

SPACE LAUNCH SYSTEM

JANUARY-MARCH 2025 HIGHLIGHTS

**SPECIAL
DELIVERY!**
BOOSTERS AND CORE STAGE
ADDED TO ARTEMIS II STACK

NASA continues to make significant progress towards the Artemis II mission, which will be the first crewed launch to the Moon since 1972. In February, the twin solid rocket boosters for the SLS (Space Launch System) rocket completed stacking on the mobile launcher inside the Vehicle Assembly Building at NASA's Kennedy Space Center in Florida. At launch and during liftoff, the boosters, which each stand 177 feet tall, will provide the majority of the 8.8 million pounds of thrust to propel four astronauts inside the Orion spacecraft on their journey.

During stacking operations, which began Nov. 20, 2024, technicians used a massive overhead crane to lift each booster segment into place on mobile launcher 1, the 380-foot-tall structure used to process, assemble, and launch the SLS rocket and Orion spacecraft.

On March 23, technicians joined the core stage with the stacked solid rocket boosters for the mission at NASA Kennedy. Teams with NASA's Exploration Ground Systems Program and primary contractor Amentum used one of the five overhead cranes inside the spaceport's Vehicle Assembly Building to lift the rocket stage from the facility's transfer aisle to High Bay 3, where it was secured between the booster segments atop the launch tower. As the newest addition to the mobile launcher, the core stage is the largest component of the rocket, standing 212 feet tall.

Read more:

go.nasa.gov/3GaOnnB and go.nasa.gov/4iriBQK



Engineers and technicians with NASA's Exploration Ground Systems Program prepare to lift the left center center booster segment shown with the iconic NASA "worm" insignia for the agency's SLS (Space Launch System) rocket in the Vehicle Assembly Building at NASA's Kennedy Space Center in Florida in January.



The SLS (Space Launch System) core stage for the Artemis II mission is mated with the solid rocket boosters in the Vehicle Assembly Building at NASA's Kennedy Space Center in Florida.

ARTEMIS II UPPER STAGE DELIVERED TO KENNEDY

NASA received the upper stage for the agency's Artemis II SLS on March 9, supplied by Boeing and United Launch Alliance (ULA). Known as the interim cryogenic propulsion stage, it arrived at the Multi-Payload Processing Facility (MPPF) at NASA Kennedy. The upper stage traveled to the spaceport from ULA's Delta Operations Center at Cape Canaveral Space Force Station.

While at the MPPF, technicians will fuel the SLS upper stage with hydrazine for its reaction control system before transporting it to the center's Vehicle Assembly Building for integration with SLS rocket elements atop mobile launcher 1.

Read more: go.nasa.gov/3EDW7y1



The Artemis II interim cryogenic propulsion stage is transported from ULA's facilities to NASA's Kennedy Space Center in Florida. The Vehicle Assembly Building, where SLS (Space Launch System) and Orion are stacked, can be seen in the background.

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 super heavy-lift 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, called Gateway, 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's Marshall Space Flight Center in Huntsville, Alabama, 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.

Read more: go.nasa.gov/4jFYdwl



At NASA's Marshall Space Flight Center in Huntsville, Alabama, the payload adapter engineering development unit is installed into the 4697 test stand for structural testing. It is then attached to the large cylindrical structure which simulates the exploration upper stage interface.

NASA KENNEDY GROUND SYSTEMS PREPPING HARDWARE FOR ARTEMIS II, BEYOND

Teams with NASA are gaining momentum as work progresses toward future lunar missions for the benefit of humanity as numerous flight hardware shipments from across the world arrived at NASA Kennedy for the first crewed Artemis flight test and follow-on lunar missions. The skyline at NASA Kennedy will soon see added structures as teams build up the ground systems needed to support them.

Crews are well underway with parallel preparations for the Artemis II flight, as well as buildup of NASA's mobile

launcher 2 tower for use during the launch of the SLS Block 1B rocket. This version of NASA's rocket will use a more powerful upper stage to launch crew and more cargo on lunar missions. Technicians have begun upper stage umbilical connections testing that will help supply fuel and other commodities to the rocket while at the launch pad.

Read more: go.nasa.gov/4irtbqW



Teams at Bechtel National, Inc. use a crane to lift Module 4 into place atop the mobile launcher 2 tower chair at its park site on Jan. 3, 2025, at NASA's Kennedy Space Center in Florida. Module 4 is the first of seven modules that will be stacked vertically to make up the almost 400-foot launch tower that will be used beginning with the Artemis IV mission.

NASA STENNIS TEAMS INSTALL NEW PRODUCTION RS-25 ENGINE FOR UPCOMING HOT FIRE

NASA marked a key milestone Feb. 18 with installation of RS-25 engine No. E20001, the first new production engine to help power SLS on future Artemis missions to the Moon. The engine, built by lead SLS engines contractor L3Harris Technologies (formerly Aerojet Rocketdyne), was installed on the Fred Haise Test Stand at NASA's Stennis Space Center in Bay St. Louis, Mississippi, in preparation for acceptance testing next month. It represents the first of 24 new flight engines being built for missions, beginning with Artemis V.

The NASA Stennis test team will conduct a full-duration, 500-second hot fire, providing critical performance data to certify the engine for use on a future mission. During missions to the Moon, RS-25 engines fire for about 500 seconds and up to the 111% power level to help launch SLS, with the Orion spacecraft, into orbit.

Read more: go.nasa.gov/3C4PC6o



Teams at NASA's Stennis Space Center in Bay St. Louis, Mississippi, deliver, lift, and install the first new production RS-25 engine on the Fred Haise Test Stand on Feb. 18.

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.

