



APRIL 2016

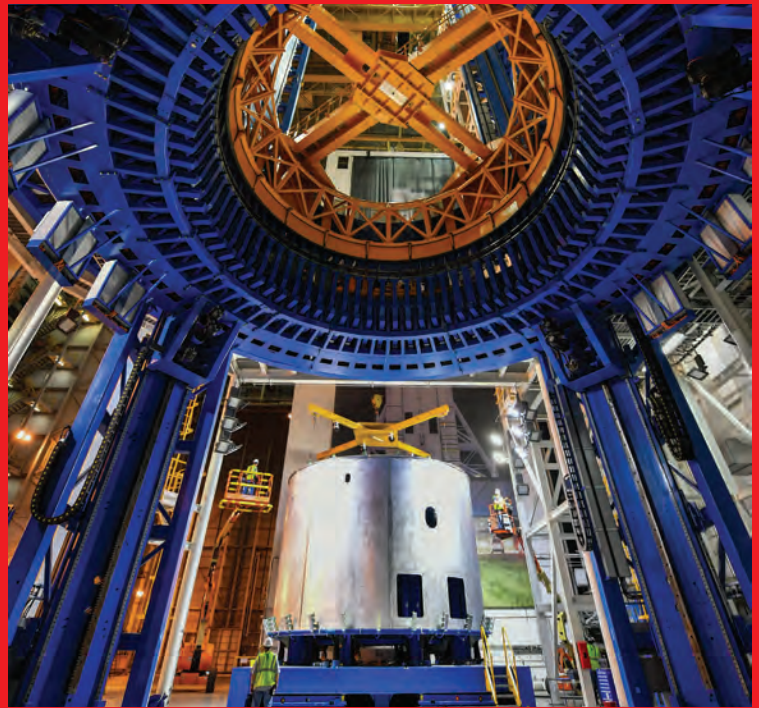
SPACE LAUNCH SYSTEM HIGHLIGHTS

FLIGHT HARDWARE IN PRODUCTION



WELDING WONDER COMPLETES HARDWARE FOR FIRST FLIGHT OF SLS

Flight hardware for the SLS core stage finishes final welding and is moved off the 170-foot-tall Vertical Assembly Center at the agency's Michoud Assembly Facility in New Orleans. The hardware is for the engine section and is the first major SLS flight component to finish full welding on the Vertical Assembly Center. The engine section is located at the bottom of the rocket's core stage and will house the four RS-25 engines for the first flight of SLS with NASA's Orion spacecraft in 2018.



DATE SET FOR SECOND SLS BOOSTER QUALIFICATION GROUND TEST

A full-scale, test version of the SLS booster will fire up for the second of two qualification ground tests June 28 at prime contractor Orbital ATK's test facility in Promontory, Utah. The test will provide NASA with critical data to support booster qualification for flight. The first, [full-scale booster qualification](#) ground test was successfully completed in March 2015, which demonstrated acceptable performance of the booster design at high-temperature conditions. The second test will measure the booster's performance at a cold motor conditioning target of 40 degrees Fahrenheit -- which is the colder end of its accepted propellant temperature range. Testing at the thermal extremes experienced by the booster on the launch pad is important to understand the effect of the temperature range on the ballistic performance of the propellant. (Orbital ATK)



SLS AVIONICS GET IN THE RING FOR THE JOURNEY TO MARS

Ratana Meekham, a Qualis Corp. engineering technician at NASA's Marshall Space Flight Center in Huntsville, Alabama, helps install approximately 5 miles of cable on a half-ring structure being used to test the avionics system that will guide SLS on deep-space missions. [Qualification testing](#) began March 30 and is an important next step in ensuring the system is "go for launch" for the first flight of SLS in 2018. During testing, the avionics team can troubleshoot any problems with subsystems and make sure the units communicate together as they are designed to do. It took technicians 11 months to assemble the avionics ring and install the cables for qualification testing, but [watch this time-lapse video](#) to see all that hard work happen in just 60 seconds.

FLIGHT SLS BOOSTER SEGMENT ANSWERS 'CASTING' CALL

The first of 10 flight segments for the two SLS solid-rocket boosters has been cast at Orbital ATK's facility in Promontory, Utah. Casting involves filling the insulated metal case with propellant and allowing it to solidify or "cure" for several days. The hardware, which is the aft segment, will eventually be integrated with four other segments to make up one of the two, five-segment solid rocket boosters for the first flight of SLS in 2018. (Orbital ATK)



GREETINGS FROM CALIFORNIA

In April, SLS and Orion had the opportunity to tour facilities across California and thank employees for their hard work on the next generation of vehicles for spaceflight.



