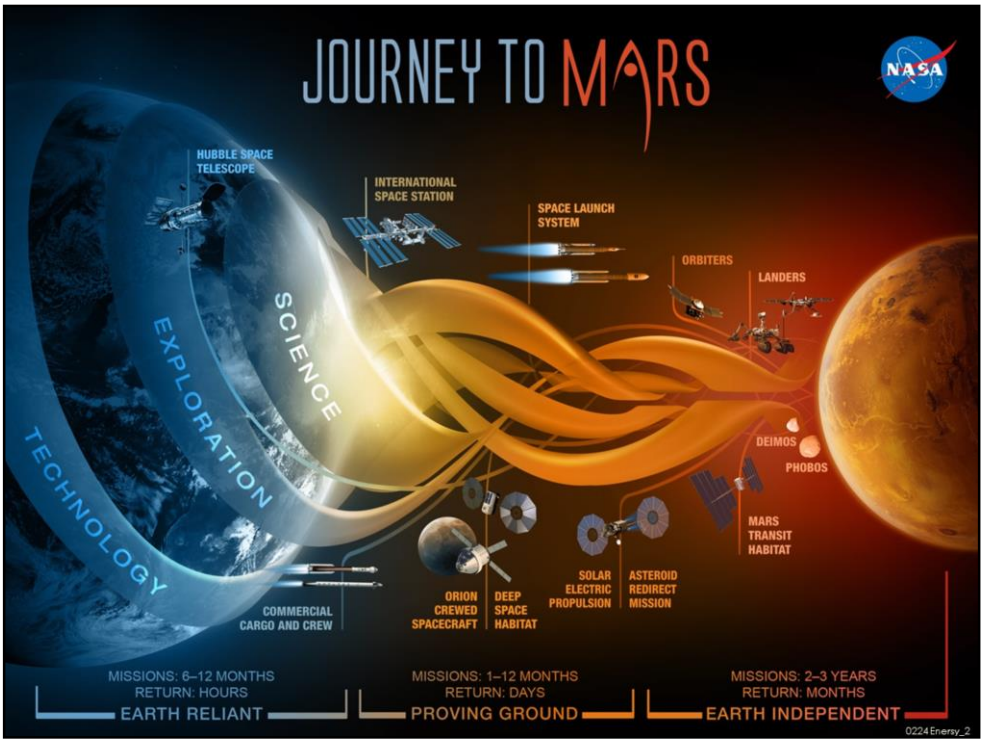
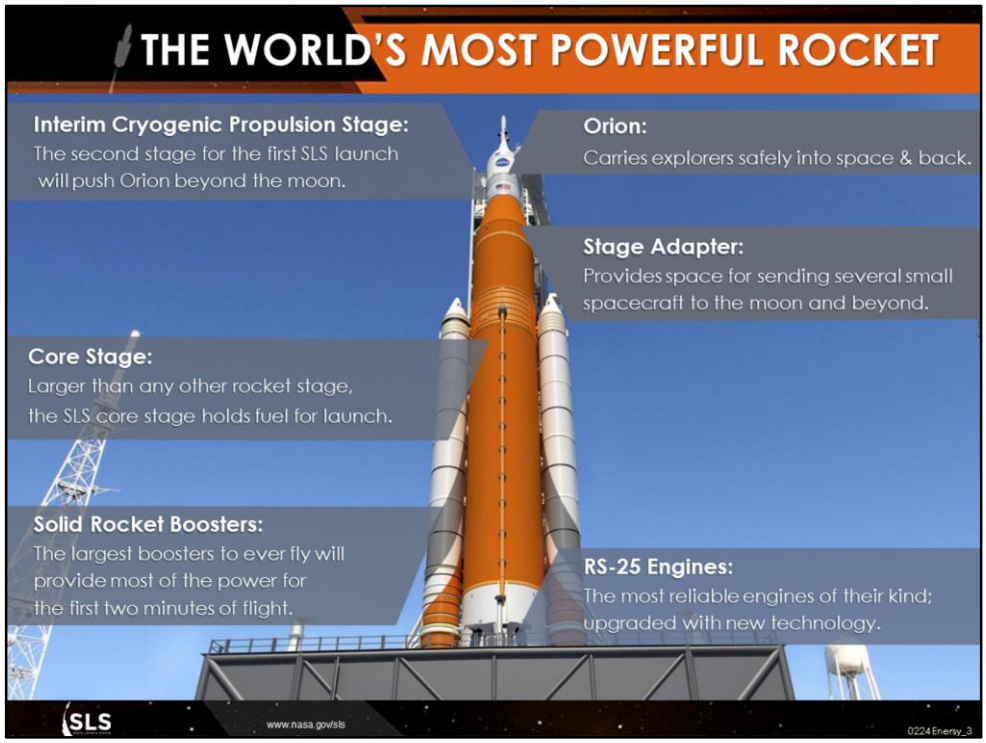
This is an approximately 20-minute briefing on SLS for general public audiences.

