Kennedy Space Center in Florida Tuesday, Sept. 2.

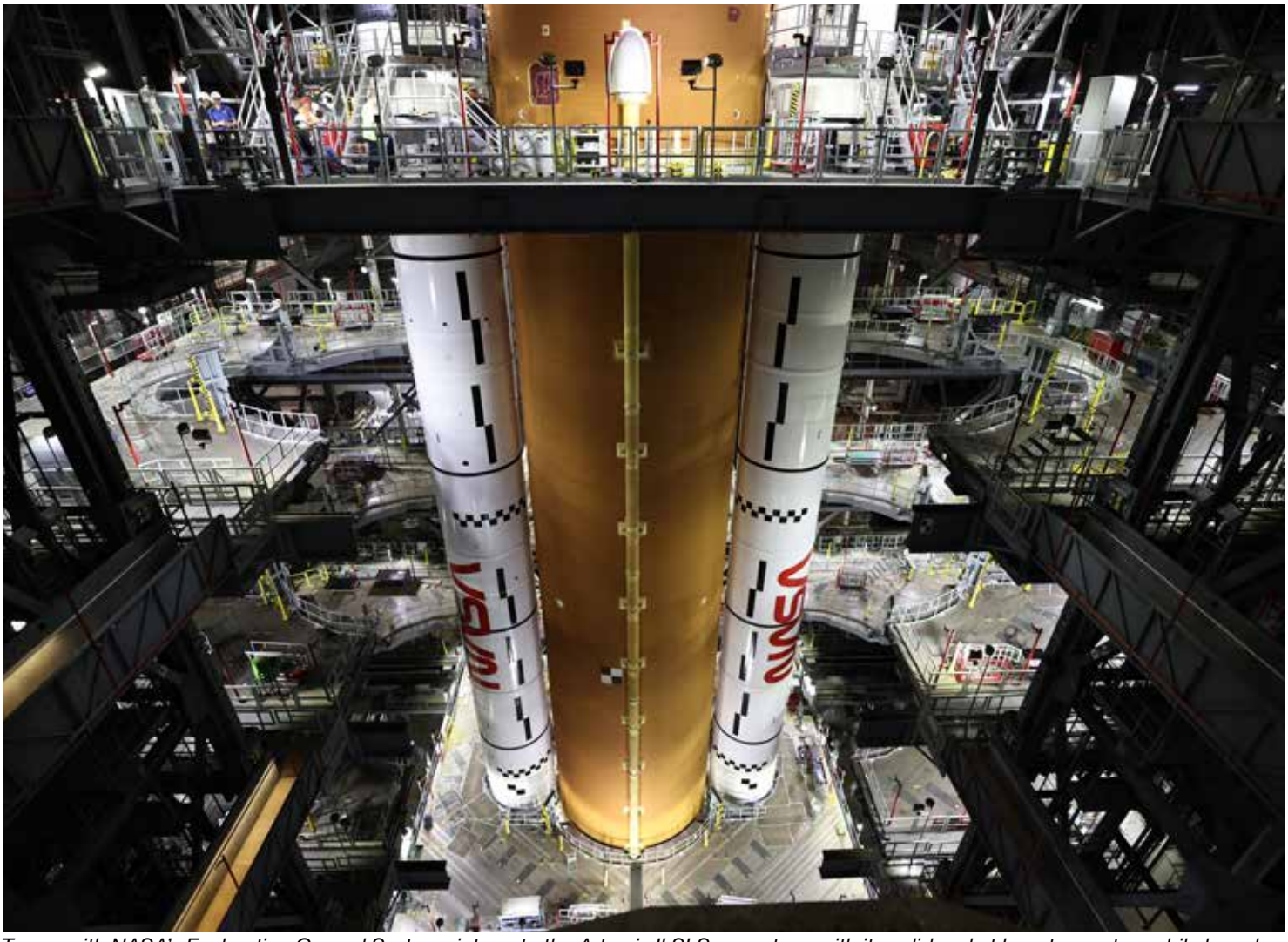
NASA ARTEMIS II MOON ROCKET READY TO FLY CREW

NASA's Artemis II SLS rocket poised to send four astronauts from Earth on a journey around the Moon next year may appear identical to the Artemis I SLS rocket. On closer inspection, though, engineers have upgraded the agency's Moon rocket inside and out to improve performance, reliability, and safety.