NASA Astronaut Doug Wheelock thanks employees who “make it happen” for SLS flight hardware at Votaw Precision Technologies in Sante Fe Springs, California.

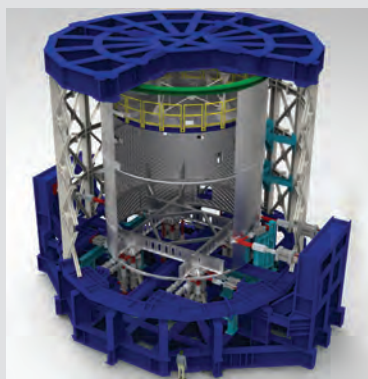
LEFT: Representatives from NASA check out the SLS forward skirt panel, built by AMRO Fabricating Corporation of South El Monte, California. The panel will be used for the first flight of SLS in 2018.

NEW TEST STRUCTURES WILL HAVE SLS ROCKET HARDWARE FEELING THE FORCE

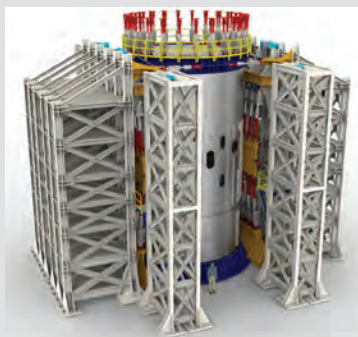
If walls could talk, Building 4619 at NASA’s Marshall Space Flight Center in Huntsville, Alabama, would have a lot to say about testing rockets.

The multipurpose, high-bay test facility has been a hotbed for all types of testing, including loads, acoustics, vibration, extreme temperatures, high-and-low pressures, and environments that simulate the cold, black conditions of outer space. More recently, it served as the hub for a series of large-scale “[can-crushing](#)” tests to study buckling in structures with the purpose of building lighter, more efficient and affordable launch vehicles.

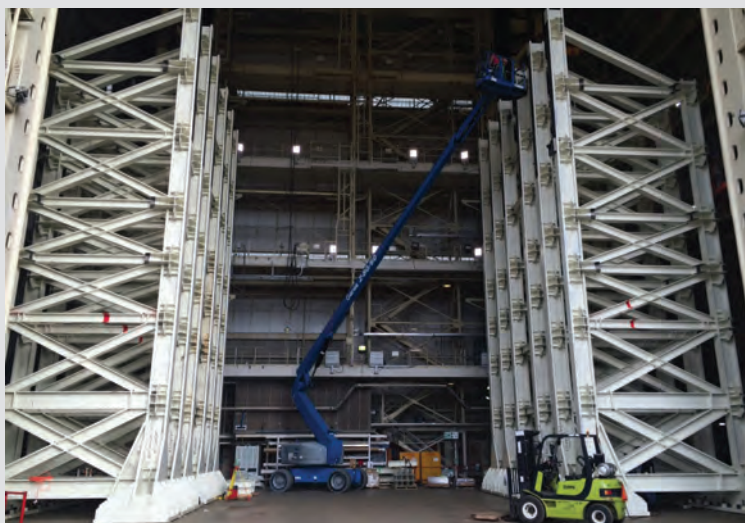
Today, teams are breathing new life into the 4619 load test annex for the next era of space exploration with [SLS](#). Construction is underway at the facility on steel reaction towers and fixturing that will be used for structural loads testing on the [SLS core stage](#) intertank and engine section. Read the [full story](#).



This artist concept shows the 50-foot engine section test structure under construction at the Marshall Center. The engine section for the SLS will be put inside the structure and subjected to millions of pounds of force -- similar to vehicle loads experienced during launch.



This artist concept depicts the 62-foot-tall intertank test structure under construction at the Marshall Center. The intertank for the SLS will undergo thermal conditioning and structural loads testing in the Marshall Structural Test Laboratory.



Twelve main tower panels, built and delivered by Weldall Manufacturing Inc. of Waukesha, Wisconsin, for the intertank test structure have been installed at Marshall’s Building 4619 load test annex. The two test towers, shown here, attach to the intertank test article and simulate the force created by the solid rocket boosters during launch, flight, and booster separation.

