



SPACE LAUNCH SYSTEM

JULY – SEPT 2024 HIGHLIGHTS

HARDWARE ON THE MOVE FOR THE MOON

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NASA rolled out the SLS (Space Launch System) rocket's core stage for the Artemis II test flight from its manufacturing facility in New Orleans July 16 for shipment to the agency's spaceport in Florida. It arrived at NASA's Kennedy Space Center in Florida July 23. The shipment is key progress on the path to NASA's first crewed mission to the Moon under the Artemis campaign.

Using highly specialized transporters, engineers maneuvered the giant core stage from inside NASA's Michoud Assembly Facility in New Orleans to the agency's Pegasus barge. The barge then ferried the stage more than 900 miles to NASA Kennedy, where engineers are preparing it in the Vehicle Assembly Building for attachment to other rocket and Orion spacecraft elements.

"With Artemis, we've set our sights on doing something big and incredibly complex that will inspire a new generation, advance our scientific endeavors, and move U.S. competitiveness forward," said Catherine Koerner, associate administrator for NASA's Exploration Systems Development Mission Directorate at NASA Headquarters in Washington. "The SLS rocket is a key component of our efforts to develop a long-term presence at the Moon."

The SLS rocket's core stage is the largest stage NASA has ever produced. At 212 feet tall, it consists of five major elements, including two huge propellant tanks that collectively hold more than 733,000 gallons of super-chilled liquid propellant to feed four RS-25 engines. During launch and flight, the stage will operate for just over eight minutes, producing more than 2 million pounds of thrust to propel four astronauts inside NASA's Orion spacecraft toward the Moon.

Technicians moved the SLS rocket stage from inside NASA Michoud on the 55th anniversary of the launch of Apollo 11 on July 16, 1969. The move of the rocket stage for Artemis marks the first time since the Apollo Program that a fully assembled Moon rocket stage for a crewed mission rolled out from NASA Michoud.

Read more: go.nasa.gov/3A41m80



NASA SLS Stages Manager Steve Wofford (center-right) hands off a ceremonial baton to Exploration Ground Systems Senior Vehicle Operations Manager Clif Lanham (center-left) as the Artemis II SLS core stage arrives at NASA's Kennedy Space Center in Florida.



Teams transport NASA's SLS (Space Launch System) core stage into the Vehicle Assembly Building at the agency's Kennedy Space Center in Florida July 24, 2024.



Two F-15 Strike Eagle fighter jets from Naval Air Station Joint Reserve Base New Orleans in Belle Chasse, Louisiana, fly over the Artemis II SLS core stage during its transportation to the Pegasus barge at NASA's Michoud Assembly Facility in New Orleans July 16.

ROCKET HARDWARE FOR FUTURE ARTEMIS FLIGHTS ARRIVES AT NASA'S KENNEDY SPACE CENTER



The Artemis IV core stage engine section, Artemis III core stage boattail, and Artemis II launch vehicle stage adapter are unloaded off the Pegasus barge at NASA's Kennedy Space Center in Florida.

NASA is making strides with the [Artemis campaign](#) as key components for the SLS rocket continue to make their way to NASA Kennedy. Teams with NASA and Boeing loaded the core stage boattail for Artemis III and the core stage engine section for Artemis IV onto the Pegasus barge at NASA Michoud Aug. 28. The hardware arrived at Kennedy Sept. 5.

The core stage hardware joins the launch vehicle stage adapter for Artemis II, which was moved onto the barge at NASA's Marshall Space Flight Center in Huntsville,

Alabama, Aug. 21. Pegasus ferried the multi-mission rocket hardware more than 900 miles to the Space Coast of Florida. Teams with the NASA's Exploration Ground Systems Program are preparing the launch vehicle stage adapter for Artemis II stacking operations inside the Vehicle Assembly Building, while the core stage hardware was moved to Kennedy's Space Systems Processing Facility for outfitting. Beginning with Artemis III, core stages will undergo final assembly at Kennedy.

Read more: [go.nasa.gov/4f9pXqM](https://www.nasa.gov/4f9pXqM)

FROM ONE CREW TO ANOTHER: ARTEMIS II ASTRONAUTS MEET NASA BARGE CREW

Members of the Artemis II crew met with the crew of NASA's Pegasus barge prior to their departure to deliver the core stage of SLS to the Space Coast. NASA astronaut and pilot of the Artemis II mission Victor Glover met the crew July 15.

