JACOBS®

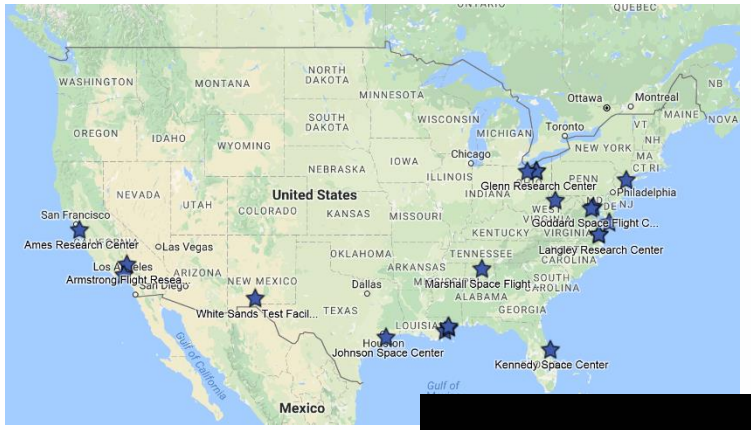
Jacobs Enabling Space Exploration for NASA

N. Jan Davis, Ph.D., P.E.

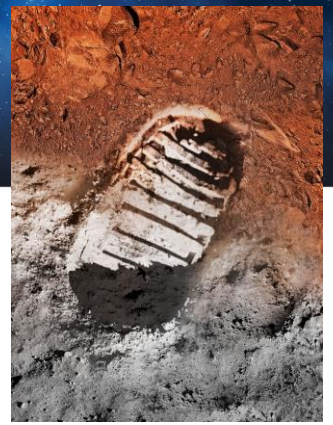
March 8, 2017

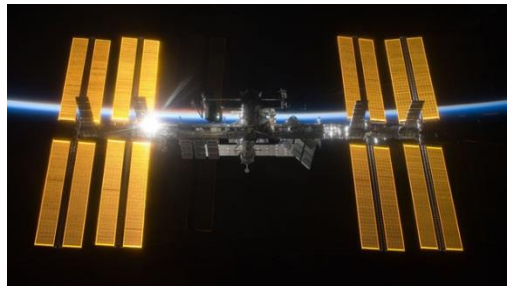
National Aeronautics and Space Administration (NASA)

- NASA Headquarters, in Washington DC.
  Ten field centers and a variety of installations
- Began in 1958 by President Eisenhower, and focused on scientific research, aeronautics, and applications of space technology
- President Kennedy had the goal of sending humans to the moon, with the Mercury, Gemini, and Apollo programs
- After Apollo, NASA flew 135 missions of the Space Shuttle, from 1981 to 2011

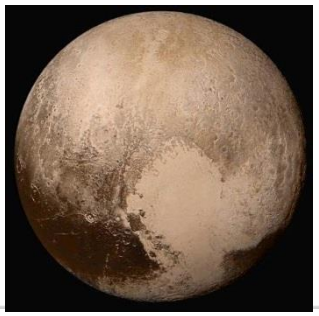


NASA Today





- Next Giant Leap to Mars
- International Space Station
- Earth science - helping to answer critical challenges: climate change, sea level rise, freshwater resources and extreme weather events.
- Aeronautics - to fundamentally improve the air transportation experience and retain our nation's leadership in global aviation.

