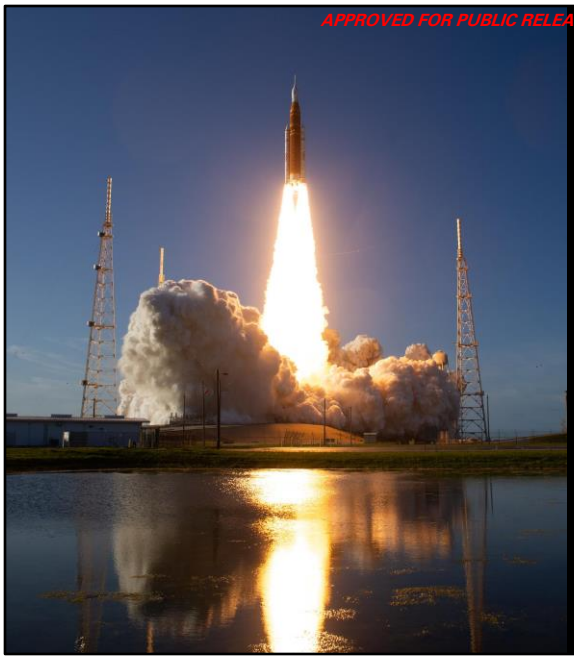

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NASA'S SLS (SPACE LAUNCH SYSTEM) ROCKET READY FOR ARTEMIS II LUNAR MISSION

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Thank you for this opportunity to talk the Artemis lunar exploration campaign. There's a lot going on right now, so let's get to it.

We just launched the first astronauts to the Moon since December 1972. The four astronauts flew inside their Orion spacecraft, which they named Integrity, and on top of a Space Launch System rocket. SLS is a critical national capability for the country's return of humans to the Moon. It is the only rocket in the world capable of launching astronauts to the Moon in a single launch.

OVERVIEW

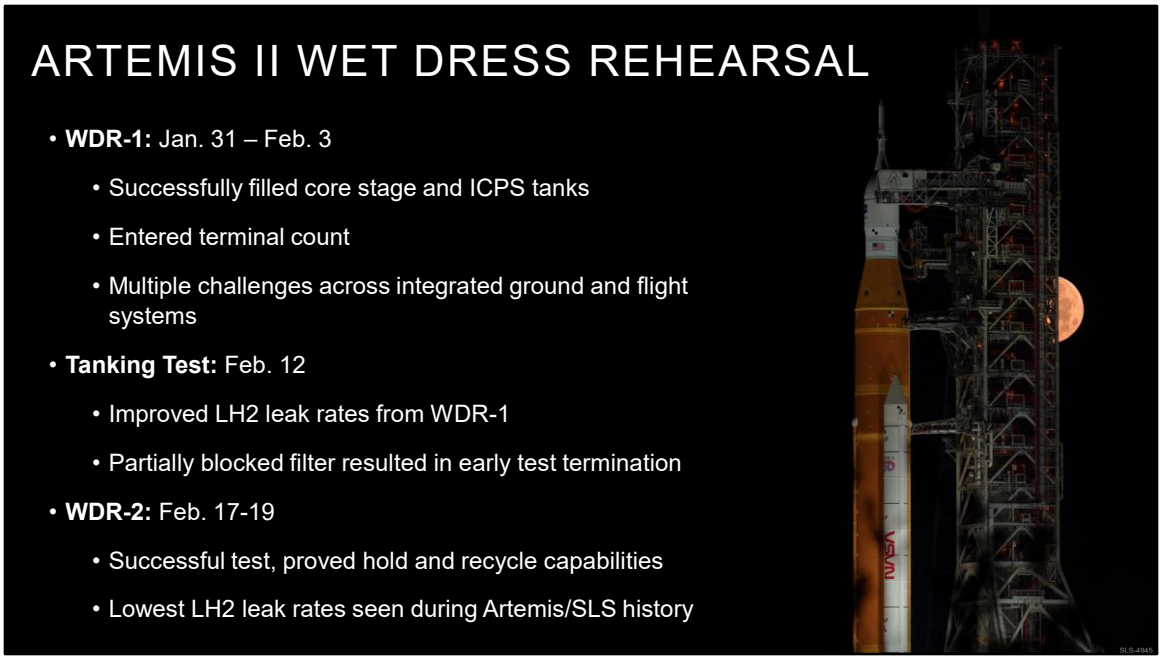
- SLS Basics
- Artemis II Wet Dress Rehearsal
- Artemis II Mission Statistics
- Artemis II Secondary Payloads
- Progress to Artemis III