General themes of this briefing:

1) **NASA has begun a new era of human space exploration, with the goal of landing humans on Mars.**
2) **To carry out that mission, NASA is building the Space Launch System, the world's most powerful rocket.**
3) **Space Launch System is currently under construction, with substantial amounts of hardware already created and testing well underway.**
4) **Because of its unrivaled power, SLS can perform missions no other rocket can, like game-changing science and human landings on Mars.**



1) **The Journey to Mars has begun; NASA has begun a series of missions that will result in astronauts taking the first steps on the Red Planet.**
2) **Today, the International Space Station, supported by Commercial partners, is allowing us to gain knowledge that will make the journey possible.**
3) **Robotic explorers are currently on the Martian surface and in orbit, helping us to better understand the Red Planet and prepare to send humans.**
4) **In the coming years, NASA will launch a series of missions, beginning in the space around the moon and then going farther out, that will demonstrate new systems and capabilities that will enable the journey.**
5) **SLS and Orion are the first new systems that will make the journey possible.**



This shows the major features of the Block 1 version we are developing now.

- Our driving requirements are safety, affordability and sustainability.
- The key to that is making best use of common elements, existing investments in technology, infrastructure and workforce, the inherent advantages of heavy lift, and an evolvable vehicle design.
- Current configuration is the result of literally thousands of trades involving cost, performance, stages, mission architecture, etc.
- 70 metric tons payload (154,000 lbs)
- Designed for affordability – based on the Space Shuttle heritage RS-25 engine and the solid rocket booster both upgraded for performance: 109 vs. 104 percent power for RS-25 and 5-segment vs. 4-segment booster for 20 percent more power on the boosters.
- Upper stage for first mission is the Interim Cryogenic Stage, based on the Delta Cryogenic Second Stage.
- We formally stood up this program in September 2011.
- Manufacturing under way on every major component, including test and flight hardware.

SLS offers unrivaled benefits for a variety of missions.

- Block 1 provides greater mass lift than any contemporary launch vehicle.
- SLS Block 1 has 10 percent more thrust than the Saturn V.
- With 8.4m and 10m fairings, SLS will over greater volume lift capability than any other vehicle.

A key feature of the design is a clear path to evolve to greater capability as missions become more challenging.

- The Block 1 SLS leverages heritage hardware and technology to support affordable development and reduce risk.
- The SLS Program is finding ways to upgrade those Block 1 systems to improve performance so we can evolve the Block 1 vehicle to a Block 2 variant with more thrust off the pad and more payload. It will have a larger cargo fairing, a new upper stage, and advanced boosters.
- Block 1 is 322 feet tall. Block 2 will be 365 feet tall with 130 metric tons of payload and the largest payload volume in history.
- Using legacy hardware and infrastructure keeps our funding profile flat, yet delivers near-term capability using available assets and advanced hardware well into development.
- By leveraging existing capabilities and planning for evolution based on commonalities, SLS will evolve into the most powerful launch vehicle ever flown, while honoring those three driving objectives: safety, affordability, and sustainability.

