

Evolved adapter for future NASA space launch system flights readied for testing

March 13 2024, by Lee Mohon



Credit: NASA/Sam Lott

A test version of the universal stage adapter for NASA's more powerful version of its SLS (Space Launch System) rocket arrived at Building 4619 at NASA's Marshall Space Flight Center in Huntsville, Alabama, on Feb. 22 from Leidos in Decatur, Alabama. The universal stage adapter will connect the rocket's upgraded in-space propulsion stage, called the exploration upper stage, to NASA's Orion spacecraft as part of

the evolved Block 1B configuration of the SLS rocket.

It will also serve as a compartment capable of accommodating large payloads, such as modules or other exploration spacecraft. The SLS Block 1B variant will debut on Artemis IV and will increase SLS's payload capability to send more than 84,000 pounds to the moon in a single launch.

In Building 4619's Load Test Annex High Bay at Marshall, the development test article will first undergo modal testing that will shake the hardware to validate dynamic models. Later, during ultimate load testing, force will be applied vertically and to the sides of the hardware. Unlike the flight hardware, the development test article has flaws intentionally included in its design, which will help engineers verify that the adapter can withstand the extreme forces it will face during launch and flight.

The test article joins an already-rich history of rocket [hardware](#) that has undergone high-and-low pressure, acoustic, and extreme temperature testing in the multipurpose, high-bay test facility; it will be tested in the same location that once bent, compressed, and torqued the core stage intertank [test](#) article for SLS rocket's Block 1 configuration. Leidos, the prime contractor for the universal stage adapter, manufactured the full-scale prototype at its Aerospace Structures Complex in Decatur.

NASA is working to land the first woman, first person of color, and its first international partner astronaut on the moon under Artemis. SLS is part of NASA's backbone for deep space exploration, along with the Orion spacecraft and Gateway in orbit around the moon and commercial human landing systems, next-generational spacesuits, and rovers on the lunar surface. SLS is the only rocket that can send Orion, astronauts, and supplies to the moon in a single launch.

Provided by NASA

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