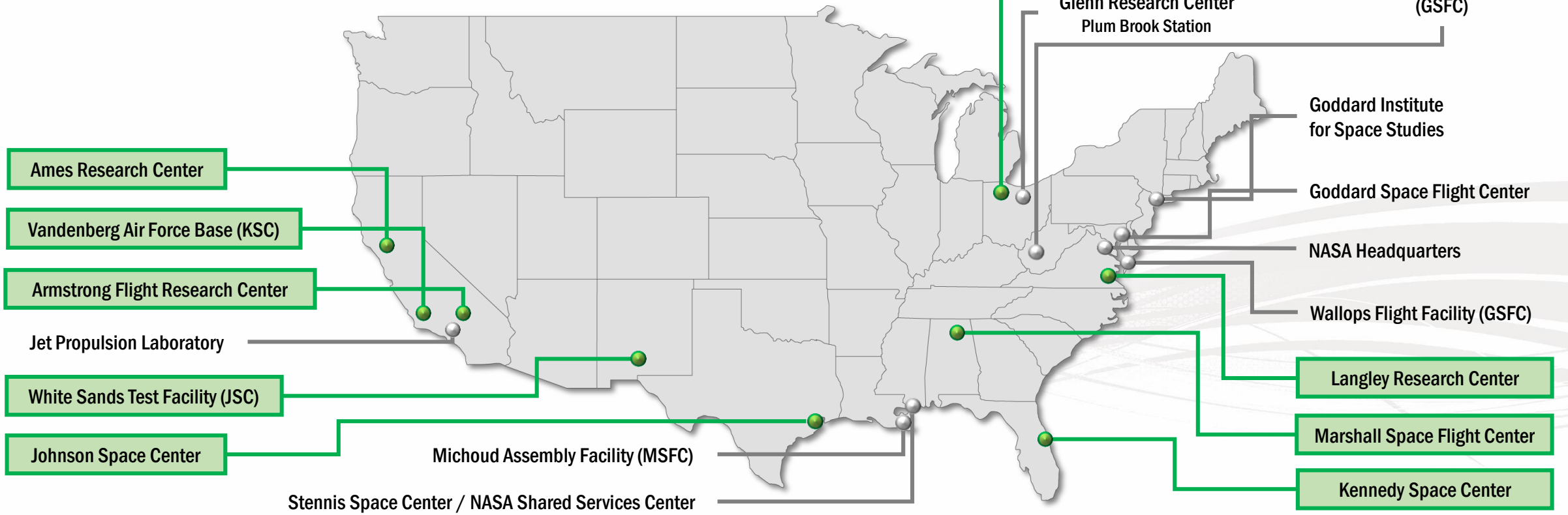


- Space science – to explore the universe with scientific spacecraft and telescopes, unraveling mysteries about the origin and evolution of the sun and planets.

Jacobs NASA Locations

Current Contract

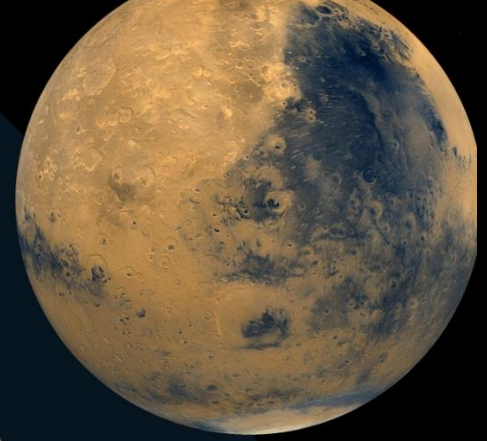
Total Employees: 3,400

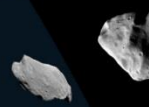


A Strong Jacobs Future with NASA

JACOBS

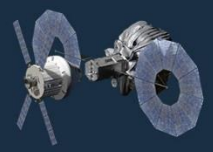
Expanding exploration capabilities by visiting an asteroid that has been redirected to high lunar orbit.





JACOBS

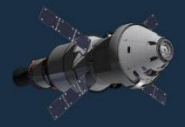
Exploring Mars and other deep space destinations.



JACOBS

Traveling beyond low Earth orbit with the Space Launch System and Orion spacecraft.

JACOBS

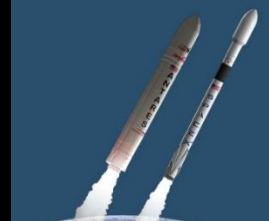


JACOBS

Learning fundamentals of living and working in space aboard ISS.

JACOBS

Getting affordable access to low Earth orbit from U.S. companies.



