



NASA's Space Launch System: *A Flagship for Exploration Beyond Earth's Orbit*

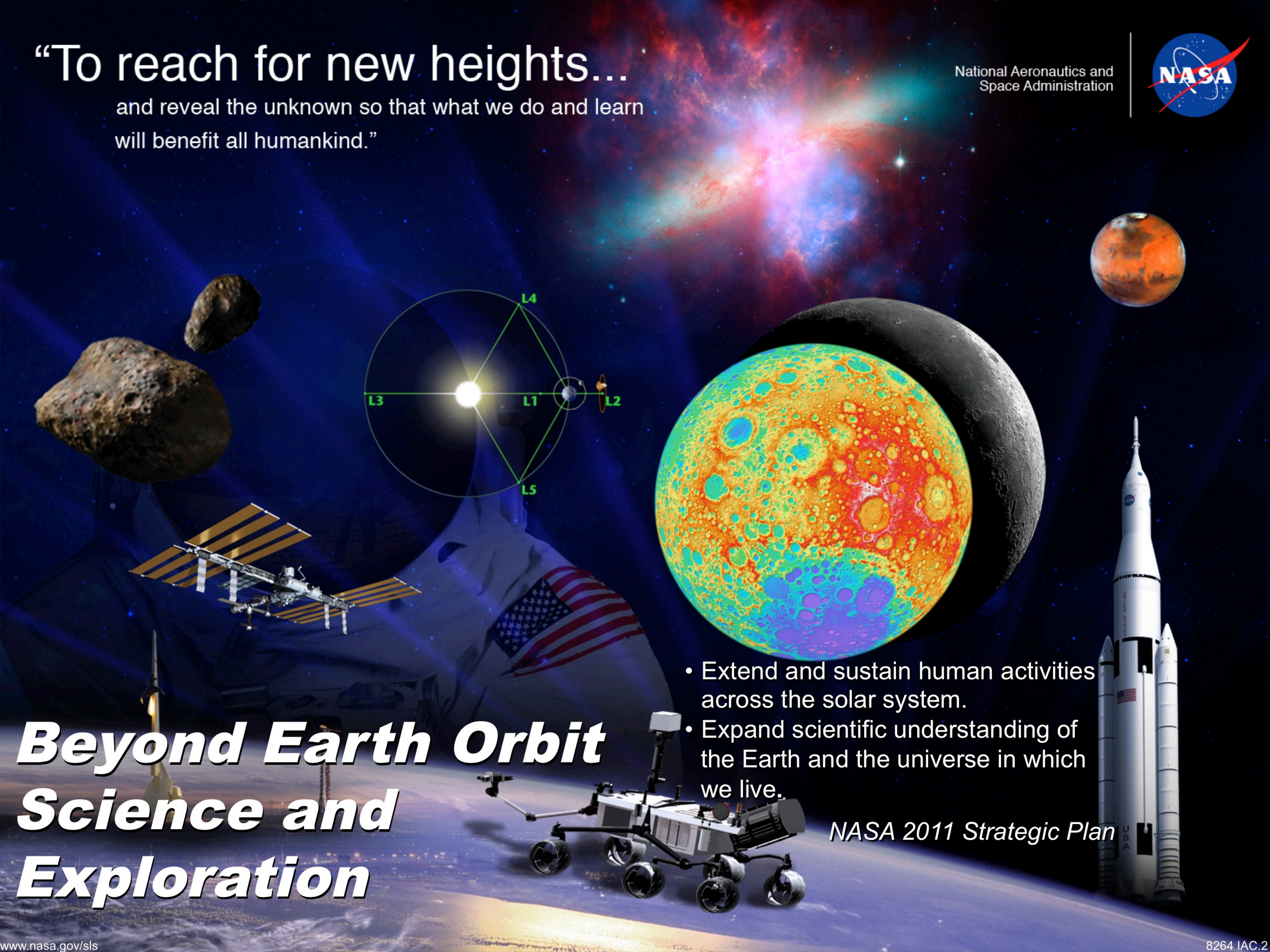
Todd A. May
Program Manager
Marshall Space Flight Center
U.S.A.

October 2012



“To reach for new heights...
and reveal the unknown so that what we do and learn
will benefit all humankind.”

National Aeronautics and
Space Administration



Beyond Earth Orbit Science and Exploration

- Extend and sustain human activities across the solar system.
- Expand scientific understanding of the Earth and the universe in which we live.