NASA astronaut Reid Wiseman, commander, and CSA (Canadian Space Agency) astronaut Jeremy Hansen, mission specialist, visited the barge July 16 shortly before the flight hardware was loaded onto it.

Pegasus, which was previously used to ferry space shuttle tanks, was modified and refurbished to ferry the SLS rocket's massive core stage. At 212 feet in length and 27.6 feet in diameter, the Moon rocket stage is more than 50 feet longer than the space shuttle external tank.

Read more: go.nasa.gov/3NrAPol



NASA astronaut and Artemis II Pilot Victor Glover (center-left) meets members of the Pegasus barge crew prior to the loading of the Artemis II SLS core stage at NASA Michoud July 15.



The Pegasus crew and team, from left, includes Kelton Hutchinson, Jeffery Whitehead, Jason Dickerson, Arlan Cochran, John Brunson, NASA astronaut Reid Wiseman, Marc Verhage, Terry Fitzgerald, Scott Ledet, CSA (Canadian Space Agency) astronaut Jeremy Hansen, Wil Daly, Ashley Marlal, Farid Sayah, Jamie Crews, Joe Robinson, and Nick Owen.

NASA MICHLOUD CONTINUES WORK ON EVOLVED STAGE OF SLS ROCKET



Manufacturing equipment that will be used to build components for the SLS rocket for future Artemis missions is being installed at NASA's Michoud Assembly Facility in New Orleans.

Manufacturing equipment that will be used to build components for SLS for future Artemis missions is being installed at NASA Michoud.

The novel tooling will be used to produce the SLS rocket's advanced exploration upper stage, or EUS, in the factory's new manufacturing area. The EUS will serve as the upper, or in-space, stage for all Block 1B and Block 2 SLS flights in both crew and cargo configurations.

In tandem, NASA and Boeing, the SLS lead contractor for the core stage and exploration upper stage, are producing structural test articles and flight hardware structures for the upper stage at NASA Michoud and NASA Marshall. Early manufacturing is already underway at NASA Michoud while preparations for an engine-firing test series for the upper stage are in progress nearby at NASA's Stennis Space Center in Bay St. Louis, Mississippi.

Read more: go.nasa.gov/3Uc3m4S

I AM ARTEMIS: JOHN CAMPBELL



John Campbell, a logistics engineer at NASA's Marshall Space Flight Center in Huntsville, Alabama, stands on NASA's Pegasus barge July 15.

How do you move SLS's massive 212-foot-long core stage across the country? You do it with a 300-foot-long barge. However, NASA's Pegasus barge isn't just any barge. It's a vessel with a history, and John Campbell, a logistics engineer for the agency based at NASA Marshall is one of the few people who get to be a part of its legacy.

For Campbell, this journey is more than just a job – it's a lifelong passion realized. "Ever since I was a boy, I've been fascinated by engineering," he said. "But to be entrusted with managing NASA's Pegasus barge, transporting history – making hardware for human

spaceflight across state lines and waterways – is something I never imagined."

NASA has used barges to ferry the large and heavy hardware elements of its rockets since the Apollo Program. Replacing the agency's Poseidon and Orion barges, Pegasus was originally crafted for the Space Shuttle Program and updated in recent years to help usher in the Artemis Generation and accommodate the mammoth dimensions of the SLS core stage.

Read more: go.nasa.gov/3Ubw1Hn

I AM ARTEMIS: *CHRIS PEREIRA*



As RS-25's operations integrator, Chris Pereira is responsible for ensuring that the many pieces of the engine program – from tracking on-time procurement of supplies and labor loads to coordinating priorities on various in-demand machine centers – come together to deliver a quality product.

Chris Pereira can personally attest to the immense gravitational attraction of black holes. He's been in love with space ever since he saw a video on the topic in a high school science class.

But it wasn't just any science class. It was one specially designed for English learners.

"I was born and raised in Guatemala," Pereira said. "I came here at 14 unable to speak any English."

Pereira did not know how to navigate the U.S. educational system either, but after that class, he was certain he wanted a career in space.

Thus began a journey that ultimately landed him at L3Harris Technologies, where he works in the Aerojet Rocketdyne segment as an engineer and operations integrator on the RS-25 engine – used to power the core stage of SLS that will launch astronauts to the Moon under NASA's Artemis campaign.

Read more: go.nasa.gov/4f5mXfa

I AM ARTEMIS: *JULIA KHODABANDEH*



Julia Khodabandeh once adorned her walls with rockets, fighter jets, and Air Force pilots. Now, she is the solid rocket motor lead for SLS.

