National Aeronautics and Space Administration

ARTEMIS

SPACE LAUNCH SYSTEM

OCT-DEC 2025 HIGHLIGHTS

SLS IN 2025: ROCKETS FOR THE MOON FOR ALL MANKIND

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SLS IN 2025: ROCKETS FOR THE MOON FOR ALL MANKIND

The rocket is stacked. The astronauts have trained. Their spacecraft is ready. The launch and flight control teams are prepared. NASA's Artemis II launch is upon us, building on a successful year in 2025 of stacking, testing, training, and preparing.

During 2025, NASA's SLS (Space Launch System) Program and its sister programs and partners comprising the agency's Artemis campaign took significant strides toward the Artemis II launch in 2026 and the following missions in the coming years.

In February 2025, teams at NASA's Kennedy Space Center in Florida completed stacking SLS's solid rocket boosters onto mobile launcher 1 inside the center's Vehicle Assembly Building. Throughout the year, boosters were joined by the rocket's core stage, launch vehicle stage adapter, interim cryogenic propulsion stage, Orion stage adapter, and four CubeSat secondary payloads. In October, the Artemis II Orion spacecraft – named Integrity by the crew – was added, completing the launch vehicle stack.

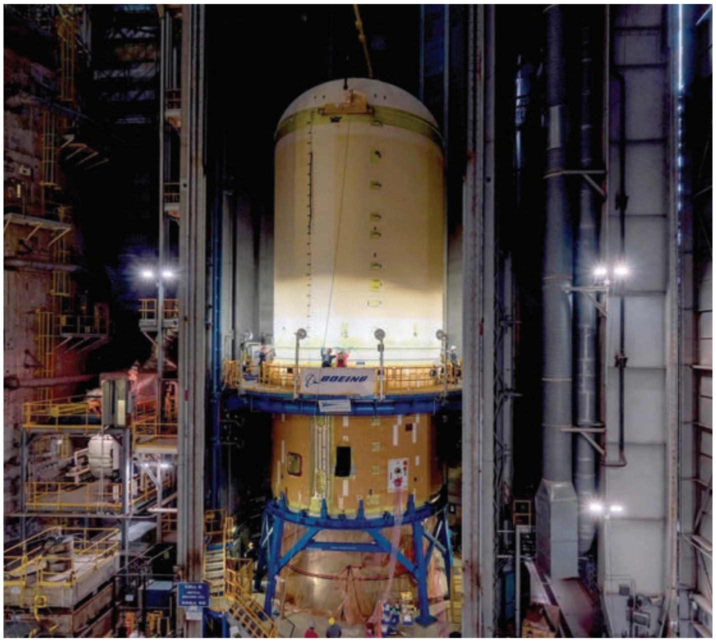
As technicians and engineers were stacking the hardware, loading the flight software, and testing the elements individually and as integrated systems, the launch control and flight control teams were conducting mission simulations. The realistic exercises provided the team members critical experience working through the various phases of pre-launch, ascent, and mission activities. They also provided the opportunity to practice anomalies, aborts, and other less-than-desirable scenarios in the unlikely event they arise.

The Artemis II SLS rocket, Orion spacecraft, and mobile launcher 1 are in the final phases of preparation before rolling out to Launch Complex 39B for final tests and launch. Emblazoned with the America 250 logo, the launch vehicle represents the indomitable spirit of the thousands of workers across the country and world who built it to send the first humans to the Moon this century.

While significant progress was made on the Artemis II mission, the SLS team also continued work on the SLS's for Artemis III, IV, and V and the development of the new elements for the Block 1B and Block 2 SLS variants.

Read more: **go.nasa.gov/3MxBXd2**

SLS team members participate in a launch countdown simulation at their stations in the SLS (Space Launch System) Engineering Support Center at NASA's Marshall Space Flight Center in Huntsville, Alabama.



The liquid oxygen tank for the Artemis III SLS core stage is lifted into a production cell at the agency's Michoud Assembly Facility in New Orleans Nov. 7. Move crews used an overhead crane system to lift the tank from the mobile transporter, which carried it from another area of the factory and set it atop the previously loaded intertank.