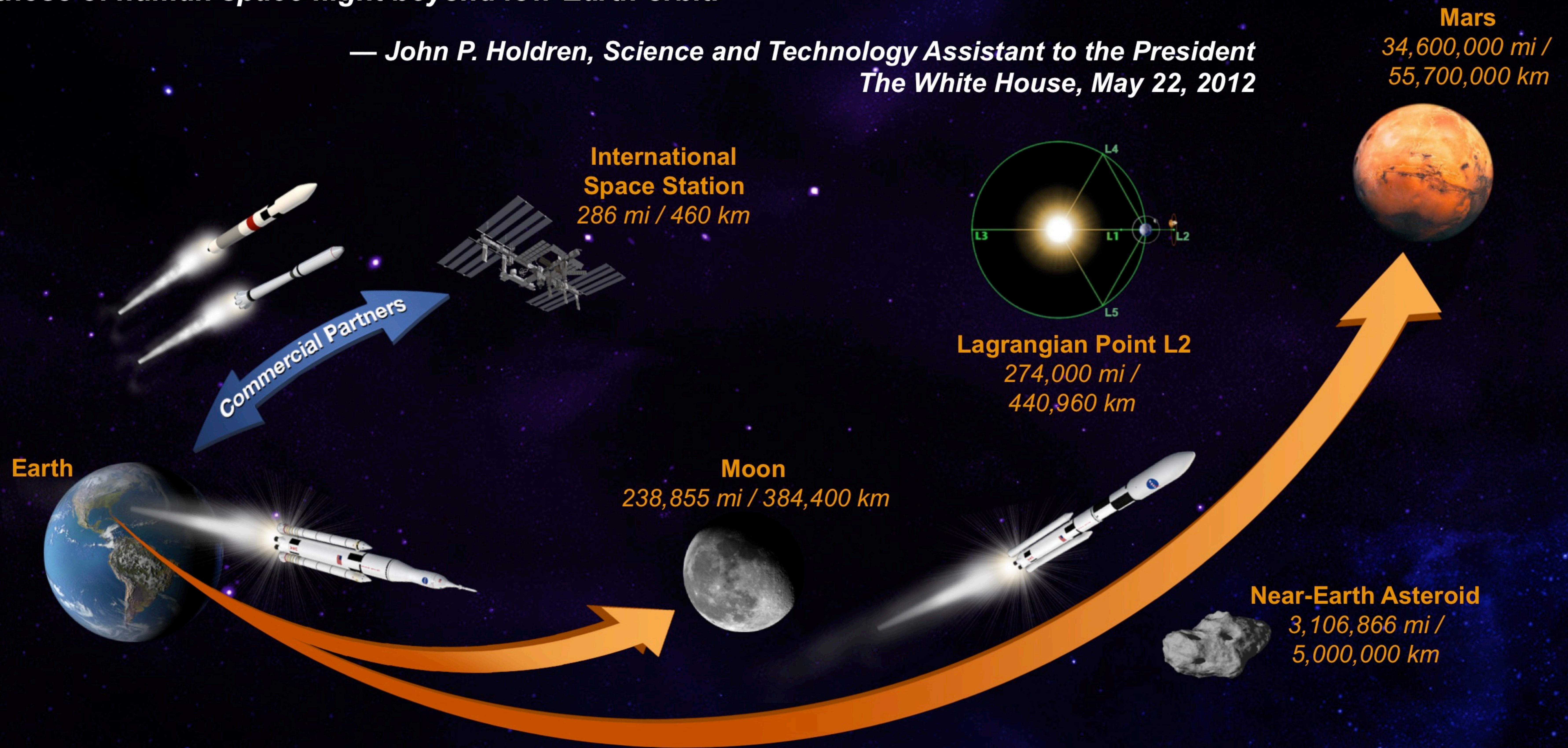
NASA 2011 Strategic Plan

The Future of Exploration



“This expanded role for the private sector will free up more of NASA’s resources to do what NASA does best — tackle the most demanding technological challenges in space, including those of *human space flight beyond low-Earth orbit*.”

