National Aeronautics and Space Administration

NASA

SPACE LAUNCH SYSTEM

APRIL - JUNE 2020

BOOSTER ASSEMBLY BEGINS AT KSC

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SLS BOOSTER ASSEMBLY BEGINS FOR ARTEMIS I LAUNCH

The SLS solid rocket booster motor segments left Northrop Grumman's facility in Promontory, Utah, June 5, and arrived at Kennedy Space Center's Rotation, Processing and Surge Facility (RPSF) June 15.

The solid rocket booster aft skirts for the Artemis I mission were moved to Kennedy Space Center's RPSF June 9 to prepare for stacking with motor segments.

Technicians with NASA's Exploration Ground Systems prepare an SLS solid rocket booster motor segment for mating to an aft skirt. The twin boosters provide more than 75 percent of the total SLS thrust at launch.

The solid rocket boosters that will help power the first Artemis test flight are being assembled at NASA's Kennedy Space Center.

The SLS solid rocket boosters' 10 motor segments were shipped by train from Northrop Grumman's facility in Promontory, Utah, to Kennedy Space Center in Florida, where they are undergoing inspection and processing at the spaceport's RPSF. The 10-day, cross-country journey was an important milestone toward the first launch for NASA's Artemis program. NASA's Exploration Ground Systems team is preparing the motor segments for stacking in the Vehicle Assembly Building for the Artemis I launch. The first step: mating the booster aft segments to the aft skirts.

Read more: **go.nasa.gov/3enNFAV**

CORE STAGE GREEN RUN TESTING HITS MILESTONE

In May team members resumed on-site work at NASA's Stennis Space Center to ready the Artemis I core stage for the Green Run test series.

The flight computers and avionics of the SLS rocket's core stage for the Artemis I mission were powered on and have completed a thorough systems checkout. The avionics "power on and checkout" was the second of eight tests in the Green Run test series at Stennis Space Center in Mississippi, where the core stage is installed in the B-2 Test Stand. The test brought the core stage flight hardware, which controls the rocket's first eight minutes of flight, to life for the first time.

In May the agency began the return of limited crews to perform on-site work after such work was temporarily suspended. Stennis went to Stage 4 of the Agency Response Framework as a result of a rise in COVID-19 cases in the area near the center. During that time, the only personnel on site were those needed to perform mission-essential activities related to the safety and security of the center.

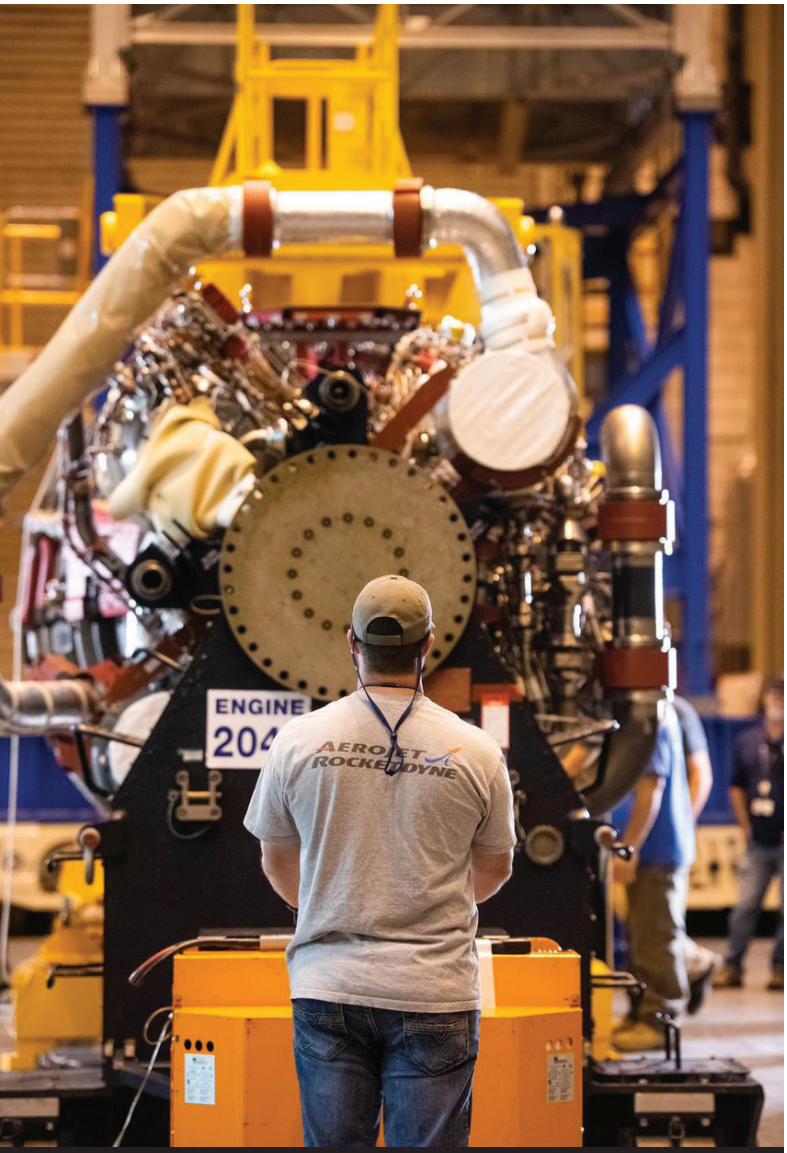
Engineers began initial Green Run preparation work in January. The series, which takes place over several months, is the first full test of all of the SLS core stage flight hardware, and will culminate in a test fire replicating the stage's first flight.