ARTEMIS II FLIGHT CREW, TEAMS CONDUCT DEMONSTRATION AHEAD OF LAUNCH

NASA's launch and mission teams, along with the Artemis II crew, completed a key test Dec. 20, a countdown demonstration test, ahead of the Artemis II flight around the Moon early next year. The astronauts, supported by launch and flight control teams, dressed in their launch and entry suits, boarded their spacecraft on top of its towering rocket at NASA Kennedy to validate their launch date timeline.

Winding the clock down to a point just before liftoff, the rehearsal enabled NASA teams to practice the exact steps teams will take as they move toward launch of the test flight.

"This test marks the passage of a key milestone on America's journey to the launchpad. We have many more to go, but I'm encouraged by the expertise and precision demonstrated by our teams as we continue NASA's ambitious lunar exploration legacy," said NASA Administrator Jared Isaacman.

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

Artemis II crewmembers CSA (Canadian Space Agency) astronaut Jeremy Hansen, mission specialist, right, and NASA astronauts Victor Glover, pilot, and Christina Koch, mission specialist, after exiting the elevator at the 275-foot level of the mobile launcher walk towards the crew access arm as they prepare to board their Orion spacecraft atop NASA's SLS Moon rocket during the Artemis II countdown demonstration test, Saturday, Dec. 20, 2025, inside the Vehicle Assembly Building at NASA Kennedy.

NASA PROGRESSES TOWARD ARTEMIS II MOON MISSION

As 2026 nears, NASA continues moving forward to launching and flying Artemis II, the first crewed mission under the Artemis campaign, no later than April next year.

NASA's Orion spacecraft, complete with its launch abort system escape tower, is now integrated with the SLS rocket in the Vehicle Assembly Building at NASA Kennedy. Following Orion stacking, teams completed testing critical communications systems between SLS and Orion and confirmed the interfaces function properly between the rocket, Orion, and the ground systems, including end-to-end testing with the Near Space Network and Deep Space Network, which aid in communications and navigation.

In the coming weeks, engineers and the Artemis II crew will conduct the first part of a countdown demonstration test at NASA Kennedy, a dress rehearsal for launch day. The crew will don their Orion crew survival system spacesuits and venture to their rocket before being secured inside Orion, which the crew recently named Integrity, simulating the final moments of the countdown. Because the rocket and spacecraft are not yet at the launch pad, the crew will board Orion inside the Vehicle Assembly Building. The test will serve as a final verification of the timeline for the crew and supporting teams on the ground. A second part of the test, preparing for an emergency at the launch pad, will occur after the rocket and spacecraft roll out to Launch Pad 39B.

Read more: **go.nasa.gov/4r6FVIF**

Technicians with NASA's Exploration Ground Systems team use a crane to lift and secure the Artemis II Orion spacecraft on top of the SLS rocket in High Bay 3 of the Vehicle Assembly Building at NASA Kennedy Saturday, Oct. 18, 2025.

NASA SIGNS AGREEMENT WITH ARGENTINA'S SPACE AGENCY FOR ARTEMIS II CUBESAT

NASA has signed an agreement with Argentina's Comisión Nacional de Actividades Espaciales (CONAE) for a CubeSat to fly on the agency's Artemis II test flight. With this agreement, NASA has finalized all partnerships for the four international CubeSats that will fly aboard the mission.

The ATENEA CubeSat will collect data on radiation doses across various shielding methods, measure the radiation spectrum around Earth, collect GPS data to help optimize future mission design, and validate a long-range communications link.

CubeSats are small but mighty – compact in size, they contain technology demonstrations or scientific experiments that can potentially enhance understanding of the space environment.

In addition to CONAE, NASA is working with German space agency DLR and their CubeSat TACHELES, the Korea AeroSpace Agency and their CubeSat K-RadCube, and the Saudi Space Agency and their CubeSat Space Weather CubeSat-1 to fly the payloads aboard Artemis II to access the high Earth orbit environment as part of NASA's Artemis campaign. Collectively, the CubeSats will gather information to inform and potentially improve how missions to deep space are designed.

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

Technicians install the Korea AeroSpace Administration (KASA) K-RadCube within SLS's Orion stage adapter inside the Multi-Payload Processing Facility at NASA Kennedy.

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 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.

SLS flew a picture perfect first mission on the Artemis I test flight, meeting or exceeding parameters for performance, attitude control, and structural stability to an accuracy of tenths or hundredths of a percent as it sent an uncrewed Orion thousands of miles beyond the Moon. It also returned volumes of invaluable flight data for SLS engineers to analyze to drive improvements.

