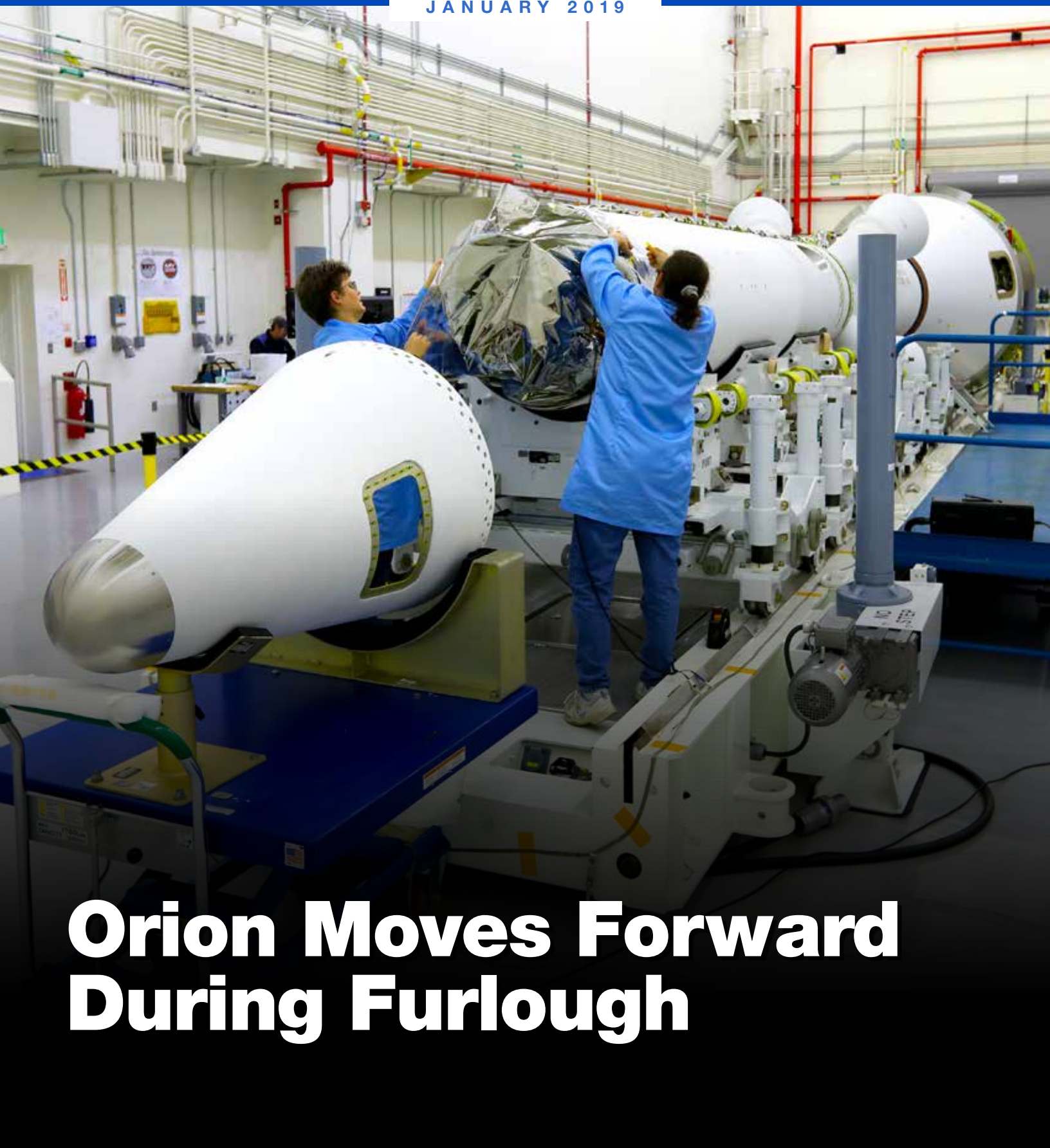
