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.
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

Instrument Unit

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

Interstage Cylinder

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)

Upper Stage
- 305k lb LOx/LH$_2$ 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)

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

ATK Launch Systems
Ames
Boeing
Marshall
Glenn
Langley
Kennedy
Pratt and Whitney Rocketdyne
Johnson
Michoud Assembly Facility
Stennis

National Aeronautics and Space Administration
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