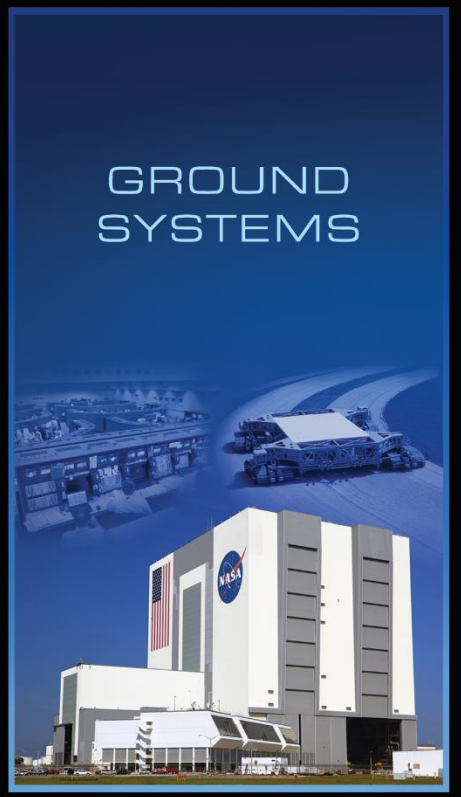
JACOBS

Ground Systems

Payload Processing

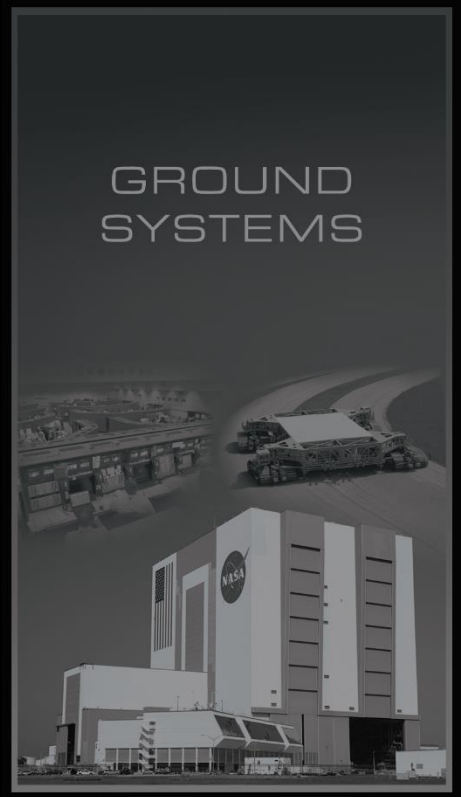
Earth Reliant	Proving Ground	Earth Independent
Missions: 6 to 12 months	Missions: 1 month up to 12 months	Missions: 2 to 3 years