For Artemis II, the major sections of SLS remain unchanged from the Artemis I rocket – a central core stage, four RS-25 main engines, two five-segment solid rocket boosters, the ICPS (interim cryogenic propulsion stage), a launch vehicle stage adapter to hold the ICPS, and an Orion stage adapter connecting SLS to the Orion spacecraft. The difference is in the details.

"While we're proud of our Artemis I performance, which validated our overall design, we've looked at how SLS can give our crews a better ride," said John Honeycutt, NASA's SLS Program manager. "Some of our changes respond to specific Artemis II mission requirements while others reflect ongoing analysis and testing, as well as lessons learned from Artemis I."

Read more: **go.nasa.gov/494VLx9**



Teams with NASA's Exploration Ground Systems integrate the Artemis II SLS core stage with its solid rocket boosters onto mobile launcher 1 inside High Bay 3 of the Vehicle Assembly Building at NASA Kennedy in March 2025.

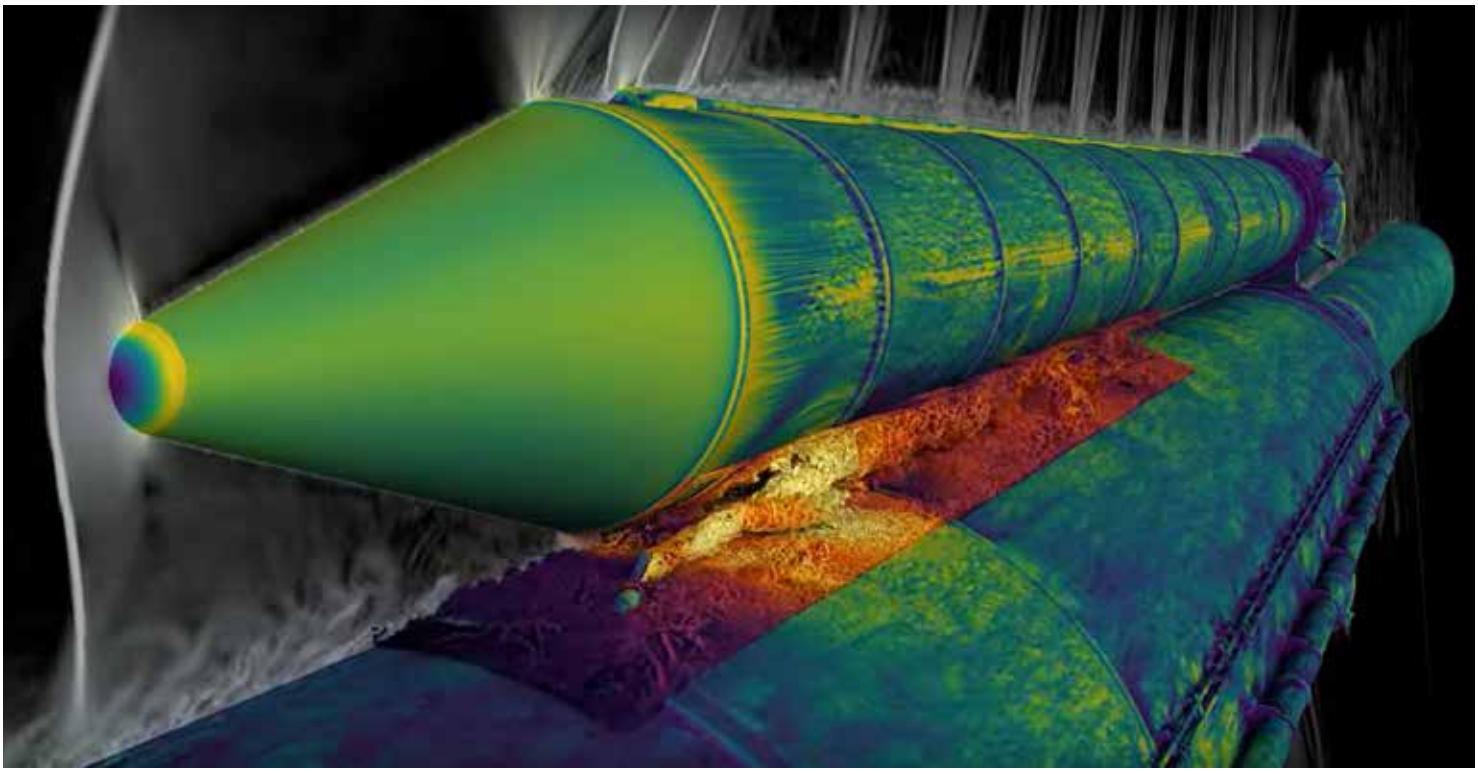
FROM SUPERCOMPUTERS TO WIND TUNNELS: NASA'S ROAD TO ARTEMIS II

Of the many roads leading to successful Artemis missions, one is paved with high-tech computing chips called superchips. Along the way, a partnership between NASA wind tunnel engineers, data visualization scientists, and software developers verified a quick, cost-effective solution to improve the SLS rocket for the upcoming Artemis II mission. This will be the first crewed flight of the SLS rocket and Orion spacecraft, an approximately 10-day long journey around the Moon.

A high-speed network connection between high-end computing resources at the NASA Advanced Supercomputing facility and the Unitary Plan Wind Tunnel, both located at NASA's Ames Research Center in California's Silicon Valley, is enabling a collaboration to improve the rocket for the Artemis II mission. During the Artemis I test flight, the SLS rocket experienced higher-than-expected vibrations near the solid rocket booster attach points, caused by unsteady airflow between the gap.