1) **Core Stage will be the tallest rocket stage ever flown.**
2) **Core Stage is being built at Michoud Assembly Facility outside New Orleans., LA, using state-of-the-art manufacturing tools, including the world's largest welding tool.**
3) **Flight hardware and test article tanks, 27.6 feet across, are currently being produced at Michoud, including: weld confidence articles, structural test articles and EM-1 flight articles.**

28 seconds – LOX qual tank removal and break-over

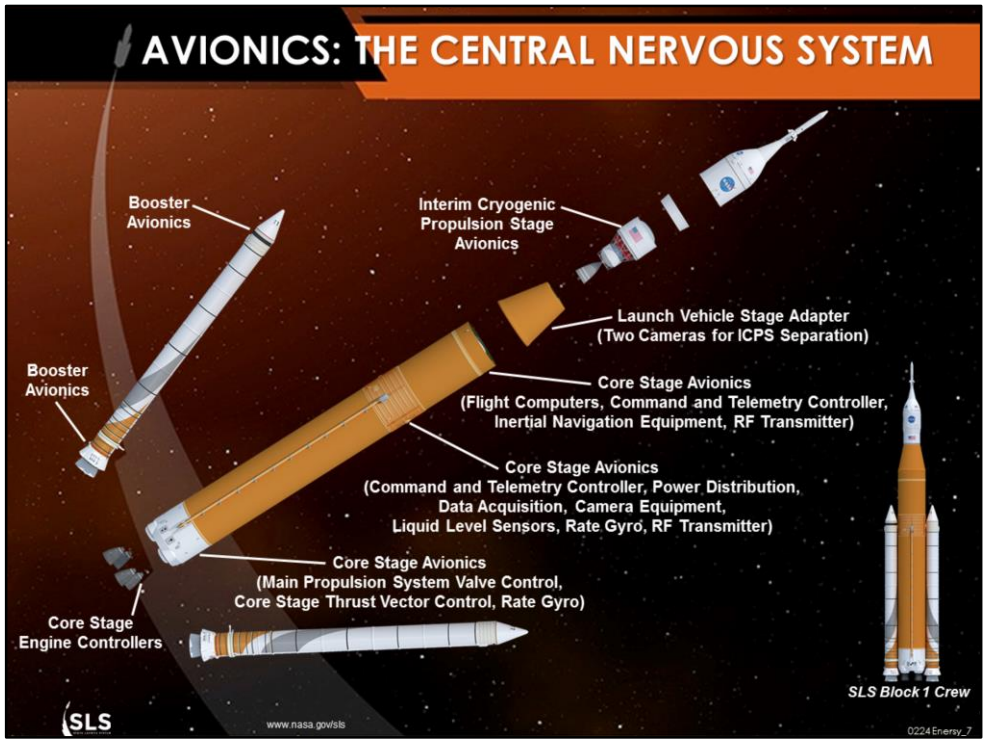
Also produced engine section test article and flight article and LH tank confidence and test article.

Clockwise from upper left:

- **LVSA structural test article completed at MSFC this year**
- **Core Stage Liquid Hydrogen test stand at MSFC, one of 5 test facilities that will test core stage components**
- **ICPS structural test article completed 2015 at ULA in Decatur, Alabama, delivered to MSFC for testing in 2016**
- **Stennis Space center B2 green run test stand work packages under way**
- **Lengthened Pegasus barge outfitted to support transportation to MSFC and KSC**

Other Testing:

- **Base heating**
- **Wind tunnel**

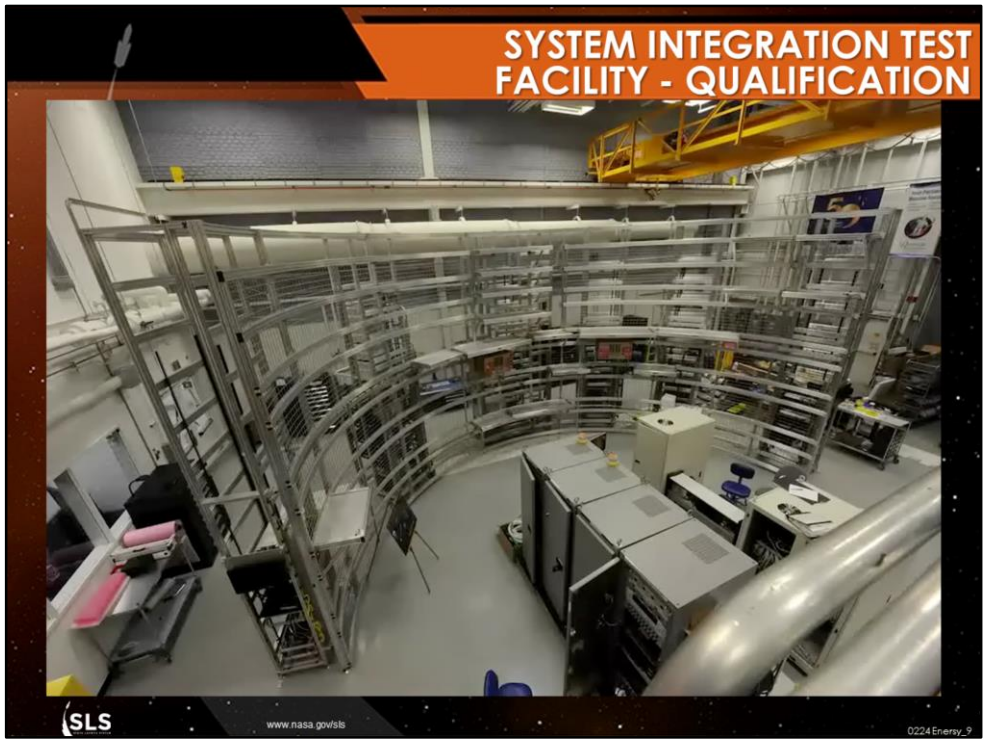


- **You are part of the core stage avionics team, so I'd like to take a moment to show you where you fit into SLS.**

- **This image shows the locat**

- **ion of all SLS avionics – excluding Orion avionics.**

- **MSFC facilities for testing SLS Block 1 avionics and software – the Integrated Avionics Test Facility.**
- **Integrates the various components shown in previous slide.**
- **Capable of virtually flying simulated missions using real avionics hardware and software.**



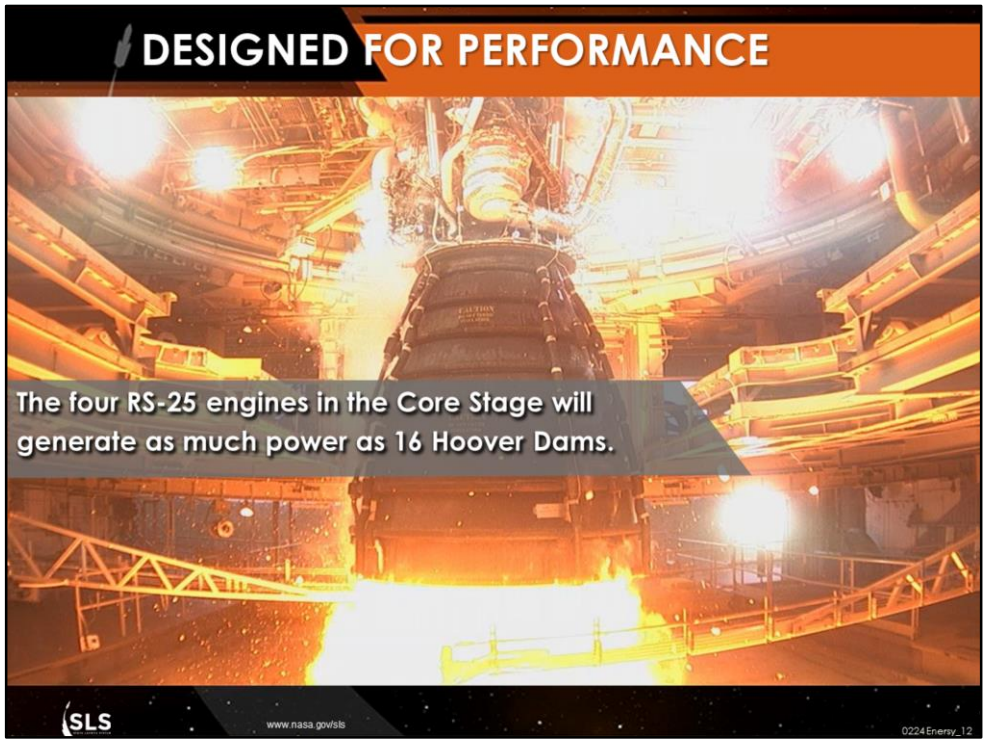
30 seconds - March 2016 time lapse video of SITF Q setup