SLS (SPACE LAUNCH SYSTEM)

BASIC STATISTICS

- **Height:** 322 ft. including Orion spacecraft (Block 1)
- **Diameter:** Core stage - 27.6 ft.; Boosters - 12 ft.
- **Thrust:** 8.8 M lbs.
- **Weight:** 5.75 M lbs. at liftoff; 3.5 M lbs. unfueled with Orion
- **Upper Stage:** Interim cryogenic propulsion stage (ICPS) (Block 1)
- **Payload:** Orion spacecraft and more
- **Payload Capacity:** 59k lbs. to TLI in crewed Block 1 configuration

(VIDEO: ARTEMIS II HYPE; 1:34 RUNTIME)



Artemis II WDR

- **WDR-1: Jan. 31 - Feb. 3**
  - Teams successfully filled all tanks in both the core stage and ICPS, and the closeout crew successfully rehearsed closure of the command module and launch abort system hatches.
  - Liquid hydrogen leaks at the mobile launcher's tail service mast umbilical – the interface between the mobile launcher and SLS – occurred.
  - A valve associated with the crew module hatch pressurization had to be replaced
  - Dropouts of audio communication channels had to be troubleshooted.
  - Despite the challenges, the team was able to get into the terminal

countdown

- At T-5 minutes, 15 seconds, when the core stage liquid hydrogen tank was pressurized for flight, the leak rate of the LH2 spiked beyond preset acceptable limits. A hold was called, and the test was terminated.

- Post-test repairs replaced seals at the SLS-tail service mast umbilical interface

- **Tanking Test: Feb. 12**

  - Conducted to evaluate new TSMU LH2 seals

  - As the LH2 loading progressed from slow fill to fast fill, a pressure difference was detected across one of the filters in the ground system lines. The filter was believed to be partially blocked.

  - To prevent any foreign object debris (FOD) from reaching the launch vehicle, a hold was initiated and flow of LH2 to the vehicle was stopped.

  - Multiple mitigation techniques were exercised, and the filter was scanned using spectroscopy in an attempt to characterize the blockage.

  - In order to properly protect the vehicle, it was decided not to attempt to load the vehicle any further.

  - Some of the test objectives were accomplished with the propellant that had not boiled off during draining operations, including verification of the replacement seals.

  - Filter in the GSE replaced after the test

- **WDR-2: Feb. 17-19**

  - Incredibly successful test, with hydrogen leak rates peaking at approximately XX percent, which occurred briefly at pre-pressurization of the tanks during the terminal count portion of the

test.

- Outside that excursion, the average leak rate was less than XX percent, the lowest seen during the Artemis era and on the ground system-SLS system.

- Also successfully tested SLS, Orion, and ground system procedures, including holding the countdown after entering terminal count and then proceeding to the designated test cutoff point at T-33 seconds.

- At the cutoff point, the count was recycled to T-10 minutes and repeated to prove the system's capabilities to recycle.

- Terminal count resumed, and a final nominal cutoff was given at T-29 seconds. The test was complete.

ARTEMIS II MISSON STATS

OVERALL:

- Flew 694,481 miles through space
- Flew 252,756 miles from Earth (new record) and within 4,067 miles of the Moon
- Collection of human data in lunar vicinity, transit to and from the Moon, and through reentry and splashdown

SLS:

- Orbital Insertion Velocity and Apogee: 99.9% accuracy
- SLS put Orion exactly where it needed to be in space

LUNAR OBSERVATION:

- First in-person study of many features
- Witnessed Earthset, Earthrise, and solar eclipse from lunar vicinity

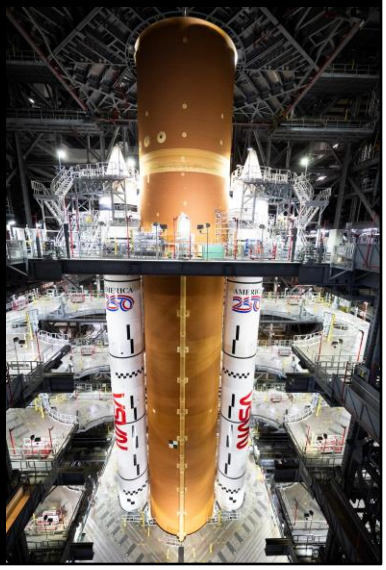
SLS performed extremely well AGAIN on it's second flight.