A solution developed for Artemis II was adding four strakes. A strake is a thin, fin-like structure commonly used on aircraft to improve unsteady airflow and stability. Adding them to the core stage minimizes the vibration of components.

Read more: **go.nasa.gov/4hmQhAg**



This supercomputer false color simulation peers down at a close-up of the SLS rocket during ascent. The force of friction is represented in greens, yellows, and blues. A seven-and-a-half-foot strake flanking each booster's forward connection point on the SLS intertank smooths vibrations induced by airflow, represented by purples, yellows, and reds. The white streams represent a contour plot of density magnitude, highlighting the change of density in the air.

FINAL PIECE OF ARTEMIS II SLS DEPARTS NASA MARSHALL AND ARRIVES AT NASA KENNEDY

The final piece of flight hardware for the Artemis II SLS rocket departed NASA Marshall Aug. 18 and arrived at NASA Kennedy one day later for integration with the rest of the rocket.

Built of lightweight aluminum at NASA Marshall, the ring-shaped Orion stage adapter connects the interim cryogenic propulsion stage to the Orion spacecraft. A composite diaphragm within the ring acts as a barrier between Orion and the rest of the rocket, preventing gases – such as hydrogen – from entering the spacecraft. An auxiliary rendezvous target has been installed on the Artemis II Orion stage adapter for use by the astronauts during the planned proximity operations demonstration intended to test Orion's handling capabilities. The adapter will also carry several CubeSats, which are small payloads containing science experiments and technology demonstrations intended to expand understanding of the space environment.

The adapter was manufactured using friction stir welding in NASA Marshall's Materials and Processes Laboratory. It's the only piece of the SLS rocket built entirely by NASA engineers.

