NASAfacts

SLS (Space Launch System) Orion Stage Adapter

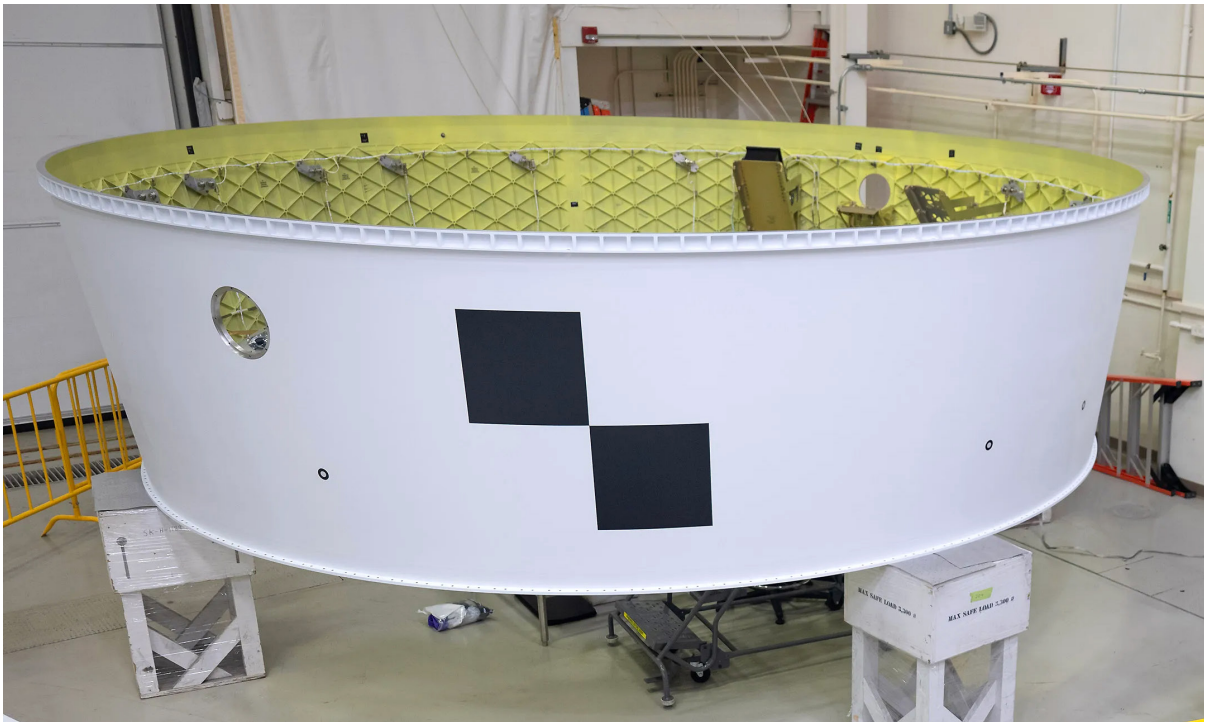
The OSA (Orion stage adapter), built by NASA's Marshall Space Flight Center in Huntsville, Alabama, connects the SLS (Space Launch System) rocket's interim cryogenic propulsion stage to NASA's Orion spacecraft. The small ring structure is the topmost portion of the SLS rocket. A diaphragm within the adapter provides a barrier and protects Orion from gases generated during launch, such as hydrogen. The adapter can also carry small payloads, called CubeSats, to deep space.

The OSA can potentially accommodate up to 17 CubeSats in a combination of 6U and 12U sizes (one unit, or U, is 10 cm x 10 cm x 10 cm). The actual number of CubeSats manifested on a flight depends on several factors, including mission parameters and CubeSat weight. SLS launched 10 CubeSats as secondary payloads on its Artemis I mission in 2022.