1) **The Space Shuttle used a solid rocket booster with four propellant segments; the SLS boosters add a fifth segment for more power. It provides 3.6 million pounds maximum thrust.**
2) **The case hardware for the first flights of SLS is currently in inventory at Kennedy Space Center.**
3) **A first qualification test of the booster was successfully completed in March 2015**
4) **QM-2 was test fired in June 2016. Disassembly is ongoing but preliminary indications look good.**
5) **Flight motors are being cast now for shipment to KSC.**

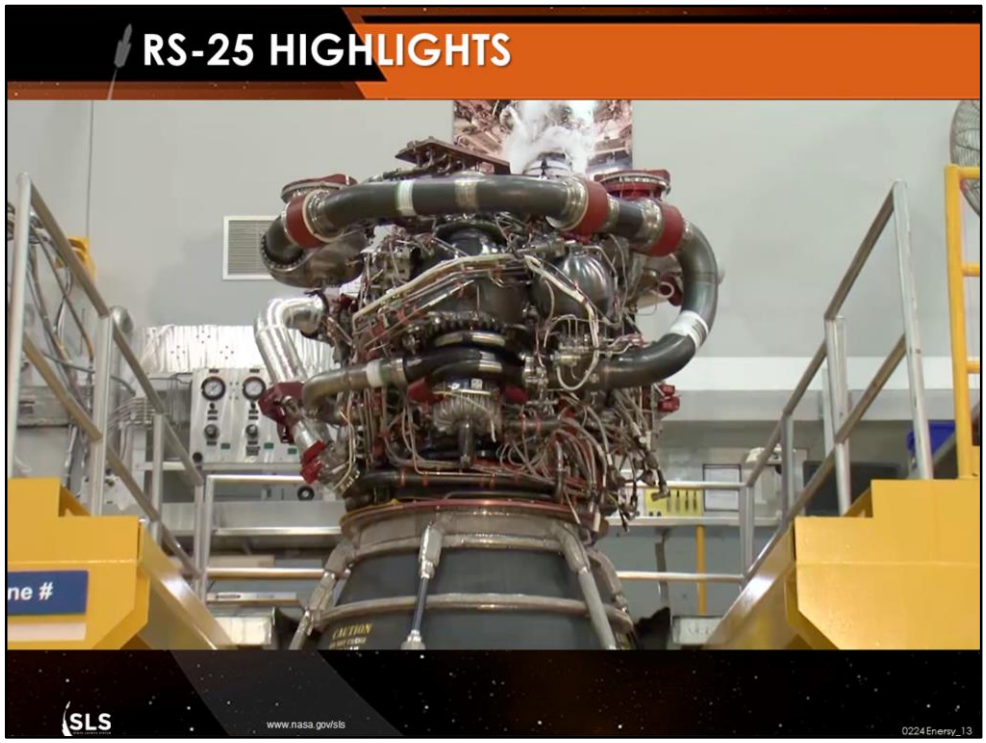
Booster Facts: 177 feet tall, 12 feet in diameter. Each weighs 1.6 million pounds (as much as four blue whales) and generates up to 3.6 million pounds of thrust.