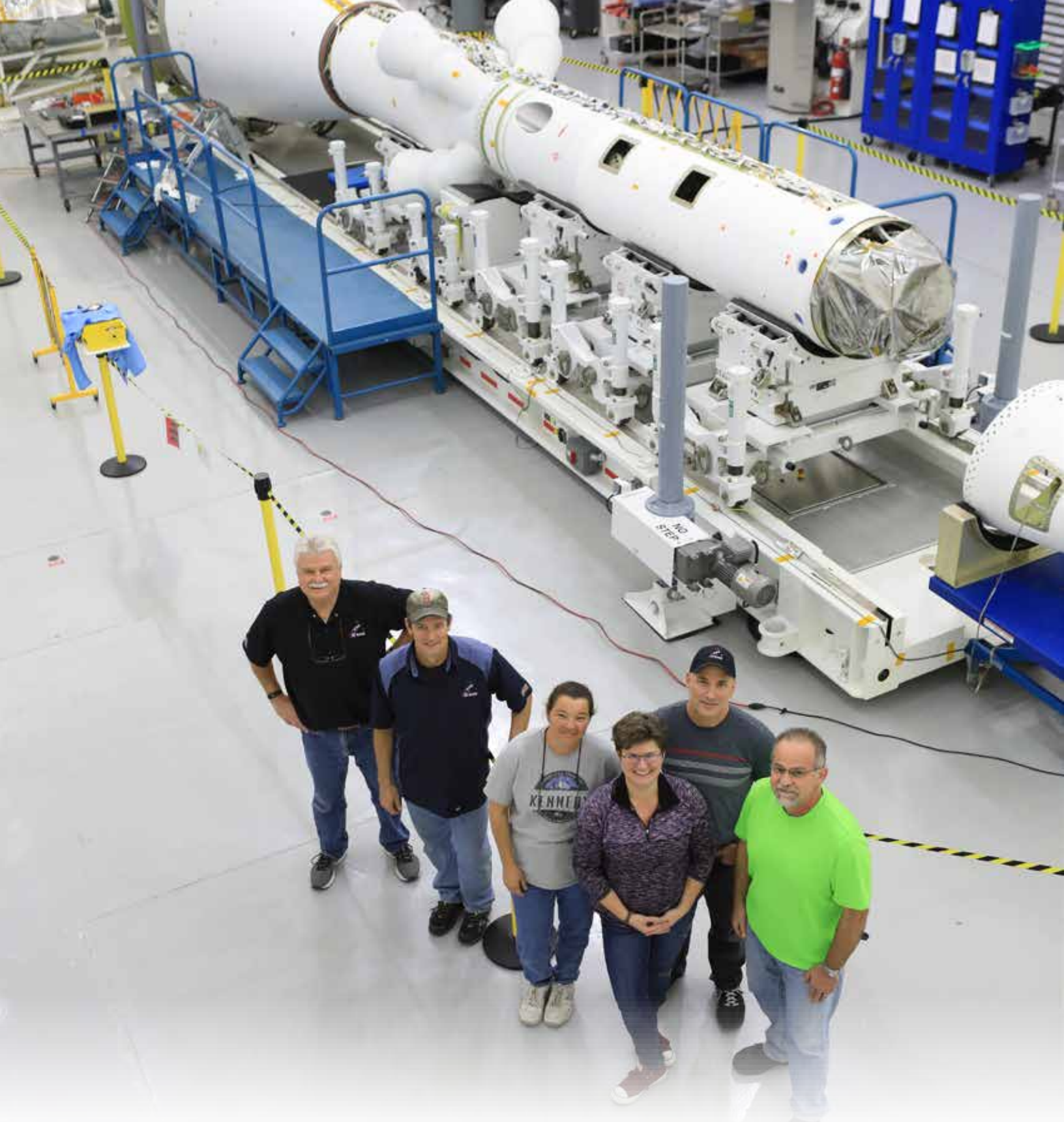
# ORION