While engineers are still pouring through the data, preliminary indications are that SLS performed extremely well and that it delivered Orion to the exact point in space it needed to go.

Likewise, the entire mission was a terrific success, that gave confidence to the SLS and Orion systems and engaged the world!

ARTEMIS II SLS NOTABLE DIFFERENCES

- **ADDED:** Optical targets on the ICPS and Orion stage adapter
- **ADDED:** Strakes to core stage intertank
- **ADDED:** America 250 emblem
- **ADJUSTED:** Booster separation motor angle
- **ADJUSTED:** Booster jettison time
- **ENABLED:** Emergency detection system on ICPS
- **IMPROVED:** Navigation and communications
- **UPDATED:** Core stage power distribution control unit



The Artemis II SLS

- **ADDED:** Optical targets on the ICPS and OSA: The astronauts aboard the Orion spacecraft will use the targets as visual cues as they manually pilot Orion around the upper stage and practice maneuvers to inform docking operations for Artemis III. One target was added to the ICPS for Orion's planned side-approach maneuvers to the stage, and one was installed on the OSA's diaphragm. The latter target will enable centerline maneuvers with the upper stage and adapter

- **ADDED:** Strakes. During the Artemis I test flight, the SLS experienced higher-than-expected vibrations caused by unsteady airflow around the forward booster attach struts. To steady the airflow, a pair of approximately seven-foot-five-inch-long strakes flanking the two booster's forward attach points on the SLS intertank will smooth vibrations during ascent, and the rocket's electronics system was requalified to endure higher levels of vibrations

- **ADDED:** America 250 emblem. America 250 commemorates the 250th

anniversary of the signing of the Declaration of Independence with NASA celebrating the "Spirit of Innovation" theme to inspire future generations

- **ADJUSTED:** Booster separation motor angle adjustment: The separation motors on the solid rocket boosters were angled an additional 15 degrees to ensure separation clearance from the core stage

- **ADJUSTED:** Booster jettison time: SLS will jettison the spent solid rocket boosters five seconds earlier during Artemis II ascent than occurred during Artemis I. Separating the boosters several seconds closer to the end of their burn will give engineers flight data to correlate with projections that shedding the boosters sooner will yield approximately 700 pounds to TLI for future SLS flights

- **ENABLED:** Emergency detection system on ICPS enabled: The system allows the rocket to sense and respond to problems and notify the crew. Additionally, the flight safety system adds a time delay to the self-destruct system to allow time for Orion's escape system to pull the capsule to safety in event of an abort

- **IMPROVED:** Navigation and communications: SLS will fly with an improved navigation system and repositioned antennas. The adjusted location of the antennas on the rocket ensures continuous communications with NASA ground stations and the U.S. Space Force's Space Launch Delta 45, which controls launches along the Eastern Range

- **UPDATED:** Core stage power distribution control unit: Mounted in the intertank, it controls power to the rocket's other electronics and protects against electrical hazards