A Road to Discovery

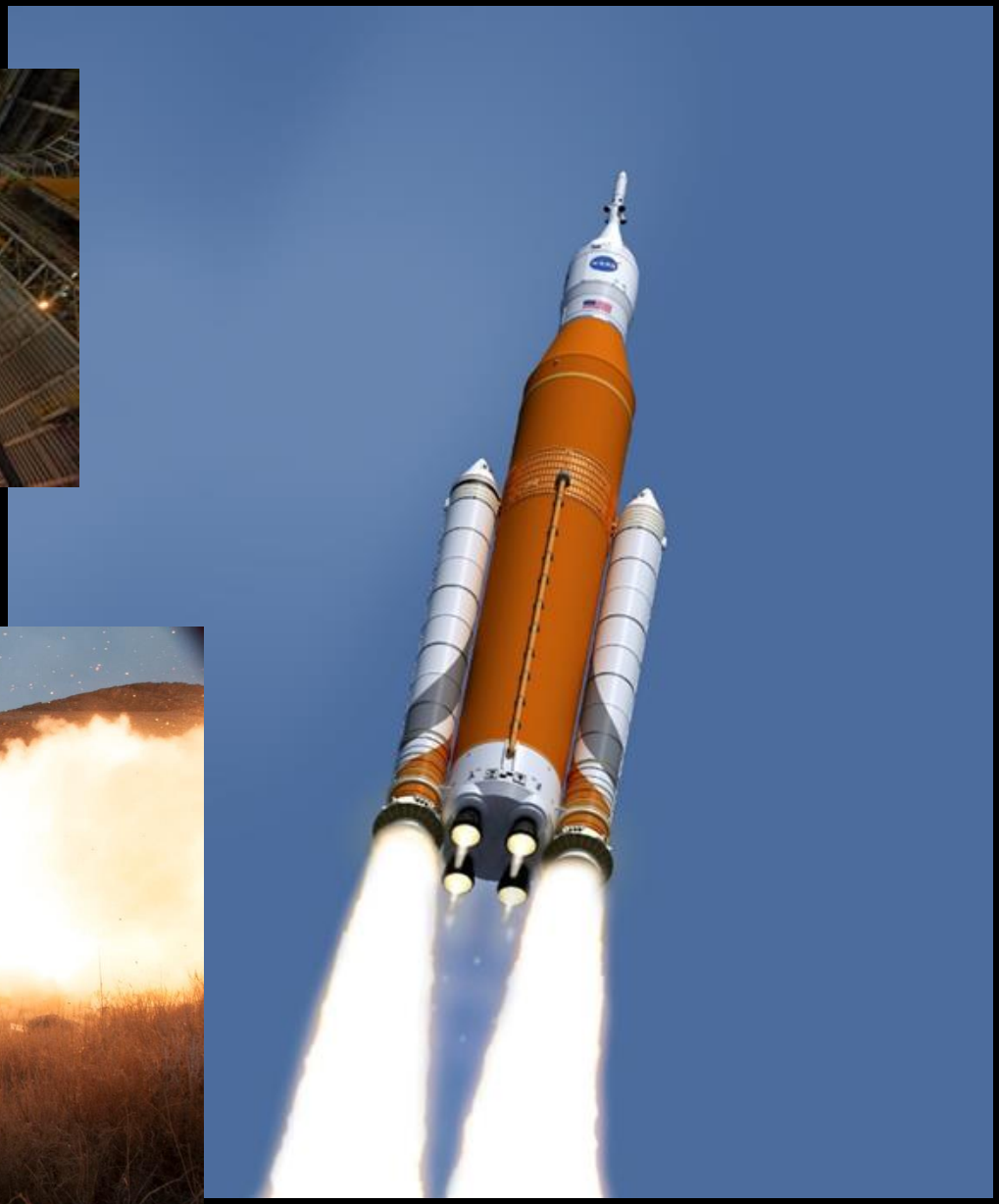


JACOBS

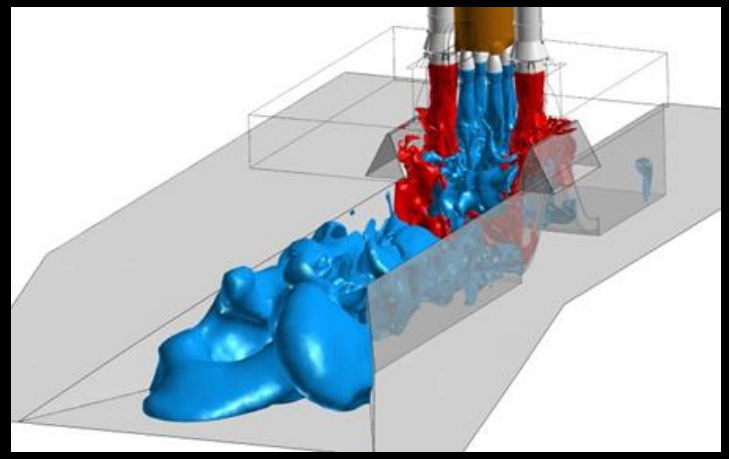
Space Launch System – Marshall Space Flight Center



