SPACE LAUNCH SYSTEM

MAY 2018

BUILD UP TO THE BIG SQUEEZE
Just in time for summer, SLS manufacturing and testing is heating up. At Michoud Assembly Facility near New Orleans, every major section of the core stage for the first mission, Exploration Mission-1 (EM-1), is structurally assembled. Currently, technicians are installing internal hardware and performing checkout tests. Core stage prime contractor Boeing is completing the outfitting for the forward skirt, liquid oxygen tank and intertank.

All wire harness installations are complete in the core stage forward skirt and intertank. And, in late May, technicians brought part of the rocket to life when they powered on the flight computers and avionics subsystems as part of a functional test of the forward skirt avionics. The liquid oxygen tank was the first flight tank to complete priming and application of the thermal protection system.

Later this year, those forward (or top) sections of the core stage will be vertically stacked and eventually integrated with the aft (or bottom) section of the stage. Work is also underway on the hydrogen tank, engine section and boat tail, which will be stacked vertically. Then, both halves of the core stage will be connected horizontally. Boeing is also completing the last two core stage test articles, which will be used for structural testing to give engineers real-world data on how the hardware responds to millions of pounds of forces and loads.

Meanwhile, engineers at Marshall Space Flight Center continue to set up the third of four SLS test articles for structural testing. Test stand buildup around the intertank test article continued at Marshall in May and about 48 tests are scheduled to begin this summer. Structural testing on the core stage engine section and the upper stage/payload section articles is complete.

After two RS-25 tests early this year, Stennis Space Center temporarily shut down the A-1 test stand for improvements that include enabling Aerojet Rocketdyne engines to be gimbaled for future hot-fire tests. Engine testing is scheduled to resume in August with a ground test engine equipped with a new main combustion chamber that will be incorporated into future production engines.

Boosters prime contractor Orbital ATK is continuing work on the EM-1 solid rocket motors, with all 10 segments cast and five complete. Nozzles and booster separation motors for the first flight are also complete.
SLS PROGRAM WELCOMES SMALL BUSINESSES TO INDUSTRY DAY

More than 400 business representatives from large and small businesses, as well as prime contractors and subcontractors, attended an industry day May 22, hosted by NASA's Marshall Space Flight Center. Small business owners talked to SLS managers and prime contractors at the event to learn about opportunities for working on the SLS rocket that will send astronauts to the Moon and beyond. More than 1,100 companies from 44 states, including many small businesses, are helping to build SLS.
NASA’s SLS rocket, being built to return astronauts to the Moon and carry larger, heavier payloads to deep space, is being built all over the United States by large and small companies. Truly America’s rocket, SLS has suppliers in more than 44 states and each company plays a key part in returning astronauts to deep space.

In May, the SLS Program partnered with prime contractors Boeing, Orbital ATK and Aerojet Rocketdyne to visit suppliers in New Hampshire to update them on overall progress in manufacturing the first vehicle for EM-1, the first integrated flight of SLS and Orion, launching from modernized facilities at Kennedy Space Center. Astronaut and U.S. Navy Captain Barry “Butch” Wilmore emphasized the importance of the work of the key Granite State suppliers. Each part of the rocket and the Orion crew vehicle are designed and tested to ensure they will be safe for astronauts.

The NASA and Industry team, with astronaut Wilmore in tow, visited Haigh Farr in Bedford, which provides couplers and antennas for the SLS core stage. The team also visited Henkel in Seabrook which manufactures adhesives used on the solid rocket booster nose caps, frustums, systems tunnels and forward and aft skirts. The final stop for the team was Smiths Titeflex in Laconia, which manufactures all external plumbing for the RL-10 engines that power the interim cryogenic propulsion stage. The EM-1 interim cryogenic propulsion stage with its Aerojet Rocketdyne RL-10B2 engine, was completed and delivered to the Exploration Ground Systems (EGS) Program in 2017.
WHAT’S NEW IN SLS SOCIAL MEDIA

NASA’S ROCKET SCIENCE IN 60 SECONDS

THIS MONTH: SECONDARY PAYLOADS

Calling all aspiring rocket scientists — and engineers and students and well, all rocket enthusiasts! NASA’s “Rocket Science in 60 Seconds” video series breaks down complex topics into snack-sized information chunks. So if you’re hungry for some rocket science, check out this month’s portion featuring Dr. Kimberly Robinson explaining how shoebox-sized payloads will be getting a ride in the skyscraper-sized SLS rocket.

HOUSTON, WE HAVE A PODCAST: EPISODES 41 AND 42

Marrying engrossing story telling and rocket science, episodes 41 and 42 of Houston, We Have a Podcast will help you stay up-to-date on all things SLS and learn about the large and small payloads the rocket will deliver to the Moon and even farther into deep space. And, you can listen while you’re out for a walk, or commuting, or cleaning, or on the treadmill (or the couch if that’s your speed). Really, the possibilities for listening and learning are almost as vast as deep space. Check out Part 1 here and Part 2 here.
I AM BUILDING SLS:
BETH ST. PETER

Years before SLS soars off the launch pad, Beth St. Peter and her team plan how to capture the images NASA needs not only to document the historic launch but also to capture important engineering data. St. Peter and her team coordinate with engineers at NASA’s Kennedy Space Center in Florida, Johnson Space Center in Houston and Langley Research Center in Hampton, Virginia, to use the cameras on the rocket, on the ground and in the air to document how the rocket lifts off, clears the mobile launcher and travels during ascent. Using photography to measure distances between objects is called photogrammetry and the black-and-white checkerboards on the rocket are targets for the cameras.

Read the full story: go.nasa.gov/2JfDYVp

SPACEFLIGHT PARTNERS:
Emerald City Initiatives, Inc. (ECI)

NUMBER OF EMPLOYEES: 10

LOCATION: Huntsville, Alabama

WHAT THEY DO FOR SLS: ECI provides project coordination and assistance with verification and data deliveries, in addition to being a key resource for design and development of the EM-1 launch vehicle stage adapter, which will partially cover the interim cryogenic propulsion stage and connect the core stage to the Orion stage adapter. Launch vehicle stage adapter prime contractor Teledyne Brown Engineering Huntsville, selected ECI, a woman-owned small company with offices in Grant, Alabama, and Huntsville to collaborate on the design, assembly and supporting data needed to successfully manufacture the EM-1 launch vehicle stage adapter, scheduled to be completed later in 2018.

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JUNE

Go inside the intertank structural test article
Boosters progress for first two missions
Connecting to mission and launch control