JANUARY 2019



# Orion Moves Forward During Furlough



During the partial government shutdown, while civil servants and some contractors were not able to work, existing funding allowed most of the industry team members and suppliers to continue working, ensuring that Orion wasn't significantly impacted during the furlough. Around the country, Orion continued its path to the pad getting ready for the Ascent Abort-2 (AA-2) test launch, Exploration Mission-1 (EM-1) and Exploration Mission-2 (EM-2).

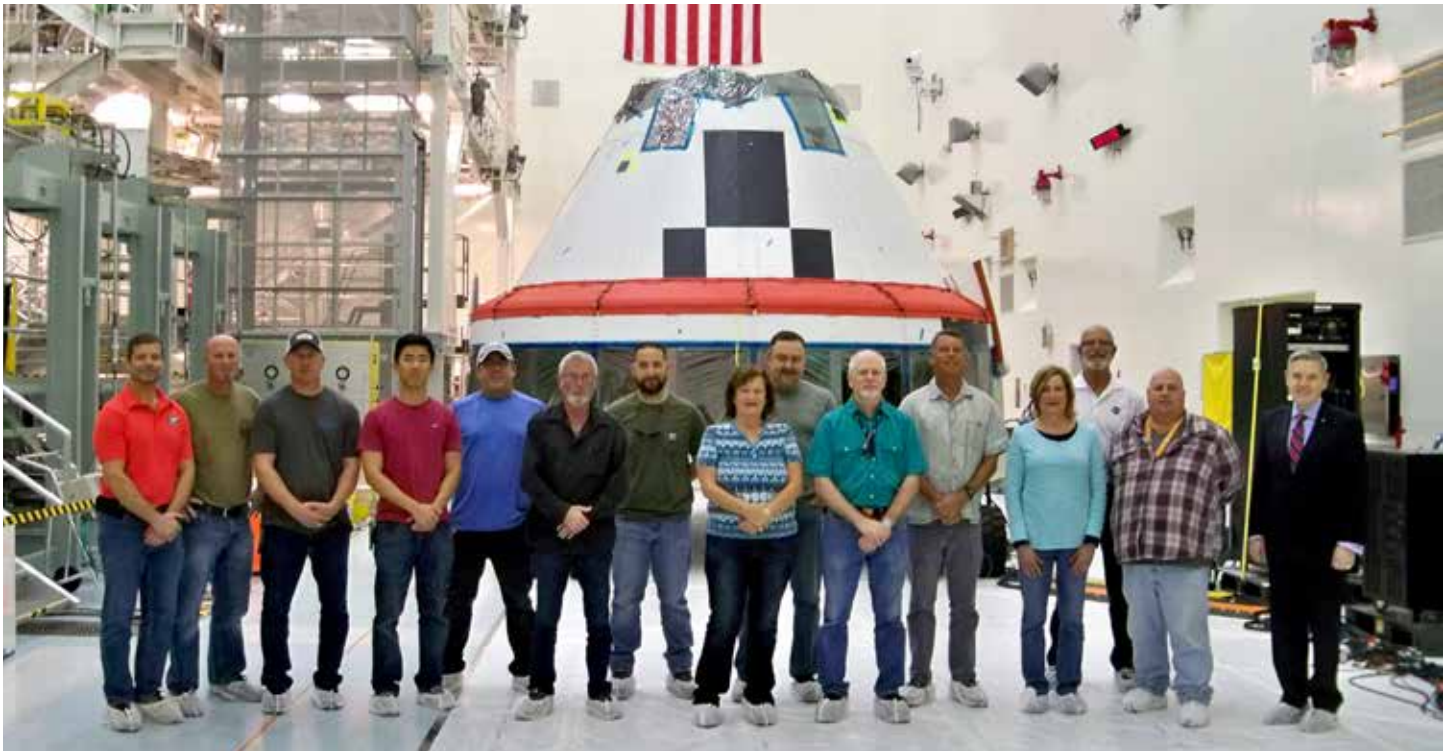
The AA-2 launch, occuring later this Spring, will verify that the launch abort system (LAS) can steer the crew module and astronauts inside to safety in the event of an issue with the Space Launch System rocket when the spacecraft is rapidly ascending into space. All major segments of the LAS are now integrated in the LAS Facility at NASA's Kennedy Space Center in Florida aside from the ogives which are scheduled to arrive in the upcoming months.

In preparation for EM-1, which will send Orion farther than any human-rated spacecraft has gone before, work continued throughout the furlough at Kennedy, Michoud Assembly Facility in Louisiana, Johnson Space Center in Houston and in Denver at the Lockheed Martin Waterton campus. The EM-1 Crew Module underwent reinstallation of key avionics components to prepare it for initial power up testing. The Crew Module side hatch was also prepared for installation. Welding on the propulsion Environmental Control and Life Support System tubing on the EM-1 Service Module, and proof testing of both systems were successfully completed.

The crew module pressure vessel (primary structure) on EM-2, which will be the first crewed flight of Orion, was completed on schedule, enabling the preparation for proof testing on the crew module itself. Production efforts on the EM-2 heat shield were accelerated during the shutdown, resulting in the completion of liquid shim adhesive injections between the heat shield composite skin and the titanium skeleton. This was followed by installation of temporary fasteners, enabling the heat shield to be locked into configuration and moved to allow other parts to undergo similar procedures. Five uprighting bags for EM-2, crucial to crew safety once the crew module lands in the Pacific Ocean, and ten bladders that maintain their helium pressure were inspected and approved for production, ensuring on-time delivery.

Progress was also made overseas with the shipment of two additional EM-2 European Service Module auxiliary engines to Airbus in Germany, completing delivery of four of the eight required engines. Two additional engines are scheduled to ship in February.

With the team back at full force, Orion is continuing to move forward on its path to the Moon and Mars.



**Ascent Abort-2 multi-payload processing facility team with the AA-2 Orion crew module.**

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# FEBRUARY 2019

Annual Orion & SLS Supplier Conference

EM-1 Service Module Initial Power On

AA-2 Launch Abort System Tower Integration