Unlike most of her friends in the 80s who covered their walls with posters of bands, Julia Khodabandeh plastered hers with posters of rockets and fighter jets.

Khodabandeh's interest in aerospace and aeronautics developed at a young age. Her parents were avid fans of the Apollo Program and were heavily invested in her education. Khodabandeh's father always encouraged her to tackle math and science problems without fear. She recalls him telling her that "you can take any problem and break it into smaller pieces." It's a philosophy she still uses in solving problems today.

"When I was growing up, my dad would make practice tests the night before my exams," she said. "It helped

me feel more prepared. The confidence I developed for math and science and my passion for aeronautics and aerospace, led me to a NASA career."

The better part of her 24-year career with NASA has been dedicated to solid rocket boosters at NASA Marshall. Over the past 10 years, she helped develop the twin solid rocket boosters for SLS, which are the largest and most powerful solid propellant boosters ever flown. They stand at 177 feet tall, and individually generate a maximum thrust of 3.6 million pounds. Together, the twin boosters provide more than 75% of the total thrust to launch SLS for NASA's Artemis campaign to the Moon.

Read more: go.nasa.gov/4eSKYq3

WHAT'S NEW IN SLS SOCIAL MEDIA

VEHICLE ASSEMBLY BUILDING HIGH BAY 2 PREPARED FOR SLS ASSEMBLY



Teams at NASA's Kennedy Space Center in Florida have been updating High Bay 2 in the Vehicle Assembly Building to allow for vertical assembly of the SLS core stage beginning with Artemis III. All major structures for the core stage will continue to be produced and manufactured at NASA's Michoud Assembly Facility in New Orleans. Watch the video here: bit.ly/408kXOZ

TECHNICIANS WORK ON QUALIFICATION PANELS FOR THE SLS PAYLOAD ADAPTER



Work is underway on the qualification article panels for the SLS payload adapter, set to make its debut with Artemis IV. The panels are made of a metallic honeycomb structure at their thickest point, tapering down to a lightweight carbon fiber layer at each end. Watch as technicians at NASA Marshall work on the first of eight panels: bit.ly/4h2q35k

SLS ON THE ROAD

SLS MAKES NEW CONNECTIONS AT MANUFACTURING CONFERENCE



SLS team members, including SLS Associate Manager Dr. Sharon Cobb and retired NASA astronaut Don Thomas, visited more than 89,000 people, including 14,000 students, at the International Manufacturing Technology Show (IMTS) in Chicago Sept. 9-14. Cobb also delivered a keynote address and participated in an event on the main stage.

SLS SAYS “THANK YOU” TO CONNECTICUT SUPPLIERS



SLS team members, along with other Artemis partners, visited a total of seven Artemis suppliers in Connecticut Aug. 12-15 to recognize their efforts in the success of the Artemis I mission. SLS also participated in a community event held August 13 at Goodwin College in Hartford. Guests at the community event participated in a STEM hour and heard about NASA's Artemis campaign during a panel discussion.

SPACEFLIGHT PARTNERS: *Genesis Systems Group LLC*

LOCATION: Bennington, Vermont



WHAT THEY DO FOR SLS:

Genesis Systems, an IPG Company, developed and built a mobile robotic non-destructive inspection system in partnership with Boeing where the entire robot system is transported to the point of inspection. There, the robotic system uses a tool at the end of a robotic arm to inspect the large SLS core stage hardware. The robot manipulates the tool along the surface of the part, triggering the instrumentation at programmed intervals and automatically communicating the position of the sensor package to the data acquisition system. The system is capable of inspecting each 24-foot linear weld and each section of circumferential weld without interruption.



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Top Three Countdown

What you need to know right now

- 3... Way of the Future** — Core stage hardware for future Artemis missions join the launch vehicle stage adapter for Artemis II on the Pegasus barge. — [Read more](#)
- 2. Aim High!** — At NASA's Kennedy Space Center in Florida, technicians begin preparing for upcoming assembly activities for future Artemis missions in the Vertical Assembly Building. — [Read more](#)
- 1. Moving Day!** — On August 21, NASA rolled out the SLS rocket's launch vehicle stage adapter for the Artemis II mission from NASA's Marshall Space Flight Center in Huntsville, Alabama, for shipment to the agency's spaceport in Florida. — [Read more](#)

Picture of the Month


We know how to wow



Crews moved the cone-shaped launch vehicle stage adapter out of NASA Marshall's building 4708 to the agency's Pegasus barge August 21.

What's Trending

The best of SLS social media this month



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

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