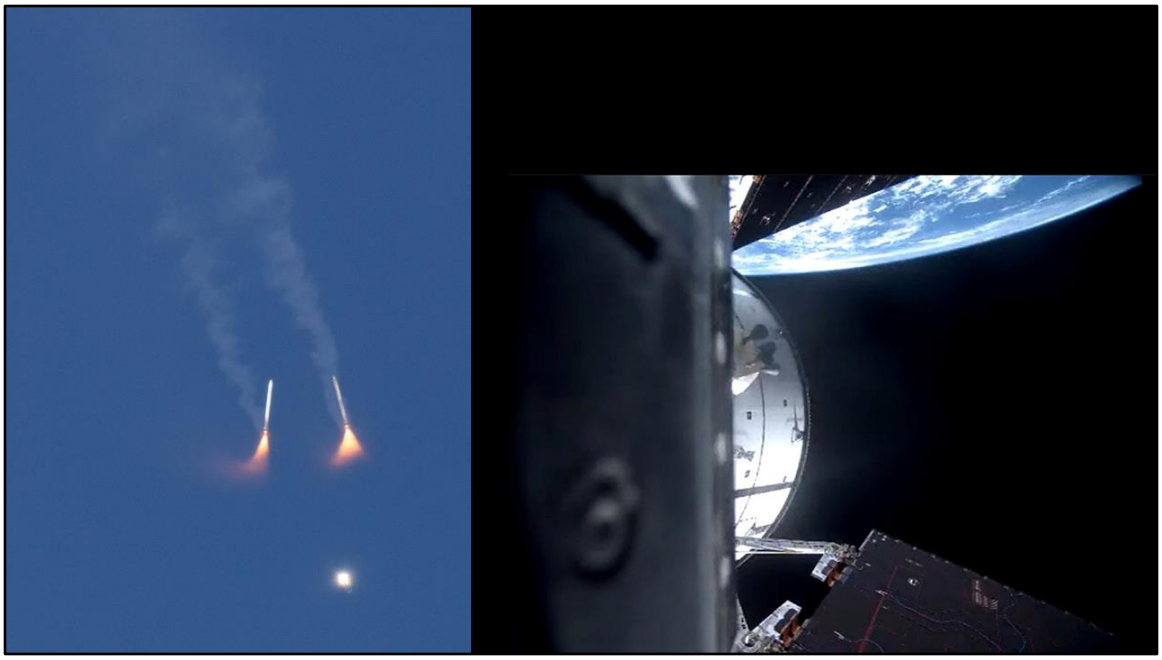
ARTEMIS II SECONDARY PAYLOADS

One of the really great things about SLS is our ability to launch secondary payloads. It's an important way for us to engage with additional partners, and in return, they can perform some remarkable science. We have a team within SLS whose whole job is to work with our payload developers to ensure they are meeting the requirements needed to fly.

On Artemis II, we launched and deployed four 12U CubeSats, built by some of our international partners South Korea, Argentina, Germany, and Saudi Arabia. I defer to the payload developers to provide more information about the spacecraft.

(VIDEO: ASCENT CLIPS; 1:57)

Segment 1 – Ignition, Tower Clear, Roll Maneuver
Segment 2 – Booster burn-out and separation
Segment 3 – Service module fairing jettison and launch abort system jettison



PICTURE LEFT: Solid rocket booster separation, approximately 2 minutes into flight

PICTURE RIGHT: SLS ICPS is seen below the Orion spacecraft on the first day of flight

The solid rocket boosters separated approximately 2 minutes into flight. MECO was at approximately T+8 minutes, and the core stage separated a few seconds later. The ICPS upper stage lifted Orion's orbit high into space before becoming the target for the proximity operations demonstration.

After translunar injection, the astronauts had the opportunity to view Earth. This is what they saw!

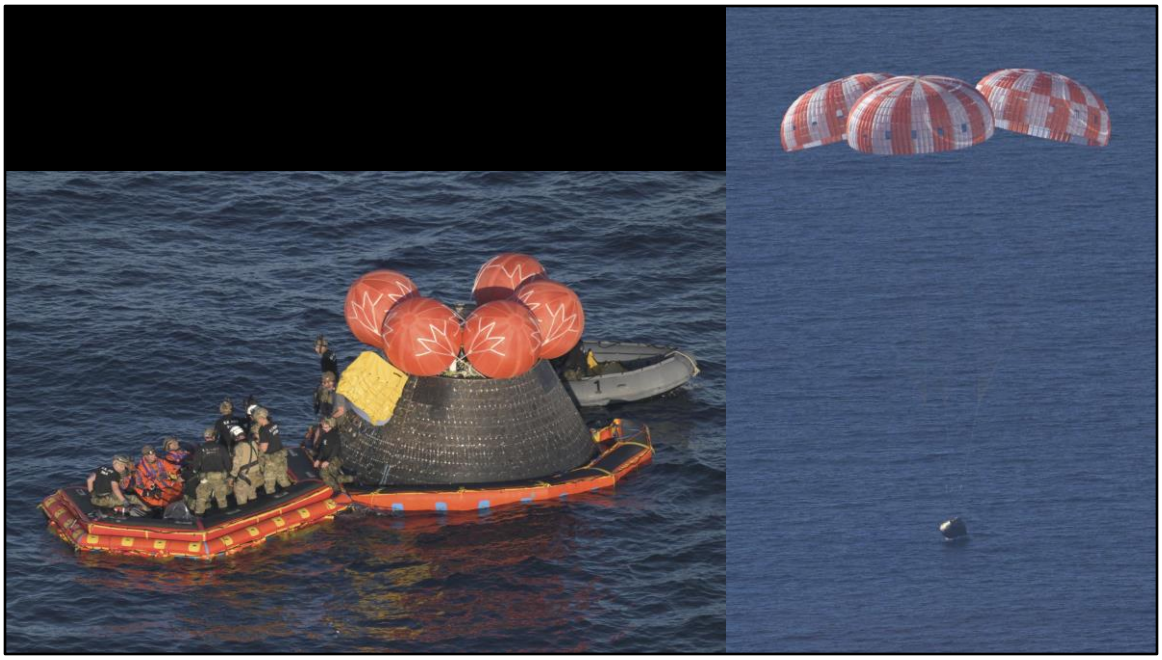
In order to get the best views possible during observations, the crew dimmed the lights on Orion so their eyes were adjusted.