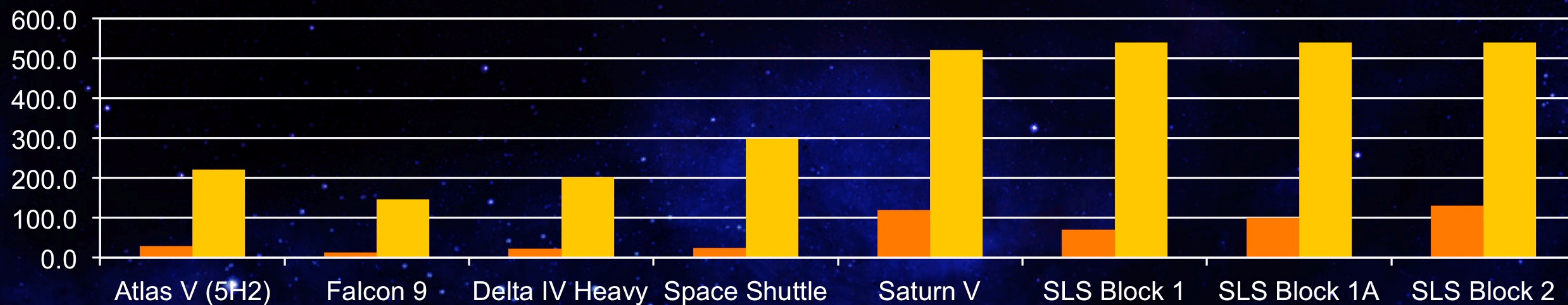
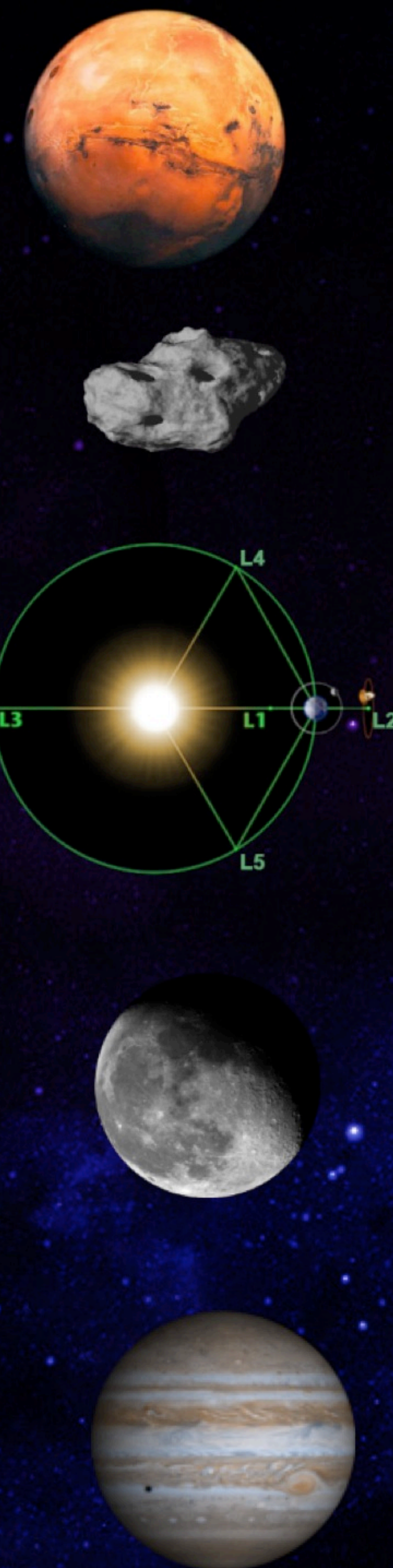
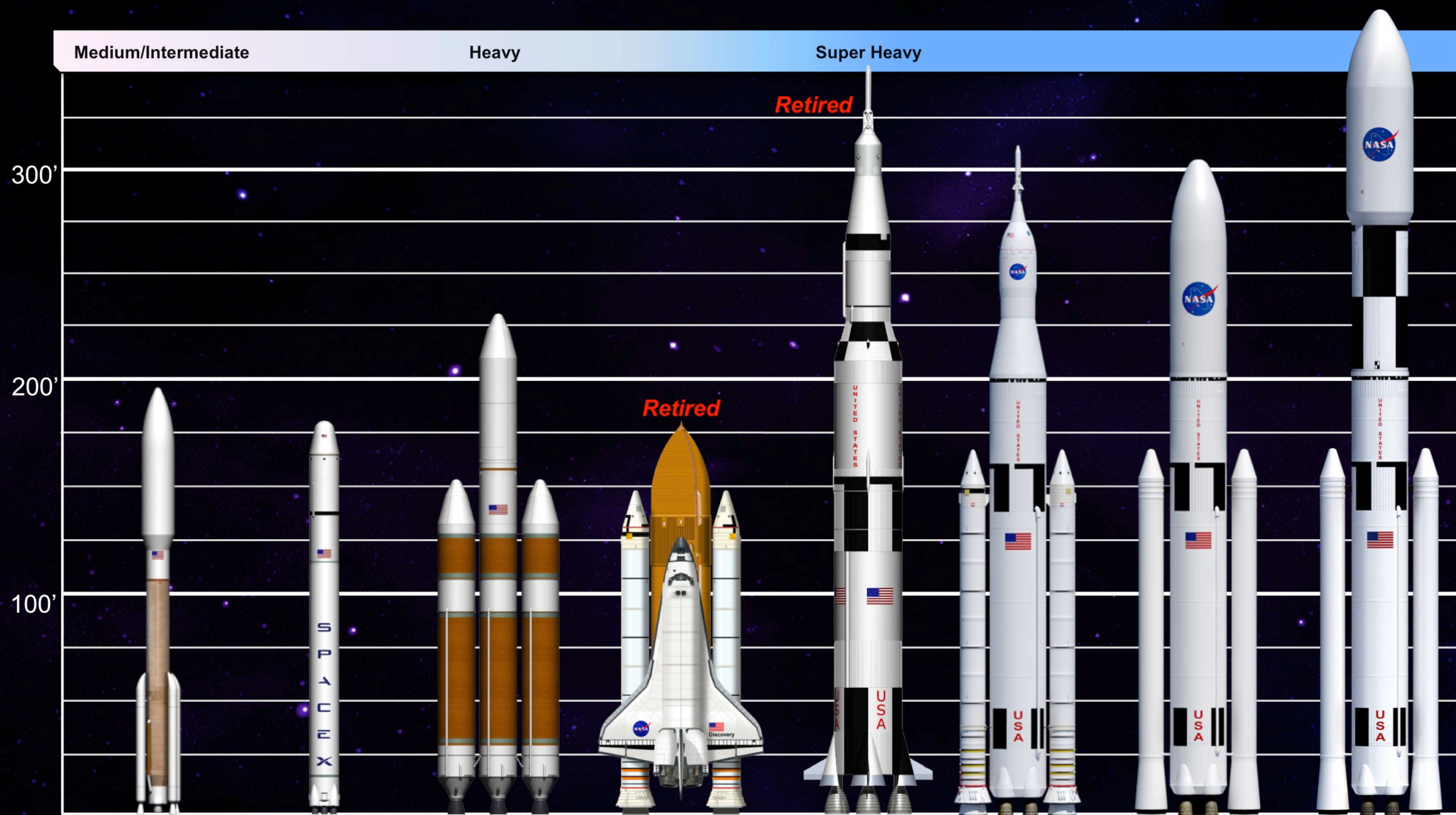
— John P. Holdren, Science and Technology Assistant to the President
The White House, May 22, 2012



“My desire is to work more closely with the human spaceflight program so we can take advantage of synergy. We think of the SLS as the human spaceflight program, but it could be hugely enabling for science.”

— John Grunsfeld, Associate Administrator
NASA Science Mission Directorate
Nature, Jan 19, 2012