He learned about TURBOCAM when company representatives made a presentation to his University of New Hampshire engineering class. "That's how I figured

out I knew I wanted to work at TURBOCAM and work with 5-axis machining," he says. "Machining amazes me."

Five axis machine tools can machine metal blanks from multiple angles to create geometrically complex parts for industrial hardware. TURBOCAM produces 10 core stage main engine turbomachinery components for the RS-25 main engine on SLS. L3Harris Technologies is the prime contractor for the RS-25 engines.

Read more: go.nasa.gov/42IHgSa



Jon Carabello has spent his entire career at TURBOCAM, which produces 10 turbomachinery components for the RS-25 core stage main engine on SLS (Space Launch System) .

WHAT'S NEW IN SLS SOCIAL MEDIA

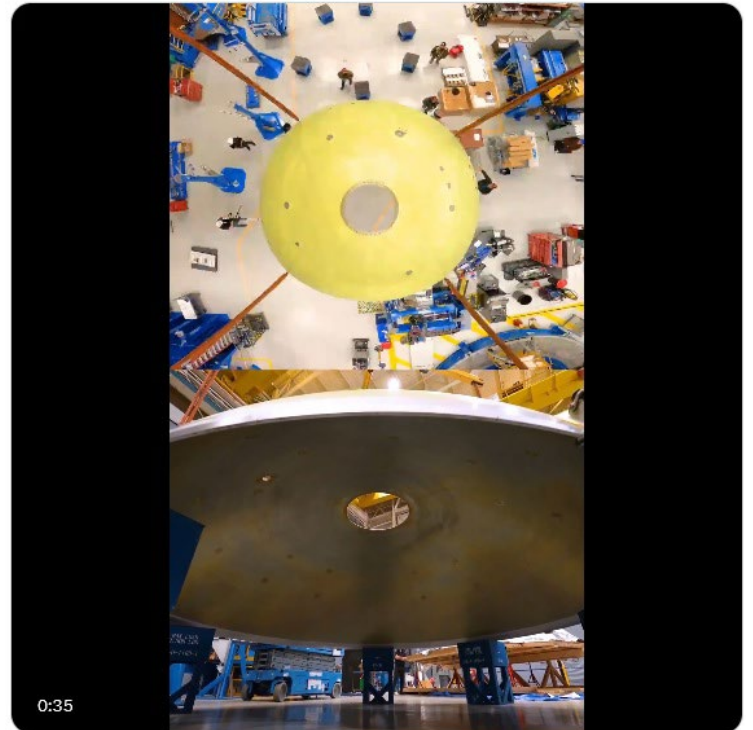
WATCH TEAMS WORK ON EXPLORATION UPPER STAGE DOME AT NASA MARSHALL

Technicians at NASA Marshall have been busy welding and working on the liquid oxygen forward dome for the exploration upper stage (EUS) structural test article (STA) in preparation for its move to NASA's Michoud Assembly Facility in New Orleans.

Read more: bit.ly/42kR8vq



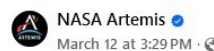
Technicians at @NASA_Marshall have been busy welding and working on the liquid oxygen forward dome for the Exploration Upper Stage (EUS) Structural Test Article (STA) in preparation for its move to NASA's Michoud Assembly Facility in New Orleans.



YOU CAN CREATE THE ARTEMIS II ZERO-G INDICATOR

Have you ever wanted to design something that could fly around the Moon? This is your opportunity. The Artemis II mission needs a zero gravity indicator – a plush toy – that will float inside NASA's Orion spacecraft once it has reached the weightlessness of space.

See more here: bit.ly/3RouxHW



Have you ever wanted to design something that could fly around the Moon?... See more

SLS ON THE ROAD

SLS REVS ITS ENGINES FOR THE HOUSTON AUTO SHOW



SLS team members attended the Houston Auto Show in Texas, Jan. 30 - Feb. 1. Along with other members of the Artemis campaign, they interacted with car enthusiasts and families, sharing the similarities and differences between high-performance rockets and automobiles.

PRACTICING RECOVERY AFTER THE MOON



SLS team members, along with other Artemis partners, exhibited at the Fleet Science Center in San Diego as part of the activities around the Underway Recovery Test 12. The exercise provided practice for the NASA and U.S. Navy recovery teams who will be retrieving the Artemis II astronauts and Orion spacecraft following their 10-day mission to the Moon and back in early 2026.

SPACEFLIGHT PARTNERS: Ultimate Hydroforming, Inc.

LOCATION: Augusta, Kansas

WHAT THEY DO FOR SLS:

Ultimate Hydroforming, Inc. (UHI) is a 100 percent woman-owned business. The UHI team consists of 170 highly skilled members across many disciplines. UHI is the supplier of the core stage system tunnel cover assemblies using tooling designs and extensive virtual formability simulations. UHI continues to be involved in ongoing product design collaborations in an effort to reduce the number of details in each assembly and add strength with a simplified assembly and significant weight reduction.



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

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... Stacked — Engineers at NASA's Kennedy Space Center in Florida completed stacking the twin SLS (Space Launch System) solid rocket boosters for the agency's Artemis II crewed test flight around the Moon. — [Read more](#)

2.. Special Delivery — The upper stage for NASA's SLS rocket arrived at the Multi Payload Processing Facility (MPPF) at Kennedy March 9. — [Read more](#)

1. The Next Big Thing — Technicians lifted the Artemis II core stage out of High Bay 2 and into a horizontal position in the Vehicle Assembly Building's transfer aisle at Kennedy to prepare for its next stage of integration. — [Read more](#)

Picture of the Month
We know how to wow

The Artemis II Core Stage was lifted into High Bay 3 inside the Vehicle Assembly Building at the Kennedy Space Center on Sunday, March 23, 2025 — [Read more](#)

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