

**Bruce R. Askins**

**Abstract**

**65<sup>th</sup> JANNAF Propulsion Meeting, May 21-24, 2017**

### **NASA's Space Launch System Gains Momentum Toward Integration and Testing**

NASA's Space Launch System (SLS) entered a new phase in 2017, completing major structural manufacturing on the core stage and delivering the first flight hardware to NASA's Kennedy Space Center (KSC). The program is now transitioning to integration, assembly and testing in preparation for launch readiness in late 2019. Core stage prime contractor Boeing concluded welding of the major core stage components for Exploration Mission 1 (EM-1) with the liquid hydrogen flight tank, following completion of the engine section, liquid oxygen tank, and forward skirt. Technicians also completed assembly of the bolted intertank, and all sections are currently in hardware integration. The engine section structural test article was shipped to NASA's Marshall Space Flight Center (MSFC) and began testing in 2017. The core stage pathfinder shipped to NASA's Michoud Assembly Facility (MAF). Booster prime contractor Orbital ATK made significant progress casting motor segments for SLS, with several segments finishing processing and in storage. Forward and aft sections of the boosters are being refurbished at KSC. RS-25 prime contractor Aerojet Rocketdyne completed SLS adaptation testing and qualification of four new EM-1 controllers. The four EM-1 engines are ready and waiting for shipment from NASA's Stennis Space Center (SSC) to Michoud Assembly Facility (MAF) for core stage integration in preparation for green run testing at SSC. The EM-1 Interim Cryogenic Propulsion System (ICPS) became the first major piece of SLS to arrive at KSC. Welding is complete on the EM-1 Launch Vehicle Stage Adapter (LVSA) and the flight Orion Stage Adapter (OSA). SLS is critical to U.S. leadership in future human and robotic space exploration, including a presence on the moon in preparation for missions deeper into space. This paper will elaborate on 2017 SLS progress and progress envisioned for 2018.