

NASA's Space Launch System Takes Shape

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Major hardware and software for NASA's Space Launch System (SLS) began rolling off assembly lines in 2016, setting the stage for critical testing in 2017 and the launch of a major new capability for deep space human exploration. SLS continues to pursue a 2018 first launch of Exploration Mission 1 (EM-1). At NASA's Michoud Assembly Facility near New Orleans, LA, Boeing completed welding of structural test and flight liquid hydrogen tanks, and engine sections. Test stands for core stage structural tests at NASA's Marshall Space Flight Center, Huntsville, AL, neared completion. The B2 test stand at NASA's Stennis Space Center, MS, completed major structural renovation to support core stage green run testing in 2018. Orbital ATK successfully test fired its second qualification solid rocket motor in the Utah desert and began casting the motor segments for EM-1. Aerojet Rocketdyne completed its series of test firings to adapt the heritage RS-25 engine to SLS performance requirements. Production is under way on the first five new engine controllers. NASA also signed a contract with Aerojet Rocketdyne for propulsion of the RL10 engines for the Exploration Upper Stage. United Launch Alliance delivered the structural test article for the Interim Cryogenic Propulsion Stage to MSFC for tests and construction was under way on the flight stage. Flight software testing at MSFC, including power quality and command and data handling, was completed. Substantial progress is planned for 2017. Liquid oxygen tank production will be completed at Michoud. Structural testing at Marshall will get under way. RS-25 hotfire testing will verify the new engine controllers. Core stage horizontal integration will begin. The core stage pathfinder mockup will arrive at the B2 test stand for fit checks and tests. EUS will complete preliminary design review. This paper will discuss the technical and programmatic successes and challenges of 2016 and look ahead to plans for 2017.