Engineering Innovations for Exploration Challenges
Agenda

- 2009 Highlights
- Many Places to Explore
- Space Exploration Enterprise
- Marshall’s Missions
- Project Lifecycle Management Model
- Sustainable Long-term Program
- Building Block Approach
- Defining the Path Forward
- Mars In Sight
2009 Highlights

Significant Successes in Space Transportation, Exploration, and Science
Many Places to Explore

Lagrange Points
- Automated Rendezvous and Docking
- Habitation Systems/ECLSS
- Advanced Propulsion

Near-Earth Objects
- Nuclear & Advanced Propulsion
- Methane Propulsion
- Habitation Systems/ECLSS
- Automated Rendezvous & Docking
- Aerocapture

ISS Research and Technology Testbed
- RP Engines, Cryogenic Fluid Mgt., Propellant Depots, Advanced Manufacturing Composites

Mars Orbit, Surface
- Solar Thermal, Solar Sail, & Solar Electric Propulsion Systems

Robotic Science & Exploration
- Lunar Flyby, Lunar Orbit, Lunar Surface

Innovations for Scientific Exploration
Space Exploration Enterprise

Government, Industry, and Academia Working Together
Marshall’s Missions

Making Possible Human and Scientific Space Exploration
Reducing Undefined, but Known, Risks
Sustainable Long-term Program

Block upgrades contributed to long-term program success

B-52Bs, 1957

NB-52A, 1959

B-52H Stratofortress, The longest-serving bomber in U.S. military history
Building Block Approach

Building success through incremental testing and development
Defining the Path Forward

Expanding Knowledge through Exploration
...I believe we can send humans to orbit Mars and return them safely to Earth.

–President Obama
Kennedy Space Center, April 15, 2010
For more information:
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