For Artemis II, the major sections of SLS remain unchanged – 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/4ts01P0**

The Artemis II core stage is moved into position for mating with the solid rocket boosters.

ARTEMIS II INSIGNIA HONORS ALL

The four astronauts who will be the first to fly to the Moon under NASA's Artemis campaign have designed an emblem to represent their mission that references both their distant destination and the home they will return to. The crew unveiled their patch April 2, 2025.

The crew explained the patch's symbolism, and its play on the abbreviation of Artemis II to AII, with the following description: The Artemis II test flight begins when a mighty team launches the first crew of the Artemis generation. This patch designates the mission as "AII," signifying not only the second major flight of the Artemis campaign, but also an endeavor of discovery that seeks to explore for all and by all. Framed in Apollo 8's famous Earthrise photo, the scene of the Earth and the Moon represents the dual nature of human spaceflight, both equally compelling: The Moon represents our exploration destination, focused on discovery of the unknown. The Earth represents home, focused on the perspective we gain when we look back at our shared planet and learn what it is to be uniquely human. The orbit around Earth highlights the ongoing exploration missions that have enabled Artemis to set sights on a long-term presence on the Moon and soon, Mars.

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

The official Artemis II mission crew insignia is projected on the exterior of the Vehicle Assembly Building at NASA Kennedy Friday, April 4, 2025.

NASA BEGINS PROCESSING ARTEMIS III MOON ROCKET AT KENNEDY

Buildup of NASA's 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.

Teams lifted the engine section onto a stand and mated the boat-tail to the bottom. They installed a canopy on top of the engine section to allow the segment to be air conditioned, preventing moisture build-up and contamination.

Teams then lifted the completed assembly into High Bay 2 in the Vehicle Assembly Building where it will complete integration and check-out testing until the arrival of the rest of the Artemis III SLS core stage components to complete stage integration, targeted for spring 2026.

The core stage is being manufactured and integrated at NASA Michoud. The stage's liquid oxygen tank, intertank, and forward skirt are mated. The liquid hydrogen tank will be joined in early 2026, completing the core stage four-fifths. The combined unit will then be shipped to NASA Kennedy for integration with the engine section in 2026.

Read more: **go.nasa.gov/4amdvTI** and **go.nasa.gov/4aF0Pc1**

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

NASA READIES MOON ROCKET FOR THE FUTURE WITH MANUFACTURING INNOVATION

NASA's Artemis campaign will send astronauts, payloads, and science experiments into deep space on NASA's SLS Moon rocket. Starting with Artemis IV, the Orion spacecraft and its astronauts will be joined by other payloads atop an upgraded version of the SLS, called Block 1B. SLS Block 1B will deliver initial elements of a lunar space station designed to enable long term exploration of the lunar surface and pave the way for future journeys to Mars. To fly these advanced payloads, engineers at NASA Marshall are building a cone-shaped adapter that is key to SLS Block 1B.

The payload adapter, nestled within the universal stage adapter sitting atop the SLS Block 1B's exploration upper stage, acts as a connecting point to secure a large payload that is co-manifested – or flying along with – the Orion spacecraft. The adapter consists of eight composite panels with an aluminum honeycomb core and two aluminum rings.

Beginning with the Artemis IV mission, SLS Block 1B will feature a new, more powerful upper stage that provides a substantial increase in payload mass, volume, and energy over the first variant of the rocket that is launching Artemis missions I through III. SLS Block 1B can send 84,000 pounds of payload – including both a crewed Orion spacecraft and a 10-metric-ton (22,046 lbs.) co-manifested payload riding in a separate cargo compartment – to the Moon in a single launch.

Artemis IV's co-manifested payload will be the Lunar I-Hab, one of the initial elements of the Gateway lunar space station. Built by ESA (European Space Agency), the Lunar I-Hab provides expanded capability for astronauts to live, work, conduct science experiments, and prepare for their missions to the lunar surface.

Read more: **go.nasa.gov/4kngu30**

At NASA Marshall, the payload adapter (PLA) engineering development unit is installed into the 4697-test stand for structural testing. It was then attached to the large cylindrical structure which simulates the Exploration Upper Stage interface. Load lines were then connected to the top of the PLA. The testing demonstrated that it can handle up to three times the expected load.