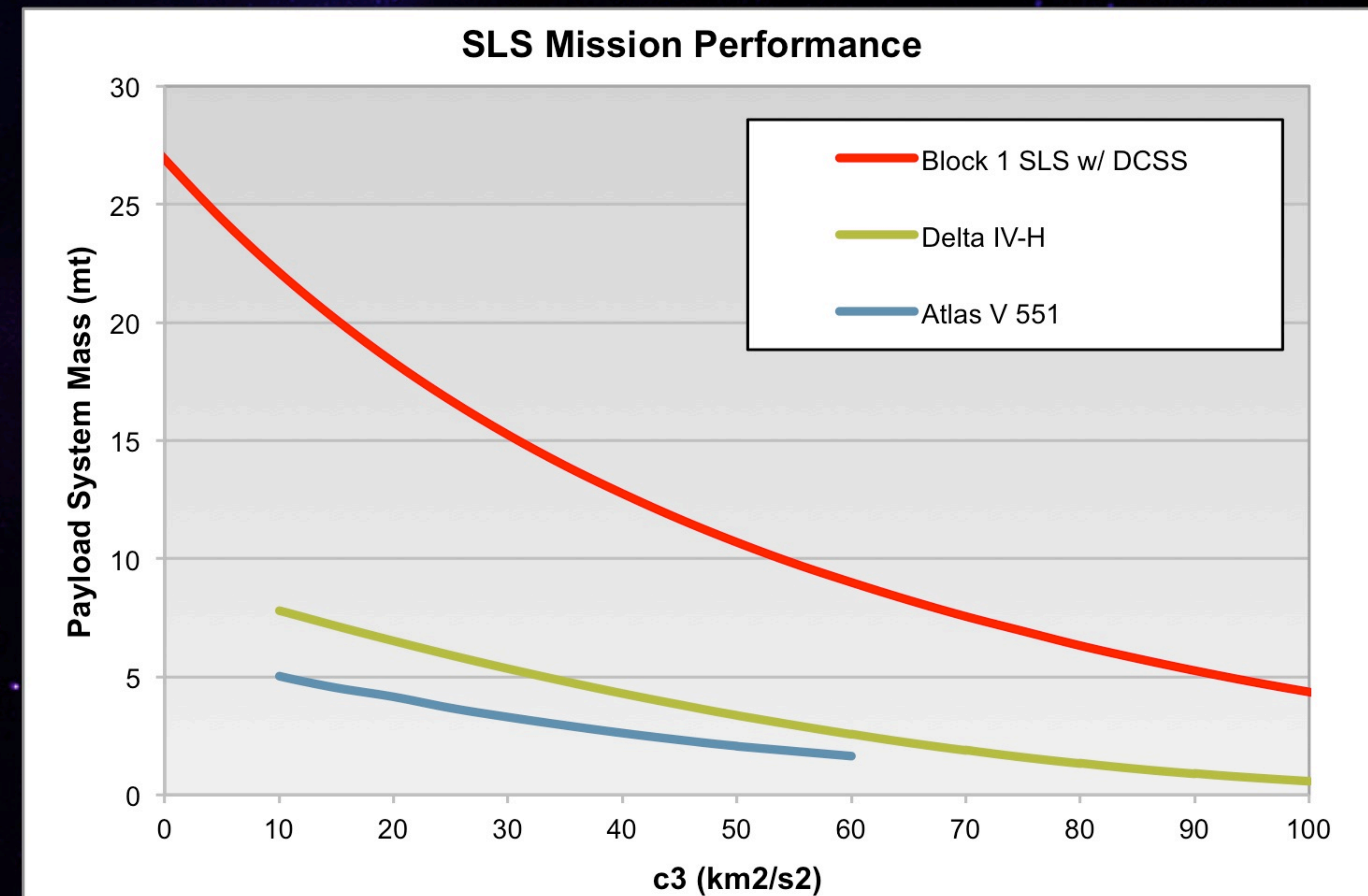
Most Capable U.S. Launch Vehicle



SLS Benefits



Attributes	Outcomes
• Greater volume and mass capability/margin	• Increased design simplicity • Fewer origami-type payload designs needed to fit in the fairing
• Single launch of multiple elements • Fewer launches and deployments • Fewer critical operations	• Increased mission reliability and confidence • Less risk
• High-energy orbit • Shorter trip times	• Less expensive mission operations
• Increased lift capacity • Increased payload margin	• Less Risk