Read more: **go.nasa.gov/3TxYiHq** and **go.nasa.gov/4oqpa9D**

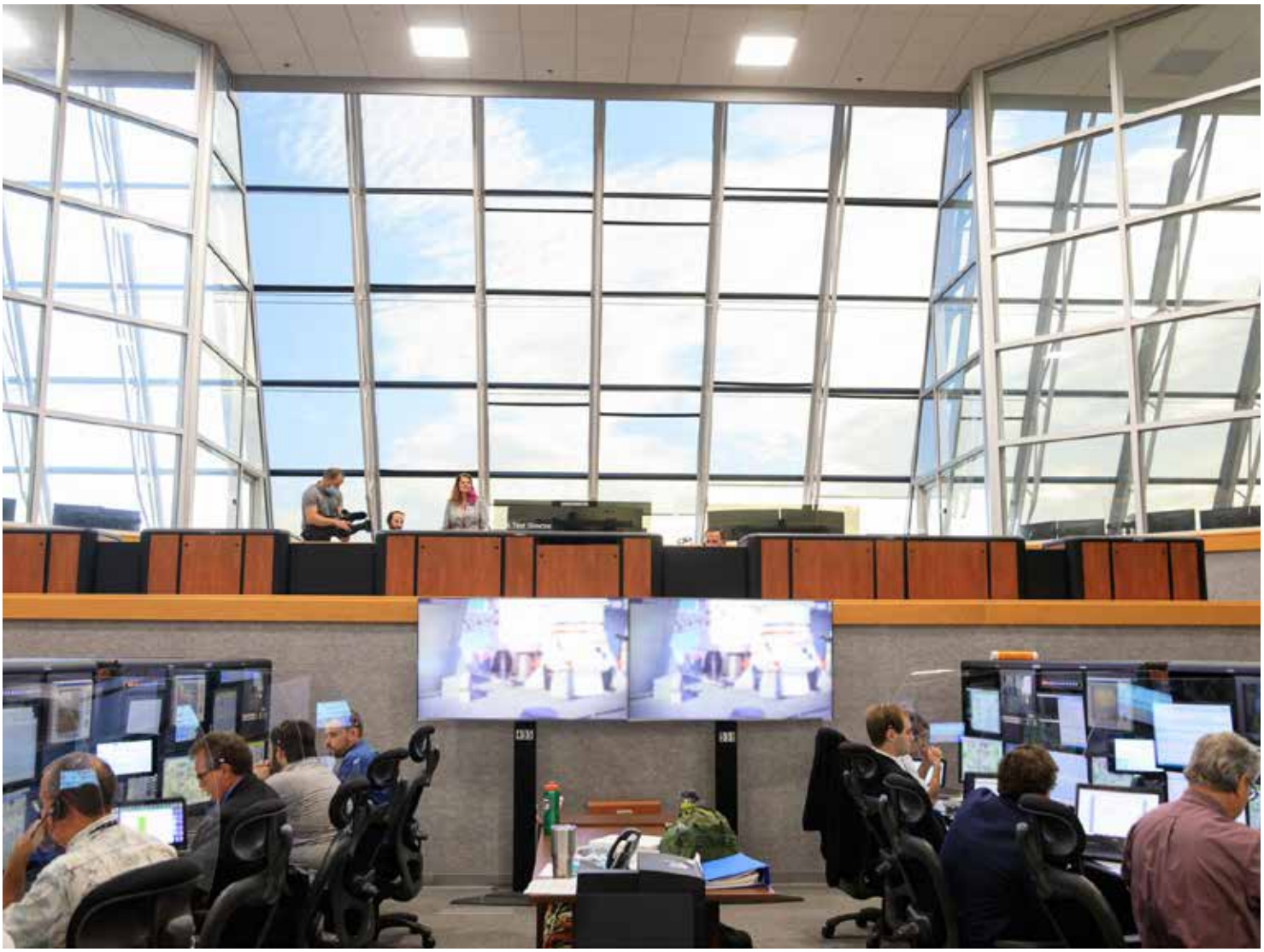
The Orion stage adapter traveled by semitrailer for its journey to NASA Kennedy in preparation for stacking.