NEW PRODUCTION RS-25 ENGINES FOR FUTURE MISSIONS TESTED AT NASA STENNIS

NASA tested RS-25 engine No. 20001 June 20 at the Fred Haise Test Stand at NASA's Stennis Space Center in Bay St. Louis, Mississippi. Engine 20002 was tested Nov. 12. Test teams fired the engine for almost eight-and-a-half minutes (500 seconds), the same amount of time RS-25 engines fire during a launch of an SLS rocket on Artemis missions to the Moon. The Artemis campaign will explore the Moon for scientific discovery, economic benefits, and to build the foundation for the first crewed missions to Mars – for the benefit of all.

Four RS-25 engines, built by contractor L3Harris Technologies (formerly Aerojet Rocketdyne), help power each SLS launch, producing up to 2 million pounds of combined thrust. During the tests, operators also fired engines No. 20001 and No. 20002 up to the 111% power level, the same amount of thrust needed to launch an SLS rocket, carrying the Orion spacecraft, to orbit. The full-duration "hot fire" was the first test since NASA completed certification testing for new production RS-25 engines in 2024.

Read more: **go.nasa.gov/4arG6HD** and **go.nasa.gov/3Zu8JyH**

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I AM ARTEMIS: *JON CARABELLO*

Jon Carabello did not begin his career journey with an eye on space, but when NASA's Artemis lunar exploration campaign came calling, he was all in.

Born, raised, and college-educated in New Hampshire, Carabello has spent his entire professional career at TURBOCAM – a turbomachinery development and manufacturing company – in the southeast corner of the Granite State.

That's a long way from the southern and western states commonly associated with U.S. human spaceflight activities.

Asked about his early memories of America's space program, Carabello mentions movies like Apollo 13, and notes that Christa McAulliffe, the teacher-astronaut who died in the 1986 Space Shuttle Challenger accident, taught high school in New Hampshire.

Little did he know that his future employer, a maker of complex machined hardware for a variety of industrial applications, has long been a component supplier to programs including the space shuttle and the International Space Station.

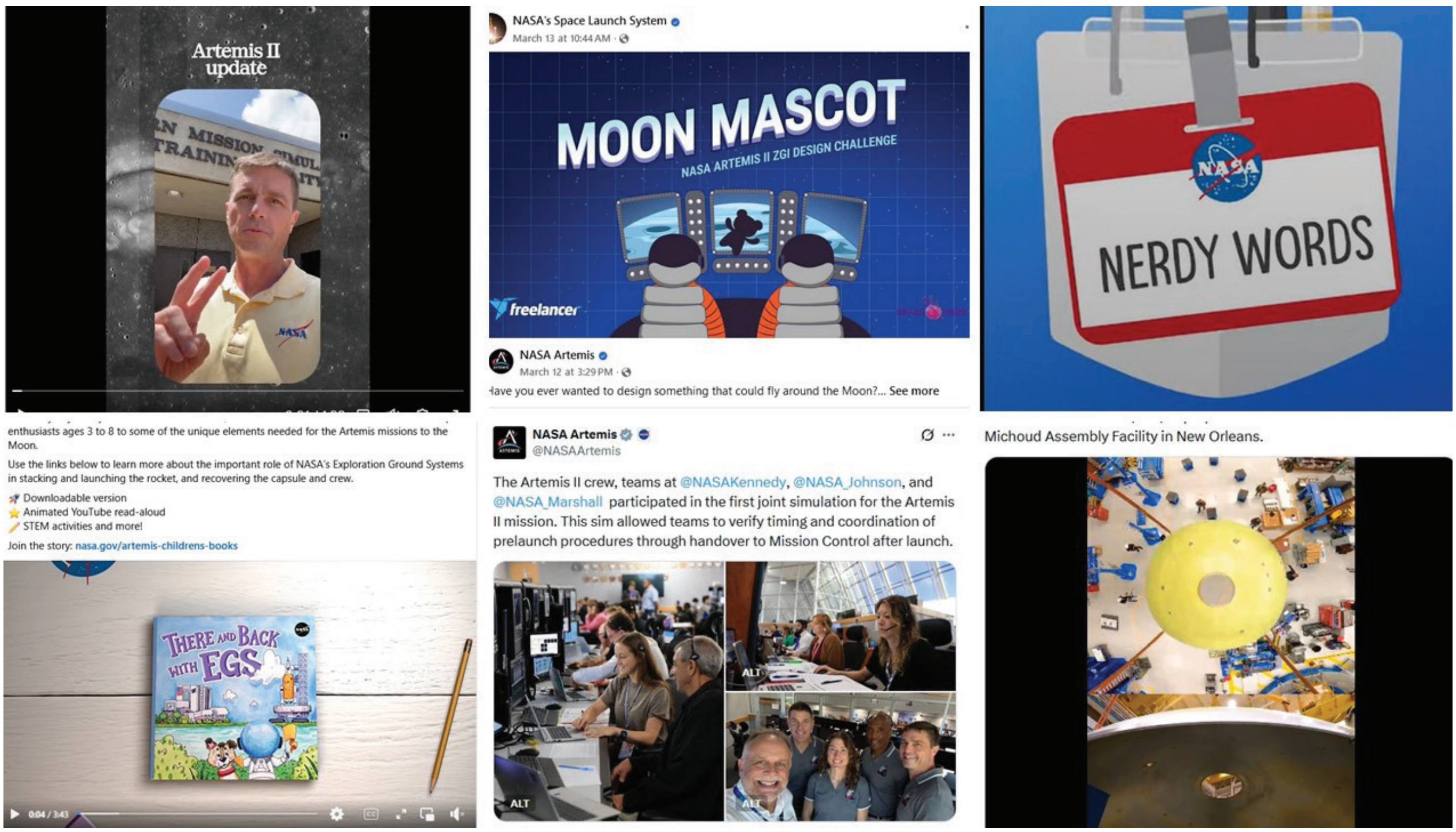
There was never much question that Carabello, who started tinkering with engines and other machinery at a young age, would make a career of mechanical engineering. "I like to solve problems – that's my big thing," he says.