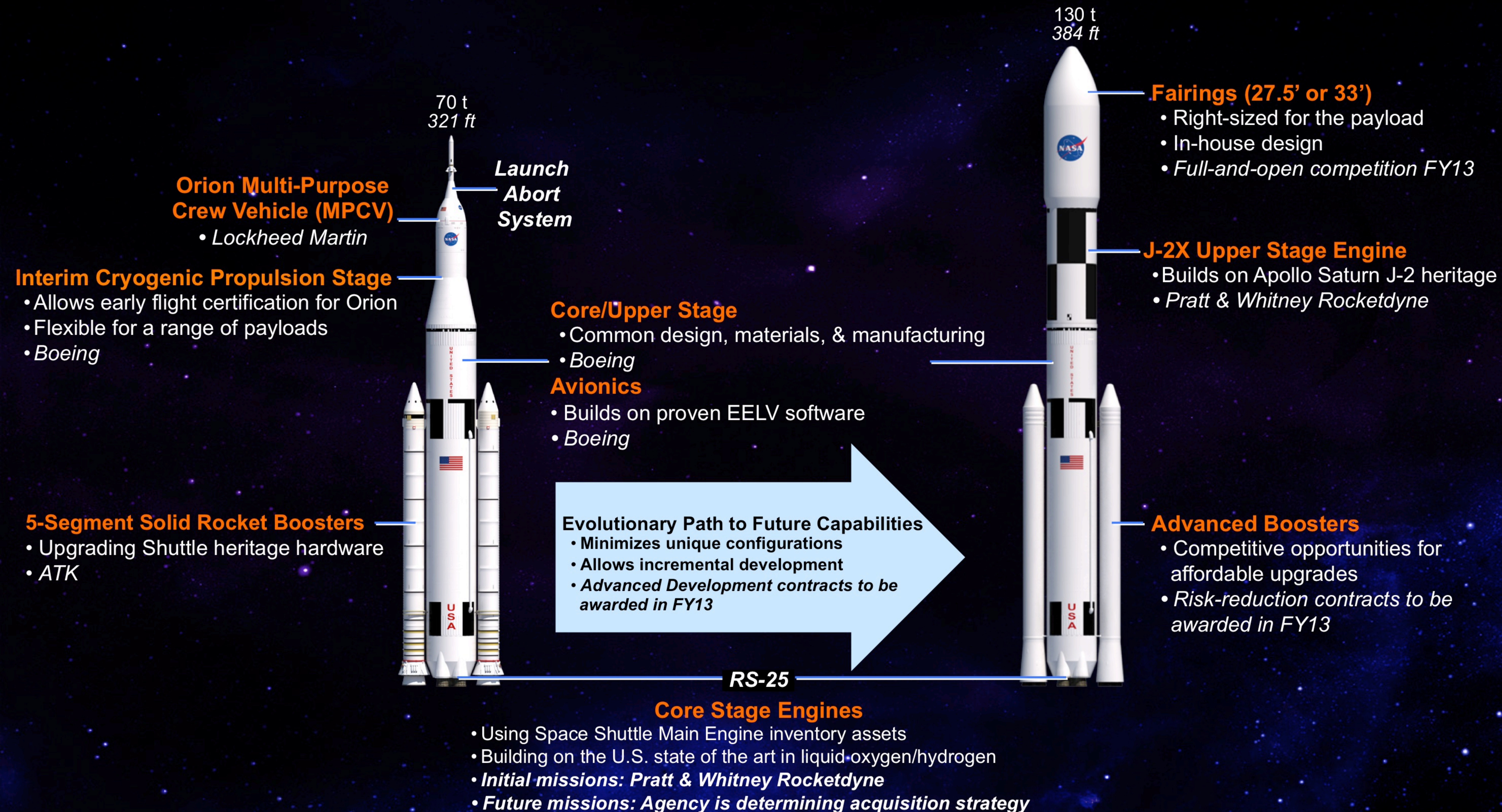


SLS: Safe, Affordable, and Sustainable



INITIAL CAPABILITY, 2017–21

EVOLVED CAPABILITY, Post-2021