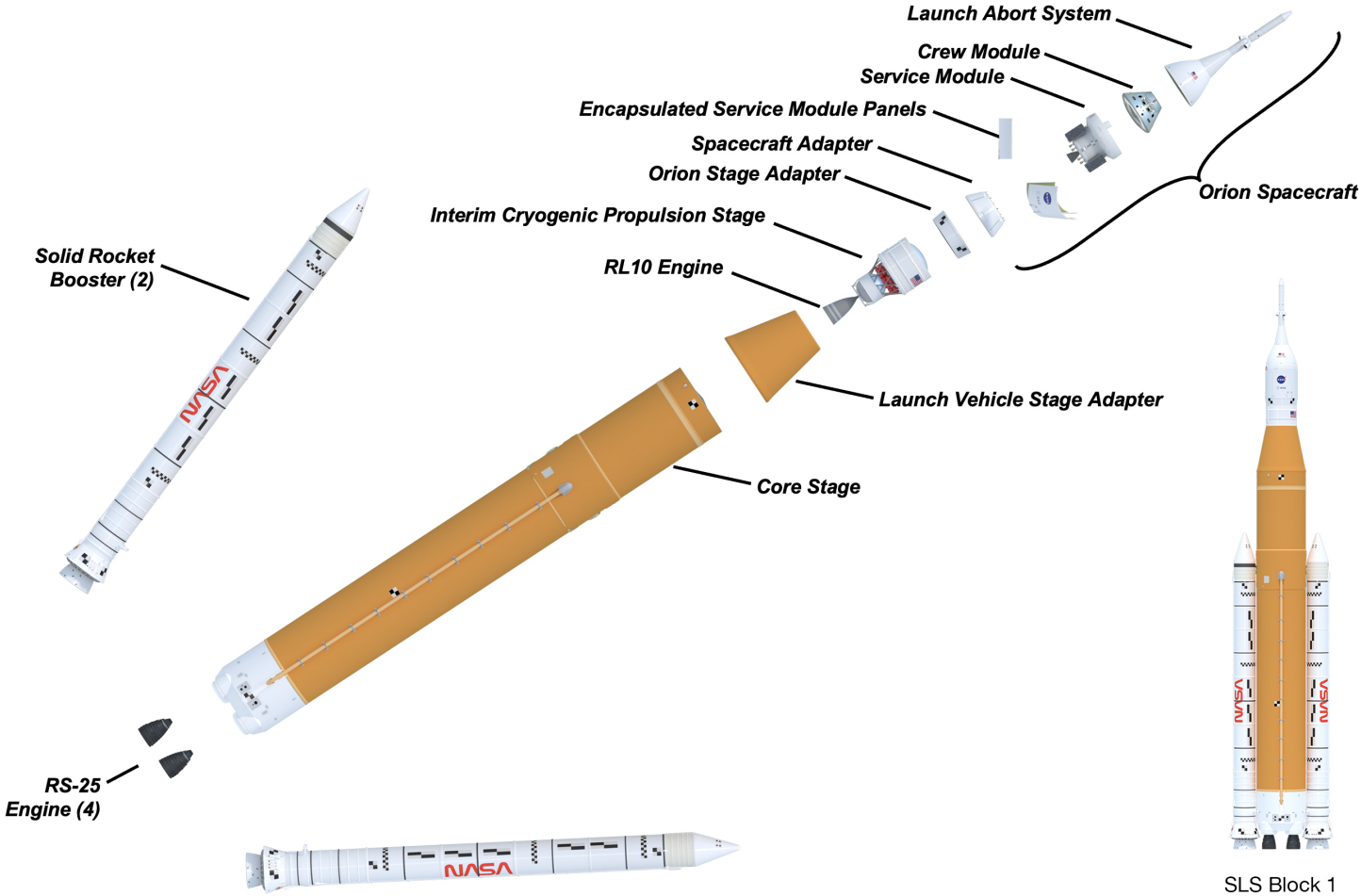
The SLS Program provides a comprehensive secondary payload deployment system for CubeSats, including mounting brackets for commercial off-the-shelf dispensers, cable harnesses, a vibration isolation system, and an avionics unit.

CubeSats can play a key role in the Artemis missions by gathering data and demonstrating potential technologies that reduce risk, increase effectiveness, and improve the design of robotic and human space exploration missions.

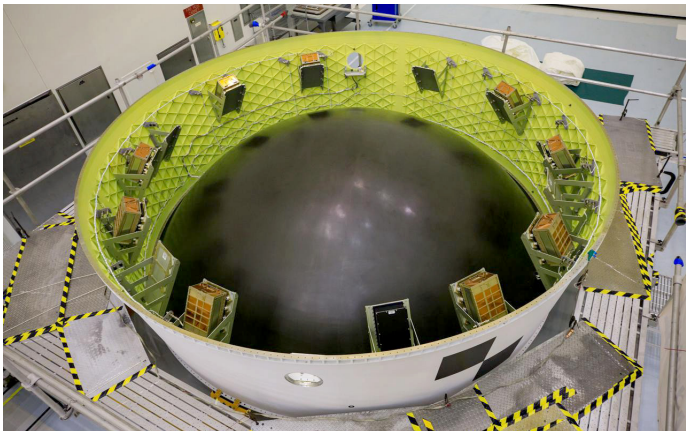
The OSA for the Artemis II test flight, the first crewed flight of Artemis, features a critical auxiliary target. This target will be used by Artemis astronauts during a proximity operations demonstration intended to test Orion's handling capabilities.



The Artemis II OSA (Orion stage adapter), built at NASA's Marshall Space Flight Center in Huntsville, Alabama.



SLS Block 1



The OSA can accommodate small satellites, called CubeSats, that conduct science experiments and technology demonstrations. The CubeSats pictured above were launched during the Artemis I mission.

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 the only rocket that can send Orion, astronauts, and supplies to the Moon in a single launch.

Orion Stage Adapter Facts

Height	5 ft. (1.5 m)
Diameter	18 ft. (5.4 m)
Payload volume	516 ft^3 (14.6 m^3) up to 17 berths for 6U/12U CubeSats

National Aeronautics and Space Administration

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For more information about SLS, visit:

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