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

Jon Carabello has spent his entire career at TURBOCAM, which produces 10 core stage main engine turbomachinery components for the RS-25 main engine on NASA's SLS heavy lift exploration rocket.

I AM Artemis stories bring to life the stories of the men and women who make the Artemis missions a reality.
See all the profiles here: **go.nasa.gov/4bItEp5**

LIKE, LOVE, FOLLOW: SLS ON SOCIAL MEDIA ENGAGES WITH WORLD-WIDE AUDIENCES



NASA SLS and Artemis social media channels continued reaching and engaging audiences throughout the year. New products, including the Nerdy Word video series, Artemis II crew weekly updates, and children’s books worked hand-in-hand with milestone updates and team member profiles. All told, more than 3.5 million people followed and learned more about the Artemis mission in 2025.

See how you can follow SLS here: **go.nasa.gov/4tr7azh**

SLS ON THE ROAD

SLS LAUNCHES TO A GALAXY OF AUDIENCES IN 2025

During 2025, the SLS team reached out to a wide array of audiences. Including the Houston Auto Show in January to visiting with The Mustard Seed in Brandon, Mississippi, in March to the PAX West convention in Seatle in September and a tree in Huntsville's Tinsel Trail to end the year, team members talked to and interacted with new members of the public during dozens of events. SLS members also continued developing relationships in traditional events including STEM career fairs, employee hardware tours, and local Huntsville community activities. More than 338,000 people engaged with SLS in 2025.

SPACEFLIGHT PARTNERS: Constellium

SUPPLIER VISITS BUILD PARTNERSHIPS ACROSS ARTEMIS TEAM

SLS is built by more than 1,000 suppliers in nearly every state in the country. Supplier visits, such as to Constellium in Ravenswood, West Virginia (seen below), allow SLS leadership to meet with the men and women on the frontlines of Artemis and share their appreciation while emphasizing the importance of the work they are doing.

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... **Ready to Fly** — Take a closer look to see how engineers have upgraded the SLS rocket inside and out to improve performance, reliability, and safety. — Read more

2.. **Tunnel Vision** — Discover how a partnership between NASA wind tunnel engineers, data visualization scientists, and software developers verified a solution to improve the SLS rocket for the upcoming Artemis II mission. — Read more

1. **One Step Closer** — The Artemis II Orion stage adapter has been successfully integrated with the rest of the SLS rocket, marking another key milestone on the journey to return astronauts to the Moon. — Read more

Picture of the Month

We know how to wow

The Orion stage adapter can be seen atop the SLS rocket inside the Vehicle Assembly Building.

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

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