A Platform for Global Cooperation

5-Segment Solid Rocket Booster

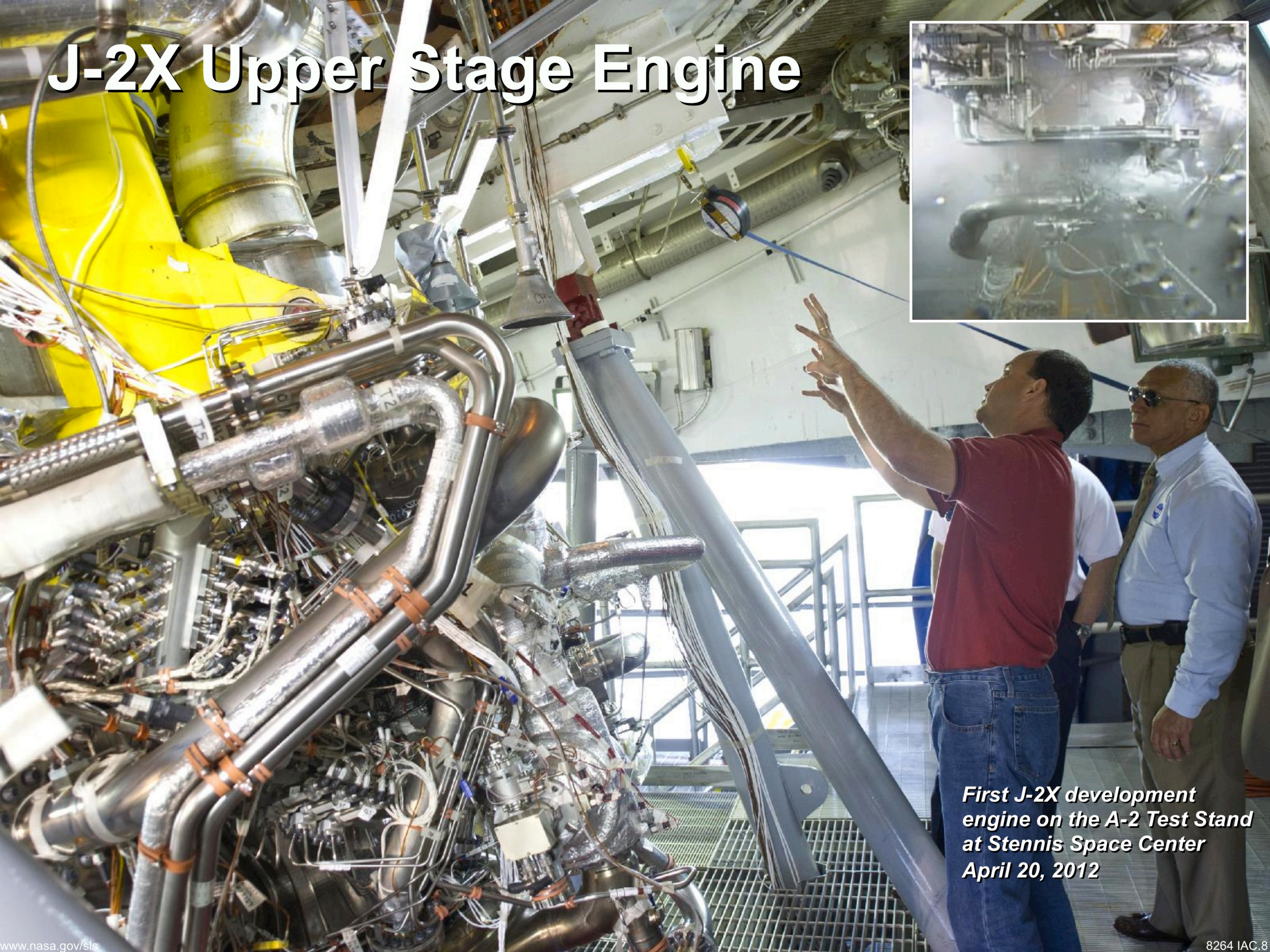
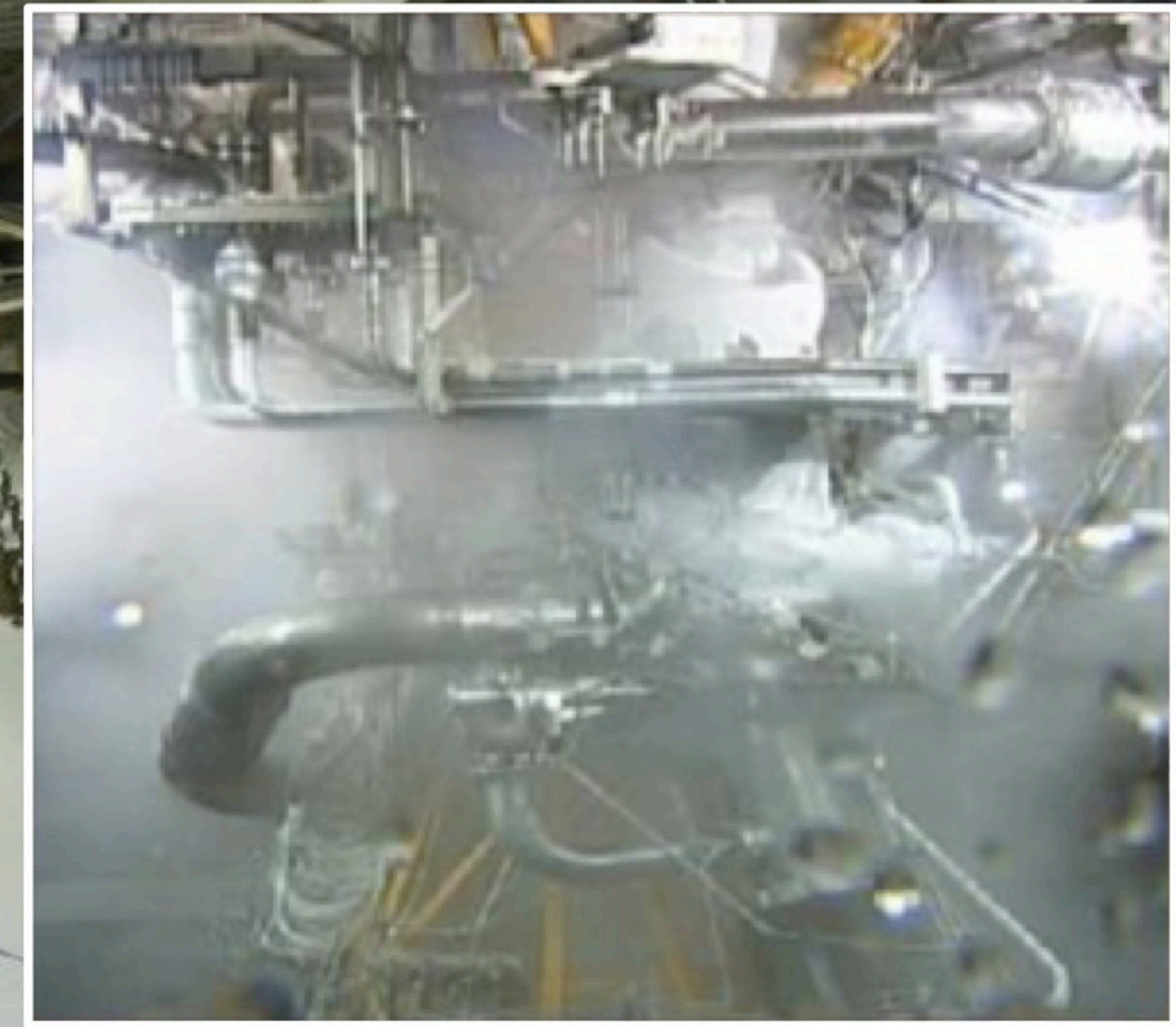