STEEL 'FLIES' AS SECOND NEW SLS TEST STAND 'TOPS' AT NASA MARSHALL



LEFT: Before being welded into place, the “topping out” beam was signed by members of the Marshall Center Operations, SLS, and other teams involved in the test stand’s design and construction, including the U.S. Army Corps of Engineers; general contractor Brasfield & Gorrie; architects Goodwin Mills and Cawood; architects Merrick & Company; NAFCO Fabrication; and LPR Construction. The same group of government and contractor teams recently topped out Test Stand 4697 at Marshall, where similar tests will be conducted on the SLS liquid oxygen tank.

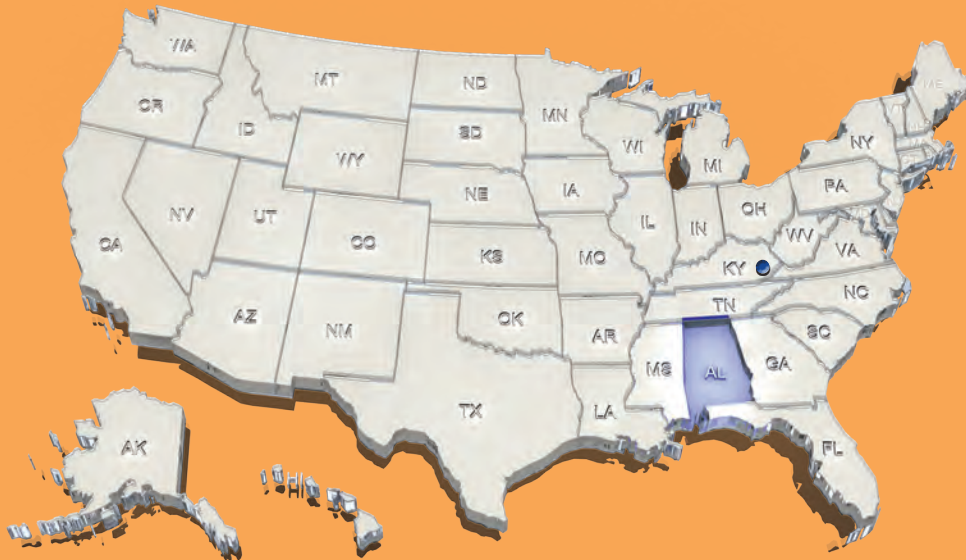


RIGHT: A steel beam is “flown” by crane into position on the 221-foot-tall Test Stand 4693 during “topping out” ceremonies April 12 at the Marshall Center. When construction is completed later this year, dozens of hydraulic cylinders at the stand will push and pull on the giant liquid hydrogen tank of NASA’s Space Launch System, subjecting it to the same stresses and loads it will endure during liftoff and flight. Topping out is a builders’ rite traditionally held when the last beam is placed on top of a structure during building.

SPACEFLIGHT PARTNERS: KT Engineering



LVSA



LOCATION:

Madison, Alabama

NUMBER OF EMPLOYEES: 11

WHAT THEY DO FOR SLS:

KT Engineering does work for Teledyne Brown Engineering of Huntsville, Alabama, in the Mechanical Design of the Launch Vehicle Stage Adapter (LVSA) structures and Ground Support Equipment (GSE).

GO, BULLDOGS! SLS VISITS MISSISSIPPI STATE UNIVERSITY

In early April, SLS visited schools and took part in Mississippi State University's Engineering Week -- talking with students and faculty about SLS, the importance of technical careers, and NASA's goals and missions, including the journey to Mars. Bring SLS to your classroom with these educational materials.



SLS's D.K. Hall, a graduate of the university, talks to students about the future of space exploration with SLS.

FOOD NETWORK'S ALTON BROWN 'EATS UP' SLS



Food Network Host Alton Brown checks out a model of the SLS during an April 11 tour of the Marshall Center. Brown also got a first-hand look at the new SLS test stands being built for core stage structural loads testing.

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

- NASA SLS Rocketology Blog.... blogs.nasa.gov/Rocketology
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COMING IN MAY:

RS-25 engine installed in A-1 test stand at Stennis

LVSA structural test article completed

Liquid hydrogen tank qualification article build finish