Topics

• Program Status and Schedule
• SLS PDR
• MAF Update
• EFT-1 Update
• ESA Service Module
• Fairing Separation Video
Exploration Systems Development (ESD)
Status and Schedule
Orion Accomplishments

- EFT-1 Crew Module being placed in the Static Loads Test Fixture at the Operations and Checkout Facility
- Actuators used in the Static Loads Test are attached to the top of the EFT-1 Crew Module
- Backshell panel drilling
- Environmental Control and Life Support System – Coolant Pump Package 1
- Capsule Parachute Assembly System testing at Army Yuma proving ground in AZ
- Applying the Avcoat material to Orion heat shield – Textron in MA.
Orion Accomplishments

100% of Service Module panels complete and delivered to KSC

Launch Abort System static test at the Lockheed Martin facility in Sunnyvale, CA

Fairing separation test 1 at Lockheed Martin, Sunnyvale, CA

Service Module Environmental Control and Life Support System tube welding

Hot Fire Test Article loaded into the test cell at Aerojet facility in CA

Power Distribution Unit C1 in Thermal Chamber Box Confidence Testing
SLS Accomplishments

- Vertical Weld Tool Complete at Michoud Assembly Facility
- Vertical Assembly Center Construction begins for the Core Stage production
- First Trial Barrel Segment Completes Vertical Weld on Core Stage
- Completed MSA Shell
- B2 Test Stand Construction
- Flight Computer Engineering Development Unit delivered to MSFC
SLS Accomplishments

- F-1B Gas Generator – Tech Demo for Advanced Booster Concept
- SLS Rigid Buffet Wind Tunnel Model installed in the Transonic Dynamics tunnel at LaRC.
- Engineers meeting with DFRC personnel about planned Flight test of Adaptive Augmenting Control
- Completed Flight Control Test #2, Booster Avionics
- J-2X Engine 10002 Arrival at Stennis A1 Test Stand
- Center segment for QM-1 delivered to its test bay at ATK’s facility in Utah
GSDO Accomplishments

Installation of flooring in the main firing room started – application of floor sealant

Landing and Recovery EIT participated in shipment of the Crew Module Recovery Cradle to Langley Research Center

Demonstration of the “local” display software for the Crew Module Ammonia Servicing System at the Engineering Development Lab

Fabrication of Liquid Oxygen (LO2) Vaporizer that will be installed at Pad B

Pad B Flame Trench and Flame Deflector demolition project

Completed Crew Module Recovery Cradle testing
GSDO Accomplishments

Installation of the second set of Radio Frequency and Telemetry System antennas

Successfully recorded data sent from Customer Avionics Integration Development Analysis lab to Firing Room 1

Boilerplate test article Handling Fixture bumper, goalposts, container load trailers, casters, etc. delivered to Langley Research Center

Completed proof load of the Forward Bay Access Stands on the BTA Handling Fixture

Pad 39B Modifications including new hydraulic elevators

Facility modifications in the Multi-Payload Processing Facility
SLS Preliminary Design Review (PDR) Status
Space Launch System (SLS) Preliminary Design Review (PDR) Status 25 July 13

• SLS PDR is on track
  – SLS PDR Pre-Board: July 24-25, 2013
  – SLS PDR Board: July 31, 2013

• PDR review teams worked pre-review item discrepancies (pre-RIDs) via tabletops to the RID Integrated Screening Team.
  – Intent of tabletops was to provide a forum for discussion of SLS’s ability to meet the success criteria.
  – Of the 600+ pre-RIDs assessed by the review teams, less than 150 were designated as RIDs by the Integrated Screening Team.

• SLS Board assigns and dispositions RIDs and determines SLS capability to meet success criteria to move fwd to Critical Design Review.
  – Proposed corrective actions are being generated and assessed by the review teams in preparation for the SLS PDR.

SLS poised for successful PDR.
Michoud Assembly Facility (MAF) Update
Stages Manufacturing, Assembly, & Production/Operations Snapshot at Michoud Assembly Facility

- Vertical Weld Center (VWC)
- Enhanced Robotic Weld Tool (ERWT)
- Segmental Ring Tool (SRT)
- Vertical Assembly Center (VAC)
- Circumferential Dome Weld Tool
Core Stage Major Weld Tools at Michoud Assembly Facility (MAF), LA

- **Segmented Ring Tool (SRT) Installation**
  - Complete 2/20/13

- **Gore Weld Tool (GWT) Installation**
  - Complete 4/30/13

- **Vertical Weld Center (VWC) Installation**
  - Complete 6/10/13 (on plan)

- **Enhanced Robotic Weld Tool (ERWT) Installation**
  - Complete 4/25/13
  - (ERWT is turntable under CDWT)

- **Circumferential Dome Weld Tool (CDWT) Installation**
  - Complete 5/19/13 (on plan)

- **Vertical Assembly Center (VAC) Foundation**
  - Complete 7/1/13 (under review)
VAC Tool Progress at Michoud Assembly Facility
Installation Complete Spring 2014 (on plan)

Tower Installation at vendor checkout

Left In-Feeder - Screw Assembly Installation

Electrical Assembly and Test Setup In Work

VAC Upper Clamp Ring (UCR) - Final Segment Installation
Vertical Weld Center (VWC) at Michoud Assembly Facility Status

- VWC will weld barrel panels together to produce whole barrels for SLS’s core stage
- VWC stands about three stories tall and weighs 150 tons
  - Opened on June 21st
- Core stage, towering more than 200 feet (61 meters) tall with a diameter of 27.6 feet (8.4 meters), will store cryogenic liquid hydrogen and liquid oxygen that will feed the vehicle’s RS-25 engines
- Core Stage consist of two pressurized tanks, the intertank, the forward skirt, and the aft engine section.

Completes First Confidence Barrel Weld!
SLS Stages “Green Run” Test Buildup
NASA Stennis Space Center, MS Test Stand B-2

Stage is 211’ Tall

Upper Superstructure

- Level 16
- Level 18
- Level 11
- Level 8
- Level 7

Above: Level 16 Demolition

Left: Installation of Aspirator Girders at Level 7

Below: Level 7 Rolling Deck Parts Staged in Laydown Yard at SSC

Left: Test Stand B-2 Draping for Demo and Refurb
EFT-1 Update
Orion Testing: Entry, Descent, and Landing

Test completed July 24th

- The test marked the first time using the LM Provided parachute compartment which includes riser cutters, and was the first time the Parachute Test Vehicle (PTV) / CPAS PTV Separation System (CPSS) will be extracted from an aircraft at 35,000 ft (as opposed to 25,000 ft) to reach more flight like environmental conditions.
- The test included additional test objectives of obtaining aerodynamics data through flush air data system development flight instrumentation and obtaining performance characteristics of the Orion GPS Receiver.

- Risk-reduction testing for parachutes, splashdown, and recovery operations.
- Orion shares test result data with CCDev2 and its partners, leveraging investment in common suppliers base.
Heat Shield Honeycomb Coating Application - Textron
Spacecraft Adapter Jettisonable Fairings
First Jettison Test Complete
Summary

• NASA continues to make great progress with SLS, Orion and GSDO
  – SLS PDR underway
  – GSDO preparing for PDR early 2014
  – Orion on track for EFT-1 in 2014

• SLS, Orion, and GSDO programs remain on track for 2017