Qualification Motor Casting, July 2012



Development Motor Test 3
September 8, 2011
ATK Promontory, Utah

J-2X Upper Stage Engine



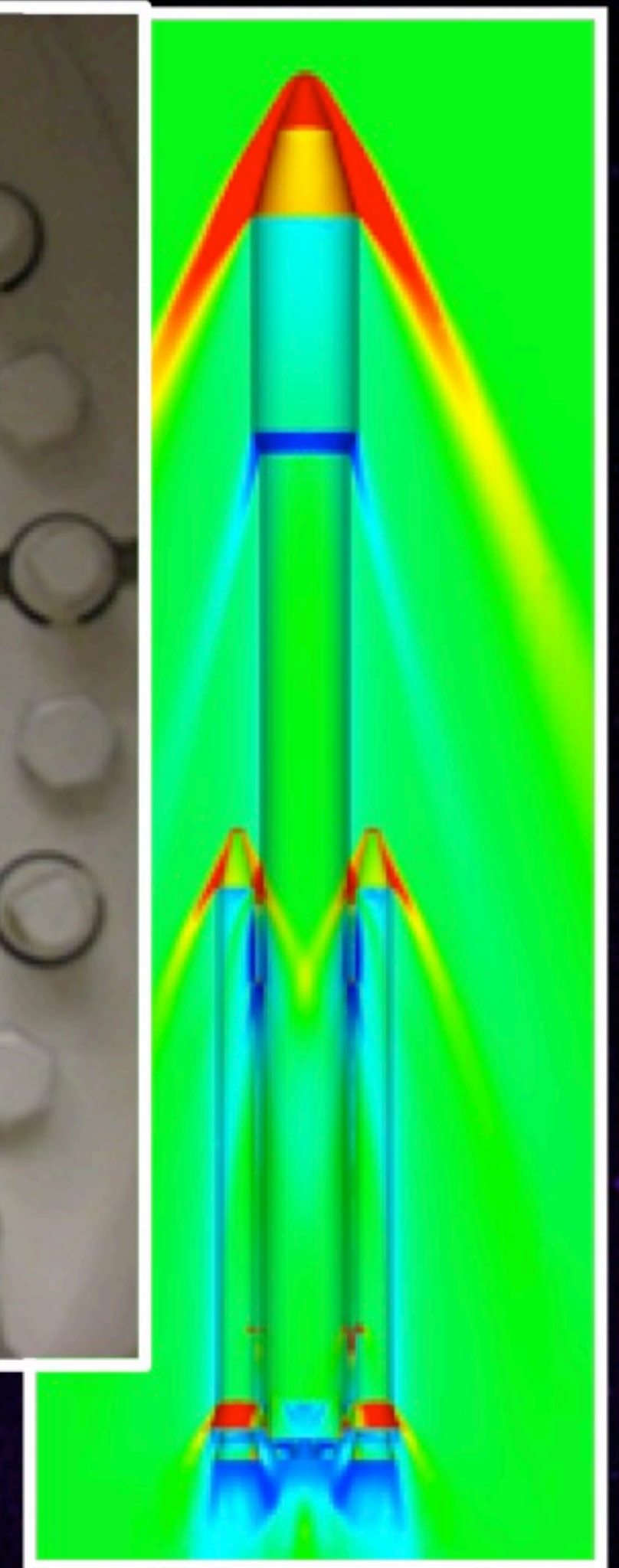
*First J-2X development
engine on the A-2 Test Stand
at Stennis Space Center
April 20, 2012*