Technicians at NASA Kennedy complete routine inspections on the Artemis II Orion stage adapter following its arrival at the center.

MEET NASA'S ARTEMIS II MOON MISSION MASTERMINDS

As four astronauts venture around the Moon on NASA's Artemis II test flight in 2026, many people will support the journey from here on Earth. Teams directing operations from the ground include the mission management team, launch control team, flight control team, and the landing and recovery team, each with additional support personnel who are experts in every individual system and subsystem. The teams have managed every aspect of the test flight and ensure NASA is prepared to send humans beyond our atmosphere and into a new Golden Age of innovation and exploration.

Read more: **go.nasa.gov/3W4T9bb**



Teams at NASA Kennedy participate in the first joint integrated launch countdown simulation for Artemis I inside Firing Room 1 of the Launch Control Center July 8, 2021.

NASA TESTS NEW LIQUID HYDROGEN TANK FOR CREWED ARTEMIS MISSIONS

As teams get ready for the first crewed Artemis mission, which will take a crew of four around the Moon and back in 10 days, engineers with NASA's Exploration Ground Systems Program tested the new liquid hydrogen sphere, which holds one of the cryogenic propellants used to power SLS, at Launch Complex 39B at the NASA Kennedy.

To minimize time between launch attempts since SLS holds approximately 600,000 gallons of chilled liquid hydrogen, the team built an additional liquid hydrogen storage sphere at the launch pad. To ensure the tank functions properly and can safely flow the minus 423 degrees Fahrenheit super-cool liquid gas to the mobile launcher and SLS during launch countdown, the Artemis launch team successfully practiced flowing liquid hydrogen from both tanks to ensure there were no issues.

Read more: **go.nasa.gov/42IB8ml**

NASA's Exploration Ground Systems team performed a series of tests to ensure the systems are ready to support the Artemis II mission.

SEND YOUR NAME AROUND THE MOON ON ARTEMIS II

Four astronauts will fly around the Moon and back on Artemis II, the first crewed flight under NASA's Artemis campaign. NASA astronauts Reid Wiseman, Victor Glover, and Christina Koch, as well as CSA (Canadian Space Agency) astronaut Jeremy Hansen will be the first humans aboard an SLS rocket, Orion spacecraft, and supporting ground systems as the crew ventures into the harsh environment of space. This flight is another step toward crewed missions to the lunar surface and helping the agency prepare for future astronaut missions to Mars. Submitted names will be included on an SD card that will fly inside Orion when the Artemis II mission launches in 2026.

Read more: **go.nasa.gov/4q4yD8a**

Each person who submits their name to fly aboard Orion will receive a digital boarding pass to commemorate their participation.

NASA BEGINS PROCESSING ARTEMIS III MOON ROCKET AT KENNEDY

Buildup of the SLS rocket for the Artemis III lunar mission has started at NASA Kennedy, even as NASA prepares for the launch of the Artemis II mission, the second Artemis mission in NASA's efforts to return humans to the Moon and eventually land on Mars.

The Artemis III SLS engine section and boat-tail – which protects the engines during launch – moved from the Space Systems Processing Facility at NASA Kennedy to the mammoth Vehicle Assembly Building in late July, just a few feet from where the Artemis II SLS is mostly stacked and undergoing integrated testing and checkouts.

In early 2026, NASA will launch Artemis II, the first crewed flight of the SLS rocket and Orion spacecraft, on an approximately 10-day journey around the Moon. This will be followed by the Artemis III lunar landing mission in 2027, the first ever to the lunar South Pole region, which will launch an SLS with a crew of four aboard an Orion spacecraft to rendezvous with the Starship Human Landing System. These missions set the stage for NASA to land the first American on the Martian surface.