Read more: **go.nasa.gov/2zjidEm**

NASA COMMITS TO FUTURE ARTEMIS MISSIONS WITH SLS ENGINES, BOOSTERS

NASA has taken the next steps to support future Artemis missions with RS-25 engines and solid rocket boosters.

In April the agency awarded a contract to Aerojet Rocketdyne of Sacramento, California, to manufacture 18 additional SLS RS-25 rocket engines to support Artemis missions to the Moon. The agreement modifies the initial contract to recertify and produce six of the engines, for a total contract value of $3.5 billion, with a period of performance through Sept. 30, 2029. Working with NASA, Aerojet has implemented a plan to reduce the cost of the engines by as much as 30 percent by using advanced manufacturing techniques to modify some of the rocket components as well as simplify processes.



Aerojet Rocketdyne is under contract to build 18 additional RS-25 engines to support Artemis missions.

In June, NASA announced an agreement with Northrop Grumman of Brigham City, Utah, to build solid rocket boosters for up to six additional SLS flights, for a total of up to nine Artemis missions. Boosters for the Artemis I flight are ready to be processed and stacked, and production for the second and third flight sets is well underway. The contract, which has a potential value of $29.5 million, allows Northrop Grumman to order long-lead items to support building the twin boosters for six additional SLS flights. The full-contract details will be finalized within the next year.

Exploration Ground Systems teams process an SLS solid rocket booster motor segment in preparation for stacking at Kennedy Space Center for the Artemis I mission.

ALABAMA NATIVE COMBINES BIRDING, BOOSTERS TO HELP LAUNCH ARTEMIS I

Bruce Tiller manages the SLS Boosters Office at NASA's Marshall Space Flight Center.

Bird watching and rocket launching aren't normally mentioned in the same breath. One activity combines the beauty and grace of nature with a relaxing personal hobby, while the other is the culmination of thousands of hours of work, calculation, and dedication that results in a massive object traveling into deep space. For Bruce Tiller, however, the two are more alike than most would think.

A lifelong bird watcher, Tiller has spent decades appreciating the effortless flight of warblers and finches while simultaneously working to advance the hard-fought flight of humankind. It's only fitting, then, that Tiller is the manager of the NASA's Space Launch System (SLS) rocket's Boosters Office. On a daily basis, he and his team take steps to help launch the biggest bird there is: SLS. Read more: **go.nasa.gov/2YbtXIX**

WHAT'S NEW IN SLS SOCIAL MEDIA

ROCKET SCIENCE IN 60 SECONDS

The two solid rocket boosters that help power the SLS rocket provide more than 75 percent of the total SLS thrust at launch. In this episode of *Rocket Science in 60 Seconds*, Chelsea Walker, a Northrop Grumman materials and process design engineer, explains why and how the boosters are insulated to protect them from the extreme heat they'll experience during launch and flight, and how that insulation is produced.

Watch the video here: **youtu.be/NAeful7UD1U**

SLS ON THE ROAD

SLS travelled to homes everywhere (and can come to your home) via the #DrawARTemis series hosted by Mark Kistler, award-winning artist and host of *The Secret City* and *Mark Kistler's Imagination Station* on Public Television. Find instructions for drawing all parts of the Artemis program, including SLS, Orion, the mobile launcher, and crew suits here: https://go.nasa.gov/3iIrGHi.

View Kistler's online class to draw SLS here: **youtu.be/hSsGq5etWmI**

SPACEFLIGHT PARTNERS:
Major Tool & Machine

NUMBER OF EMPLOYEES: *390*

LOCATION: *Indianapolis, Indiana*

WHAT THEY DO FOR SLS:
Major Tool & Machine works with Aerojet Rocketdyne to produce critical hardware for the RS-25 restart production contract. Combining state-of-the-art CNC machines and innovative processes, Major Tool has successfully produced parts for all sections of the RS-25 engine: the powerhead, the main combustion chamber, and the nozzle. The company also supports the SLS program with machining and testing for the boosters, core stage, Orion crew module, and Orion stage adapter.

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