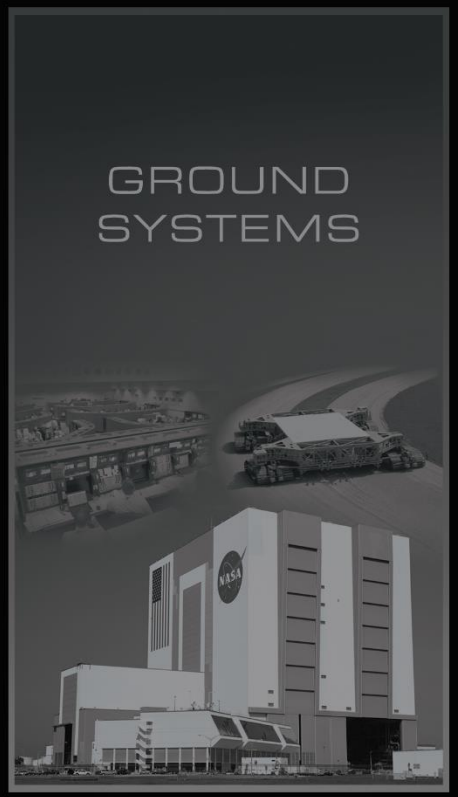
Space Launch System



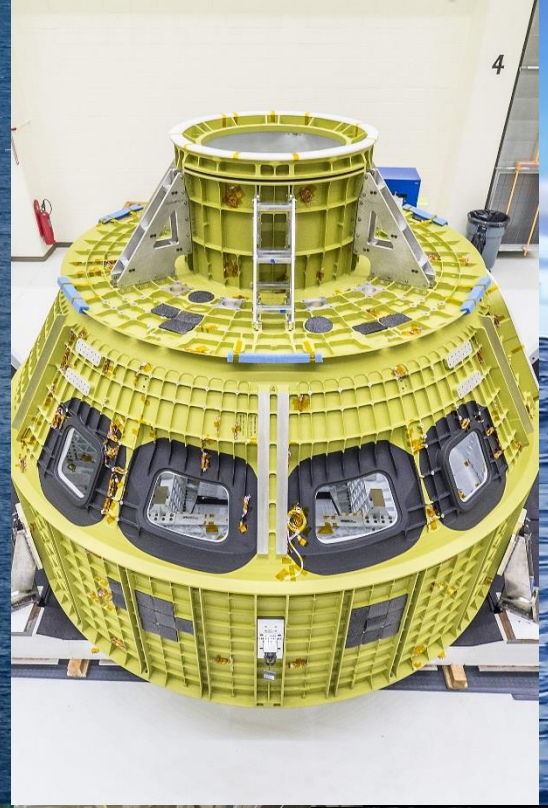
SLS System Level Technical Services

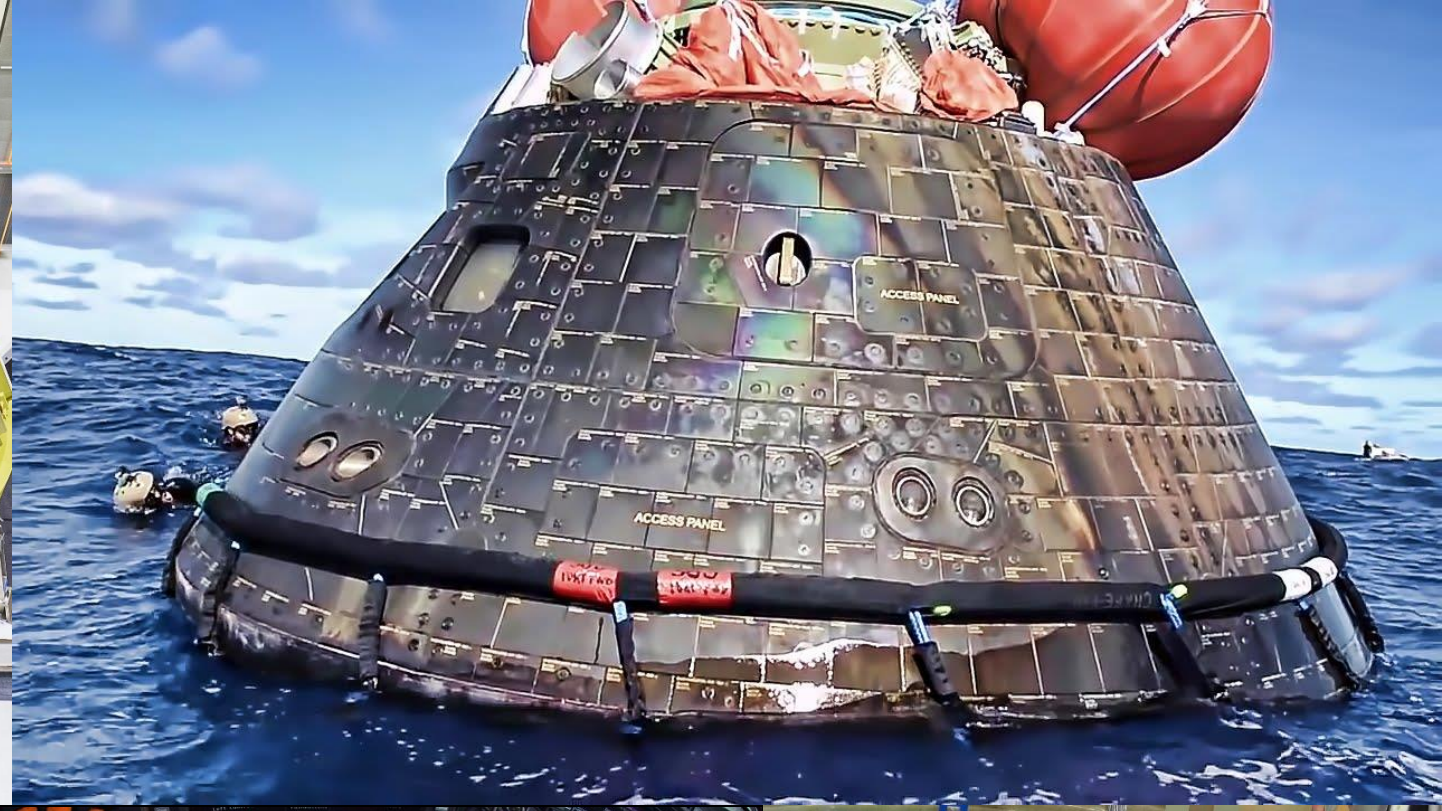


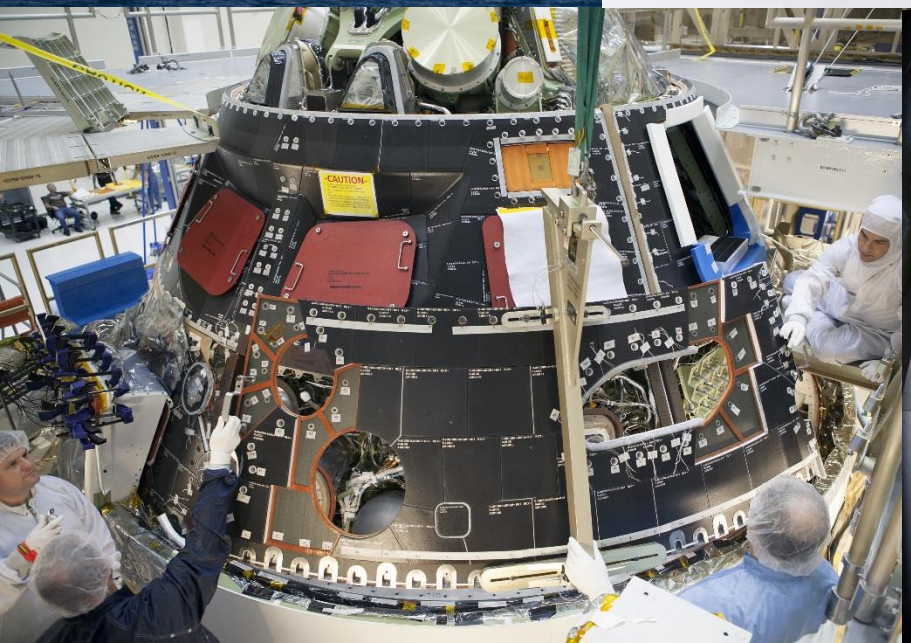
Orion – Johnson Space Center

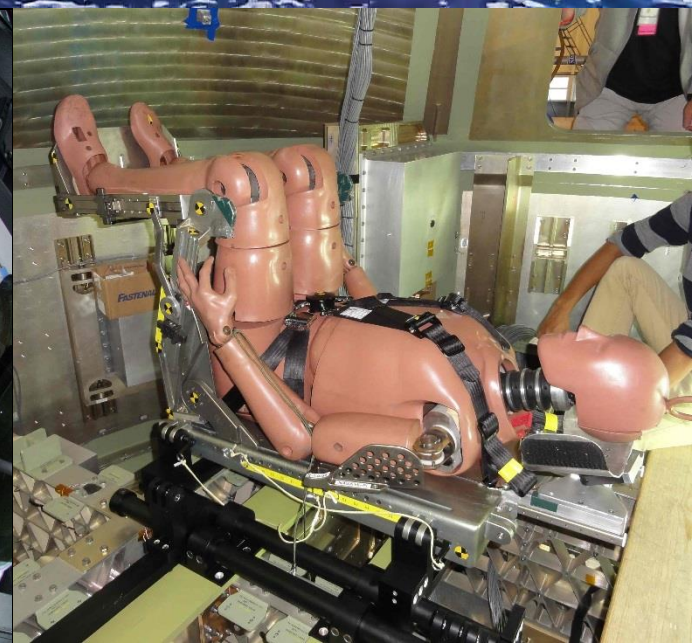



Orion



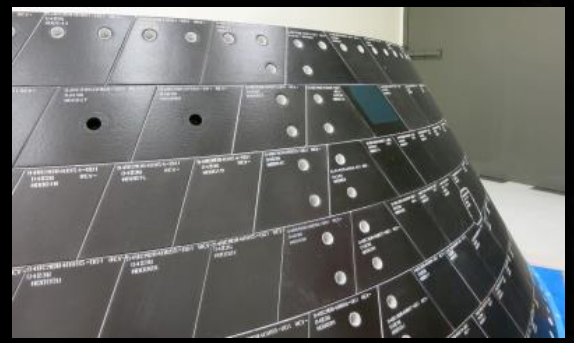

ACCESS PANEL
ACCESS PANEL


CAUTION



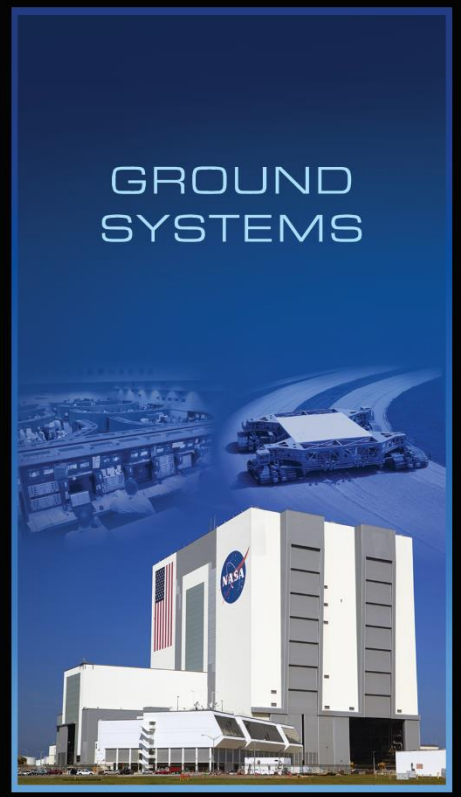
Launch Abort System

Thermal Protection System



Parachute System

Ground Systems – Kennedy Space Center



GROUND SYSTEMS DEVELOPMENT & OPERATIONS

Concept of Operations

★ TOSC Activities

Launch Abort System (LAS)

LAS Ogive Fairing

Crew Module

Service Module

Spacecraft Adapter

Interim Cryogenic Propulsion Stage

Launch Vehicle Stage Adapter

Core Stage

Solid Rocket Booster

Solid Rocket Booster

RS-25 Engines

Launch Abort System Facility

Transfer Elements to Vehicle Assembly Building

Operations & Checkout Facility

Offline Spacecraft Processing

Multi-Payload Processing Facility

Comm and Control

Command, Control & Communications Range and Firing Room

Interim Cryogenic Propulsion Stage Processing

Turn Basin

Vehicle Integration and Launch

Vehicle Assembly Building High Bay 3

Crawler-Transporter 2

Mobile Launcher

Launch Complex 39B

Liftoff

2018

Solid Rocket Booster Processing

Jay-Jay Bridge

Railcar to Rotation Processing & Surge Facility

Rotation Processing & Surge Facility

Space Launch System Manufacturing

Hangar AF

Aft Forward Skirt, Core Stiffner Attach Ring & Position Refurbishment (SLS Production Activities)

Booster Fabrication Facility

Aft Skirt, Forward Assembly & Core Stiffner Attach Ring Buildup (SLS Production Activities)