Read more: **go.nasa.gov/4nQsxXt**

Teams from NASA Kennedy prepare to lift NASA's integrated Artemis III SLS core stage engine section with its boat-tail inside the center's Vehicle Assembly Building in August.

ARTEMIS TEAM CONDUCT MISSION SIMULATIONS TO PREPARE FOR LUNAR MISSION

Students may be on summer vacation, but that doesn't mean the learning ends. SLS's latest video series, called Nerdy Words, defines common words used in building and operating SLS.

Read more: bit.ly/4hmS748

NEWLY RELEASED: THERE AND BACK WITH EGS

In September, SLS released the third in a series of children's books. The latest issue highlights the Exploration Ground Systems team.

Read more here: bit.ly/3KQXAE5

SLS WENT NEW GAME+ AT PAX WEST

The SLS Program along with Exploration Ground Systems, Orion, and Exploration Systems Development Mission Directorate (ESDMD) participated in PAX West held August 29 – September 1, 2025, in Seattle, Washington. While there, NASA hosted a panel discussion, “NASA’s Artemis II Mission: Gaming the Future of Space Exploration”, which was moderated by SLS Strategic Communications Manager Marcia Lindstrom. Panelists were NASA astronaut Dr. Michael Barratt, NASA Marshall Deputy Branch Manager for Systems Analysis and Human Systems Integration Tanya Andrews, Orion Interactive Developer Seth Lambert, and SLS technical writer Whitney Sheppard. An interactive booth also provided fans the opportunity to learn more about SLS, Orion, and the Artemis campaign.

SLS CELEBRATES NASA MARSHALL’S 65TH ANNIVERSARY

In July, the SLS Program joined the rest of NASA Marshall and the community to celebrate the center’s 65th anniversary. The public event featured many NASA organizations and local teams, including the mascots from the local minor league hockey team.

SPACEFLIGHT PARTNERS: Bronson & Bratton, Inc.

LOCATION: Burr Ridge, Illinois

WHAT THEY DO FOR SLS:

Bronson & Bratton performs precision machining of valve hardware for the RS-25 engine. As a partner to RS-25 manufacturer L3Harris Technologies, Bronson & Bratton provides the finish machining on the 3D-printed valve housings. Four RS-25 engines help power SLS during launch and ascent, providing more than 2 million pounds of thrust to help launch America's rocket during the new Golden Age of exploration and innovation.

GET THE LATEST SLS UPDATES SENT TO YOUR INBOX EACH MONTH!

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

ARTEMIS

What's SLS in 3... 2.. 1. ?

Welcome to "SLS in 3... 2.. 1. ," the newsletter that connects you to the latest news and resources related to NASA's SLS (Space Launch System) rocket. Want to know more about NASA's heavy-lift rocket and the Artemis campaign?

With "SLS in 3... 2.. 1. ," you're only a few clicks away. — Learn more

Top Three Countdown

What you need to know right now

3... I Am Artemis — Discover the lives of the people involved with the Artemis campaign. For Patrick Junen, the desire to work for NASA was there from the beginning. With a father and grandfather who both worked for NASA, space exploration wasn't just a dream, it was a family legacy. — Read more

2.. The Next Rocket — As NASA prepares for the launch of Artemis II, the SLS rocket for the Artemis III lunar mission has already begun processing at the agency's Kennedy Space Center in Florida. — Read more

1. The Final Piece — The final piece of Artemis II flight hardware for the SLS (Space Launch System) rocket recently departed from NASA's Marshall Space Flight Center in Huntsville, Alabama. — Read more

Picture of the Month

We know how to wow

Recently, the Artemis II crew, and teams with NASA's Exploration Ground Systems and Orion programs at NASA's Kennedy Space Center, executed suit fit and leak checks, communication checks, and simulated launch and flight scenarios.

FOLLOW THE PROGRESS OF NASA'S NEW LAUNCH VEHICLE FOR DEEP SPACE:

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