SLS: Preparing for First Flight in 2017

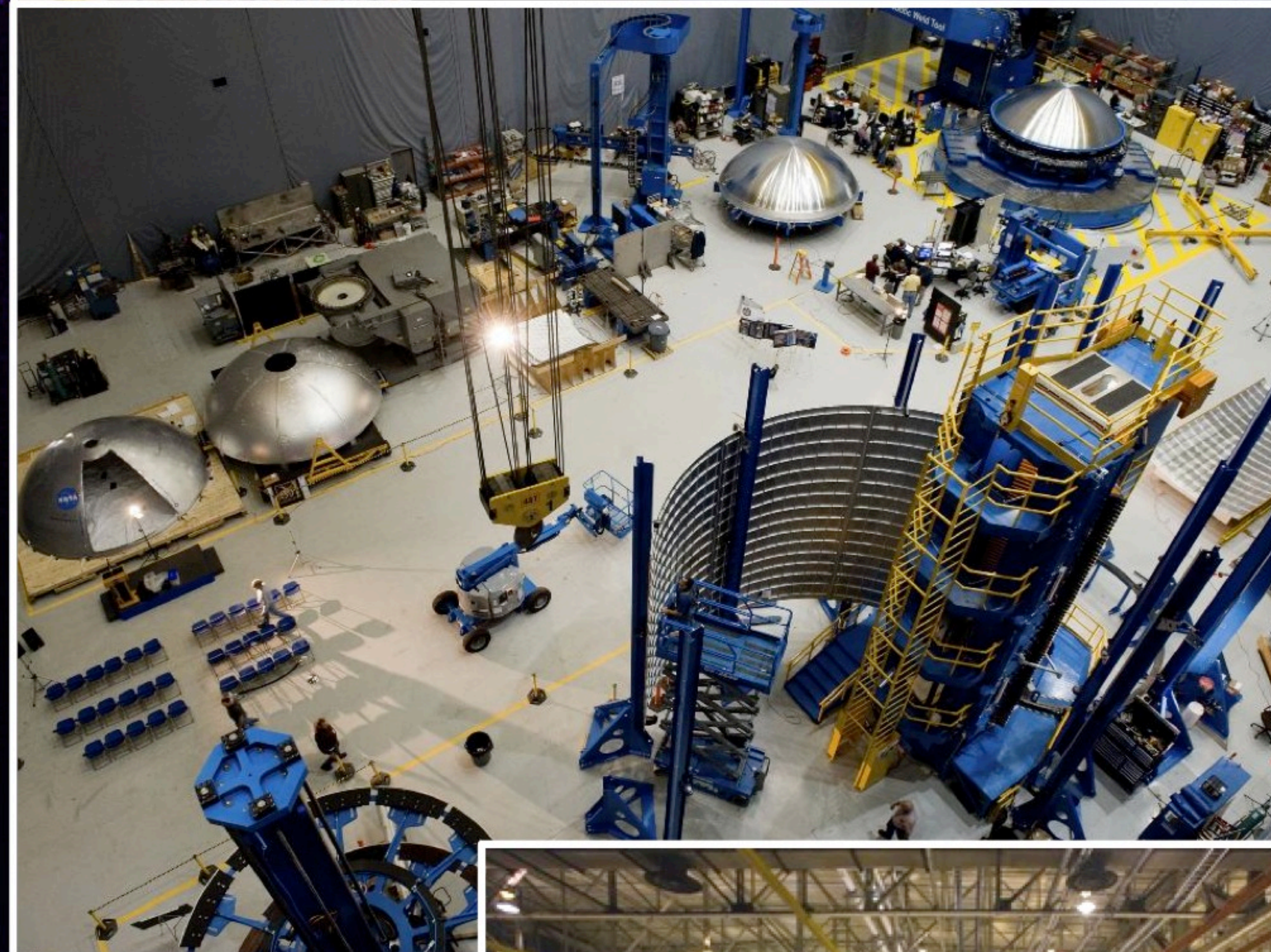


Avionics Test-Bed
May 2012

Force and
moment wind
Tunnel testing
July 2012



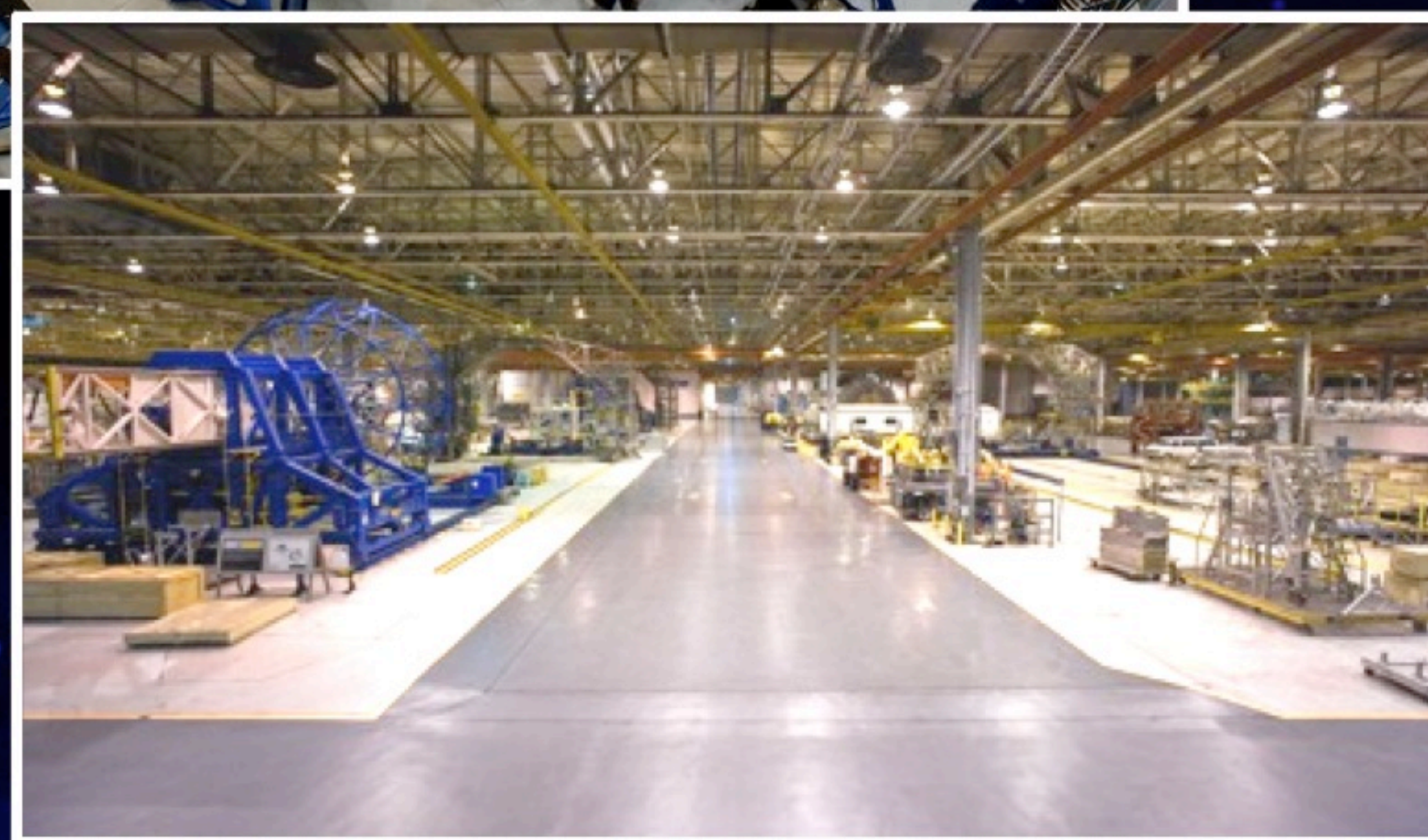
Systems Engineering & Integration



Ring Milling for
Multi-Purpose
Crew Vehicle-to-
Stage Adapter
(MSA) for 2014
Exploration Flight
Test
June 2012



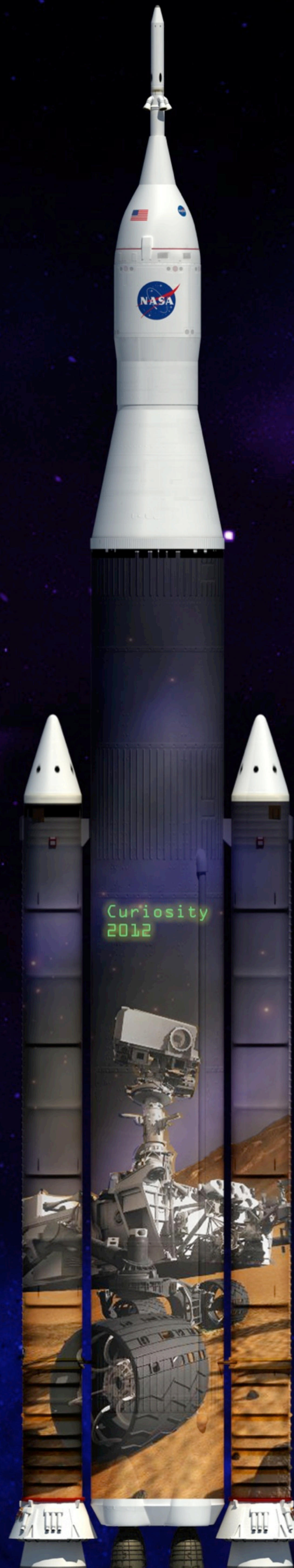
MSA Pathfinder hardware
June 2012



Stages manufacturing
demos and tooling
preparation for friction stir
welding
April 2012



For More Information



*www.nasa.gov/sls
[www.twitter.com/nasa_sls](https://twitter.com/nasa_sls)
[www.facebook.com/nasasls](https://facebook.com/nasasls)*

A composite image of the solar system. In the upper left, a large, bright yellow Sun with a soft orange glow. To its right, the Earth is shown with blue oceans and white clouds. Further right is the Moon, appearing as a small, grey sphere. To the right of the Moon is Mars, a reddish-orange planet with dark surface features. In the foreground, numerous brown, rocky asteroids of various sizes are scattered across the dark blue space. A small satellite with solar panels is visible near the Earth. A faint, horizontal line of small, dark objects, possibly a comet or a distant galaxy, stretches across the upper right portion of the image.

*Somewhere, something incredible
is waiting to be known.*

— Carl Sagan