Ares Projects Office Progress Update

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Presentation Abstract

NASA's Vision for Exploration requires a safe, reliable, affordable launch infrastructure capable of replacing the Space Shuttle for low Earth orbit transportation, as well as supporting the goal of returning humans to the moon. This presentation provides an overview of NASA's Constellation program and the Ares I and Ares V launch vehicles, including accomplishments and future work.
Ares Projects Office Progress Update

Teresa Vanhooser
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Today’s Journey

♦ Where We Are

♦ A Nationwide Partnership

♦ Ares I Progress Since System Requirements Review
  • Vehicle Integration
  • First Stage
  • Upper Stage
  • Upper Stage Engine

♦ The Challenges Ahead
Over $4B in New Procurements

**Orion CEV**
- 16.5 ft diameter

**Launch Abort System (LAS)**

**Spacecraft Adapter**

**Upper Stage**
- 305k lb LOx/LH₂ stage
- 18 ft diameter
- Aluminum-Lithium (Al-Li) structures
- Instrument unit and interstage
- Reaction Control System (RCS) / roll control for first stage flight
- Primary Ares I control avionics system
- *NASA Design / Boeing Production ($1.12B contract signed 8/28)*

**Stack Integration**
- 2M lb gross liftoff weight
- 328 ft in length
- *NASA-led*

**First Stage**
- Derived from current Shuttle RSRM/B
- Five segments/Polybutadiene Acrylonitrile (PBAN) propellant
- Recoverable
- New forward adapter
- Avionics upgrades
- *ATK Launch Systems ($1.2B contract signed 8/10)*

**Interstage Cylinder**

**Upper Stage Engine**
- Saturn J-2 derived engine (J-2X)
- Expendable
- *Pratt and Whitney Rocketdyne ($1.8B contract signed 7/16)*
Vehicle Integration

LAS Mock-up

MSFC Systems Integration Lab

Abort Simulations

2,500+ Wind Tunnel Tests
First Stage

- SRM Test Firing
- Nozzle Actuator Tests
- New SRM Insulation
- Parachute Drop Test
Upper Stage

- Full-scale Interstage Mock-up
- Friction Stir Weld Facility
- Confidence Panel Evaluation
- Saturn IVB Vent Relief Valve Disassembly
Upper Stage Engine

LOX Inducer Testing

Cold-flow Nozzle Side Loads Testing

Powerpack Disassembly/Installation

Subscale Injector Testing
The Challenges Ahead

- **The Latest Milestone: System Definition Review**
  - Kick-off conducted September 10
  - Standing Review Board participation
  - Review board for final dispositions scheduled for October

- **Instrument Unit contract award**
  - Scheduled for the December 2007 time frame

- **Preliminary Design Review**
  - Currently slated for mid-2008

- **Ares I-X Test Flight**
  - On track for April 2009 launch
  - Ground vibration testing ongoing
  - Hardware fabrication underway