26 seconds - motor casting at OATK and QM-2 highlights

- **Interesting high speed camera footage of ignition shock wave and motor nozzle plug blowing out**



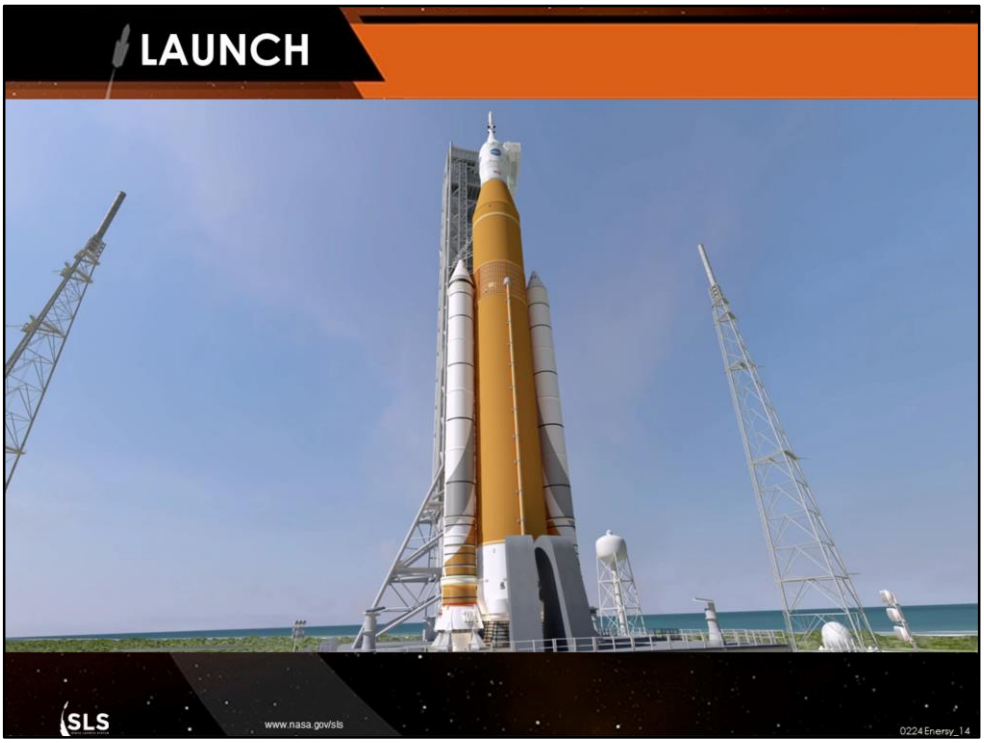
1) **The Space Shuttle was powered by three RS-25 engines, which were continuously updated throughout the shuttle program.**
2) **SLS will use four RS-25 engines – each roughly 500,000 pounds of thrust – and has made further upgrades to leverage current technology.**
3) **Engines for the first four flights are currently in inventory at Stennis Space Center in Mississippi, including 14 heritage flown engines and two new engines, all from the shuttle program.**
4) **The first SLS test series of the engine was conducted in 2015; a flight engine test was conducted in March 2016, and additional testing will prepare for the Green Run test firing of Core Stage in 2017.**



25 seconds – engine assembly and hotfire test at SSC

- **"Adaptation" tests in 2015 and 2016 to adapt the engines to variety of SLS requirements and environments including:**

Increased propellant inlet pressures and lower temperatures, throttle profile, pre-launch engine conditioning, new engine controllers and software.



34 seconds – SLS launch day beauty shot and initial ascent

- **This is what we are all working toward, the EM-1 mission now set for late 2018.**
- **Ambitious schedule of manufacturing and testing for the next 2 years.**

Thank the audience, remind them that this is THEIR space program, and encourage them to join on us the journey with the social media links listed.