Christina Koch is seen using one of the tablets, while another crew member is looking out a window.

This photo shows Earthset during the lunar flyby on Flight Day 6. The astronauts' trajectory is taking them around the far side of the Moon, and minutes after this photo was taken, Earth was no longer visible.

The Artemis II astronauts were not the first to witness an eclipse from lunar vicinity, but they were the first in more than 50 years.

The science community is investigating whether the glow seen around the Moon is due to the Sun's corona, zodiacal light, or a combination of the two. Also visible are stars, typically too faint to see when imaging the Moon, but with the Moon in darkness stars are readily imaged. This unique vantage point provides both a striking visual and a valuable opportunity for astronauts to document their observations during humanity's return to deep space. The faint glow of the nearside of the Moon is visible in this image, having been illuminated by light reflected off the Earth.



The Artemis II mission splashed down at 8:07 p.m. EDT on April 10, concluding a mission of nearly 700,000 miles through space, spanning more than 9 days.

They landed in the Pacific Ocean, off the coast of San Diego. The Orion recovery systems slowed the spacecraft from over 24,000 miles an hour to approximately 20 miles an hour in less than 20 minutes.

U.S. Navy divers and crews picked up the crew and recovered Orion.

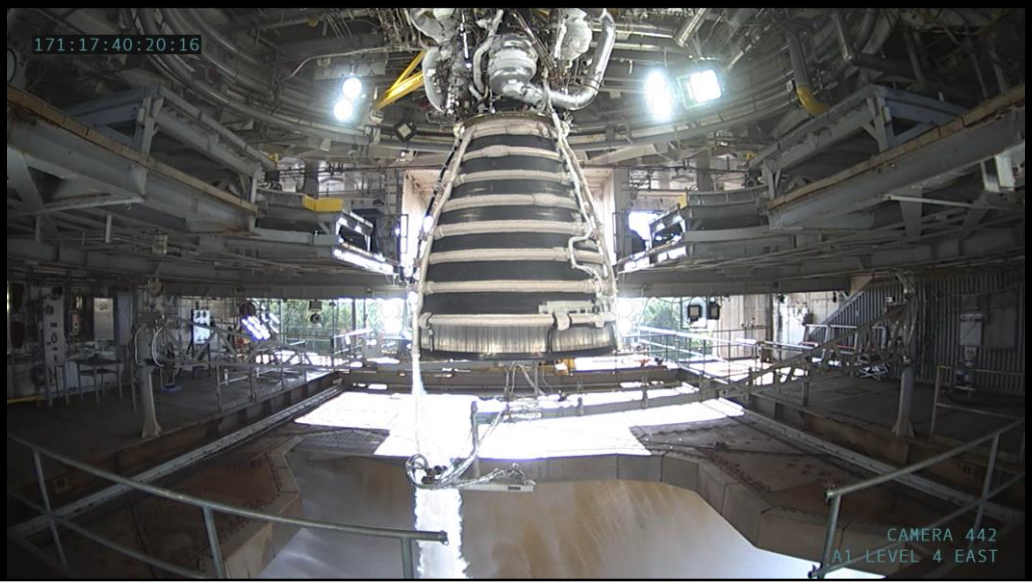
TOP: Artemis II commander, Reid Wiseman, and mission specialist, Jeremy Hansen, seen on the flight deck of the USS John P. Murtha after a short ride from Orion.
BOTTOM: Artemis II pilot, Victor Glover, and mission specialist, Christina Koch, seen on the flight deck of the USS John P. Murtha after a short ride from Orion.

SLS PROGRESS TOWARD ARTEMIS III

SLS has had a terrific year! Our team members are working hard to ensure the Artemis III SLS is ready for a 2027 launch.

