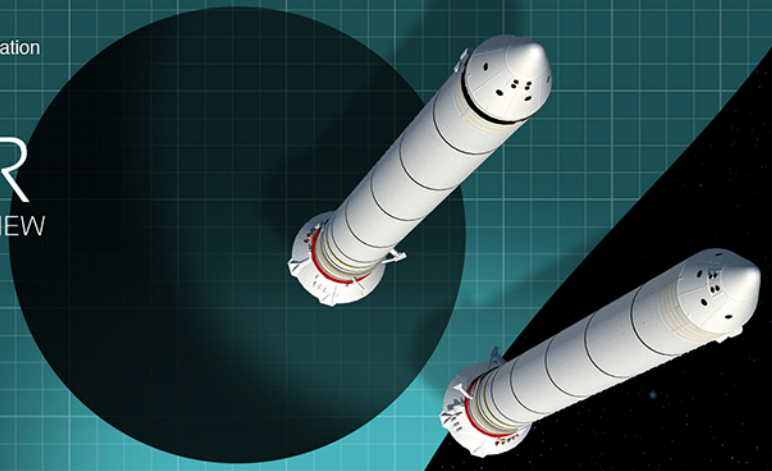
National Aeronautics and Space Administration

SLS PDR
PRELIMINARY DESIGN REVIEW



Space Launch System

BOOSTERS

WHERE WE ARE

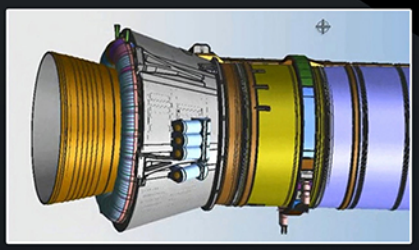
- On track to build the world's most powerful solid rocket motor—3.55 million pounds of thrust.
- Modified the contract with Alliant Techsystems, Inc., to transition previous Ares Project design efforts and align booster contractual requirements to SLS vehicle requirements.
- Established process improvements through value stream mapping, resulting in approximately 46% reduction in manufacture and assembly time for the SLS booster.
- Met all SLS safety requirements for booster design, including failure tolerance and ascent reliability.
- Current plan initiates flight hardware builds beginning in FY14 to support Exploration Mission 1.

MAJOR ACCOMPLISHMENTS

Five-Segment Motor Testing

- Completed three developmental motor tests (DM-1, DM-2, and DM-3).
- Began casting operations for the first qualification motor (QM) of two that will be static tested to support qualification of the motor design and processing.
- Preparations under way for the next major milestone—the QM-1 static test—scheduled for late 2013.

Booster Design Reviews



- Completed Booster Requirements Review in August 2012; Board determined that the booster requirement set was well understood.
- Completed Preliminary Design Review in April 2013; Board determined the design is adequate to meet requirements and that risks are known, with credible plans for resolution.
- Began planning for Booster Critical Design Review, scheduled for July 2014.

Developing Booster Avionics

- Completed Flight Control Test (FCT) #1 and FCT #2 in March 2012 and January 2013, respectively, testing the booster's new avionics' ability to control the Thrust Vector Control (TVC) system.
- Successfully conducted loaded control testing on the SLS Booster Hydraulic Power Unit Controller at the Shuttle TVC Auxiliary Power Unit original equipment manufacturer facility.
- Planning is ongoing to complete avionics development testing in 2014 and avionics qualification testing in 2015.

NW-2013-08-071-MSFC