- **RIGHT:** In April, the core stage top 4/5ths was transported from Michoud Assembly Facility to NASA Kennedy for integration with its engine section and RS-25 engines
- **LEFT:** Also in April, portions of the solid rocket boosters were delivered to NASA Kennedy via train. The remaining segments will be shipped later this summer.
- During the summer, we will ship the launch vehicle stage adapter and the Orion stage adapter, both of which are made right here in North Alabama
- Stacking is expected to begin later this year

RS-25 CERTIFICATION

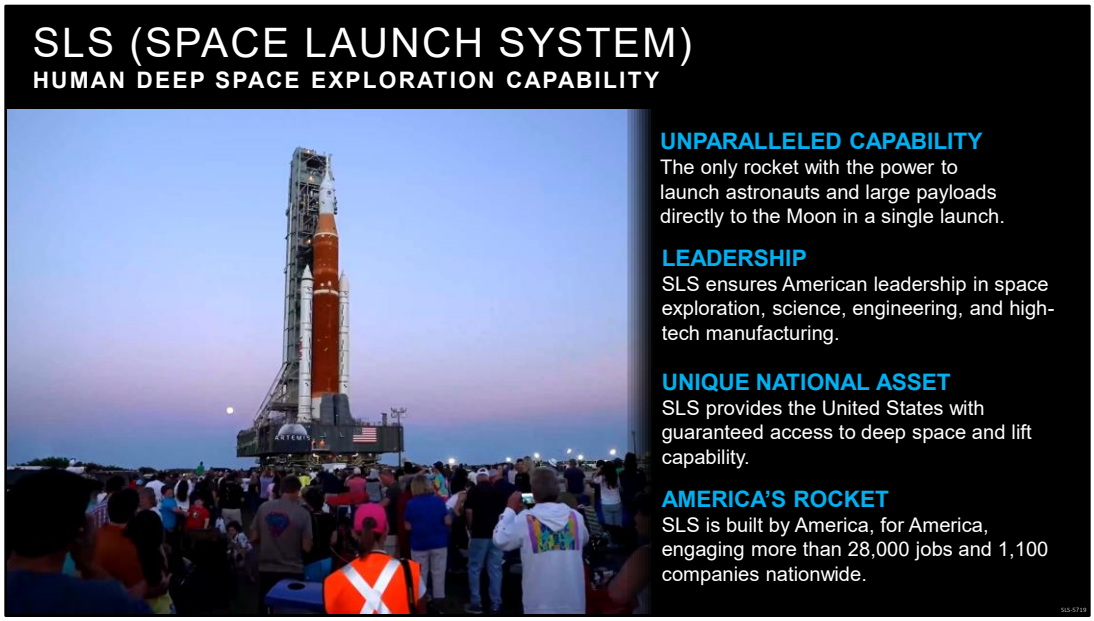


(JUNE 2025 RS-25 HOT FIRE VIDEO WITH SOUND; 57 SECONDS)

In June 2025, we successfully completed an acceptance test of the first flight new production engine at NASA's Stennis Space Center in Bay St. Louis, Mississippi. 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.

In November, the second flight new-production engine was also tested at Stennis, completing a 500-second test fire.

The new engine production program is realizing a cost savings of at least 30 percent and reduced production time due to streamlined manufacturing as well as advances in technology, including additive manufacturing.



- **Unparalleled Capability**
  - SLS is the only rocket with the power and capability required to carry astronauts AND/OR large payloads to deep space (astronauts on exploration missions or payloads for scientific missions) in a single launch.
  - Block I (>27t) is the workhorse for the first phase of the Artemis exploration missions.
  - If you're going to send big things far, you need super heavy lift.

- **Soft Power**
  - Ensures American leadership in deep space exploration.
  - Sets the conditions for commercial markets to emerge.
  - Funding space exploration is a prudent investment in return for international leadership, research, and development.

- **Unique National Asset**
  - SLS is a foundational asset for America's space program and a critical next step for exploring the solar system and the cosmos.
  - SLS, along with EGS, ensures our Nation's access to deep space.
  - Critical piece of the architecture that enables us to deliver reusability to the Moon (all the things needed).
  - Transformational strategic capability for US
  - SLS restores U.S. access to the surface of Earth's nearest neighbor for the first time in almost five decades.

- **America's Rocket**
  - SLS belongs to the American taxpayer.
  - SLS missions are transparent, and the entire nation can join the journey.

Thank you for allowing me to talk with you today!

Here's how you can keep an eye on us… our social media platforms. We're putting new pictures and stories out every day.