Landing and Recovery

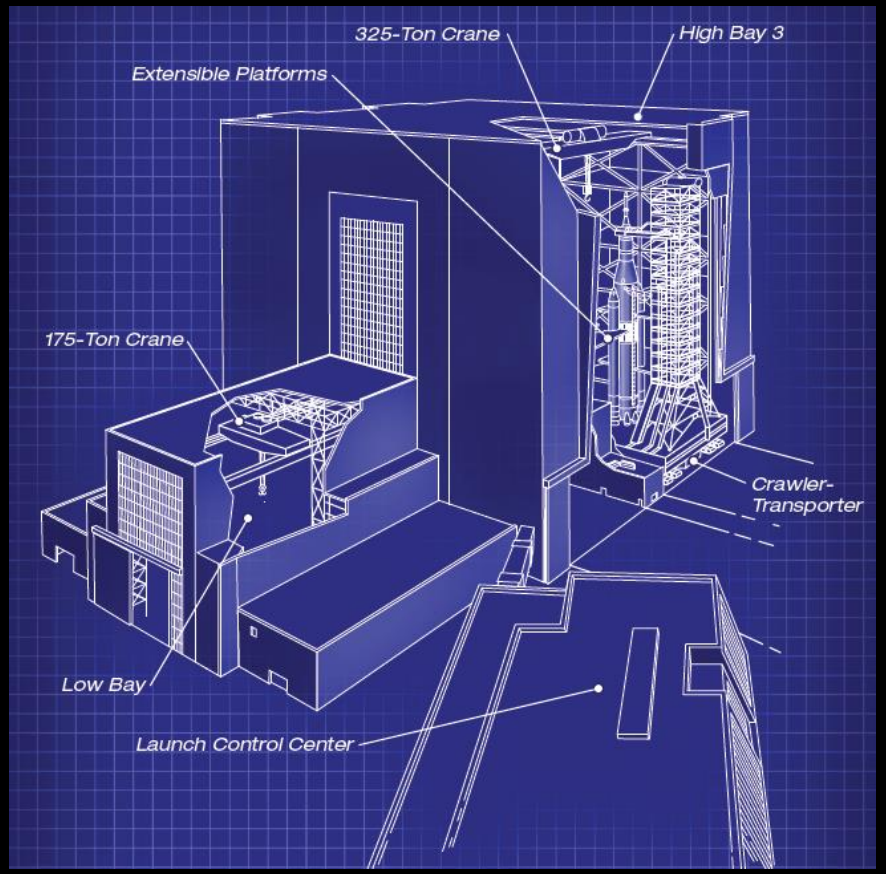
Crew Module Landing

Crew Module & Crew Recovery

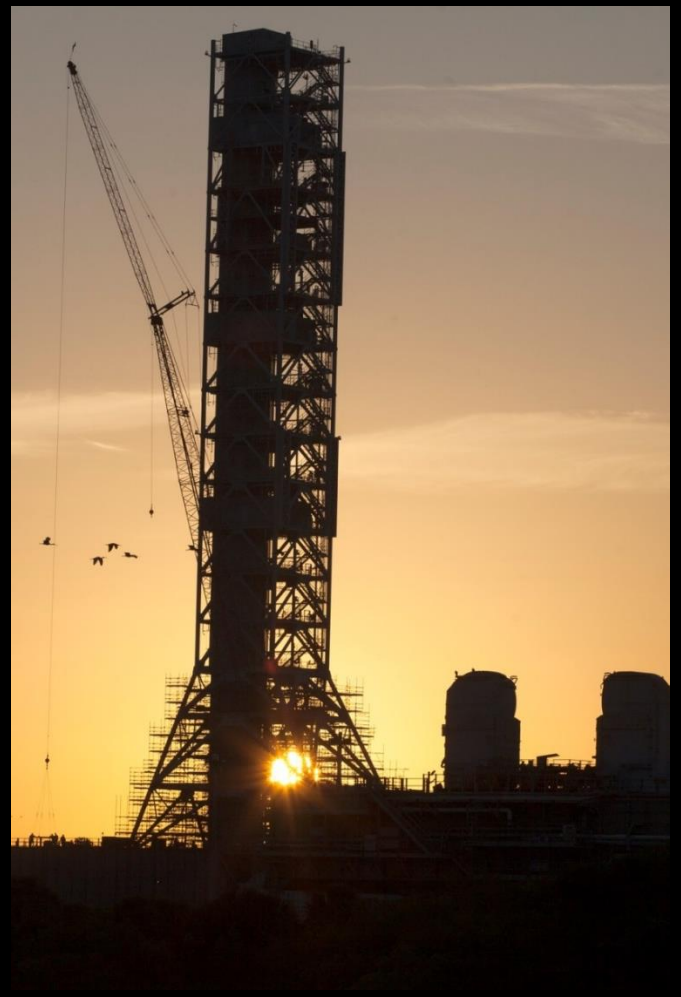
West Coast Recovery & Transport to Kennedy Space Center for Deservicing

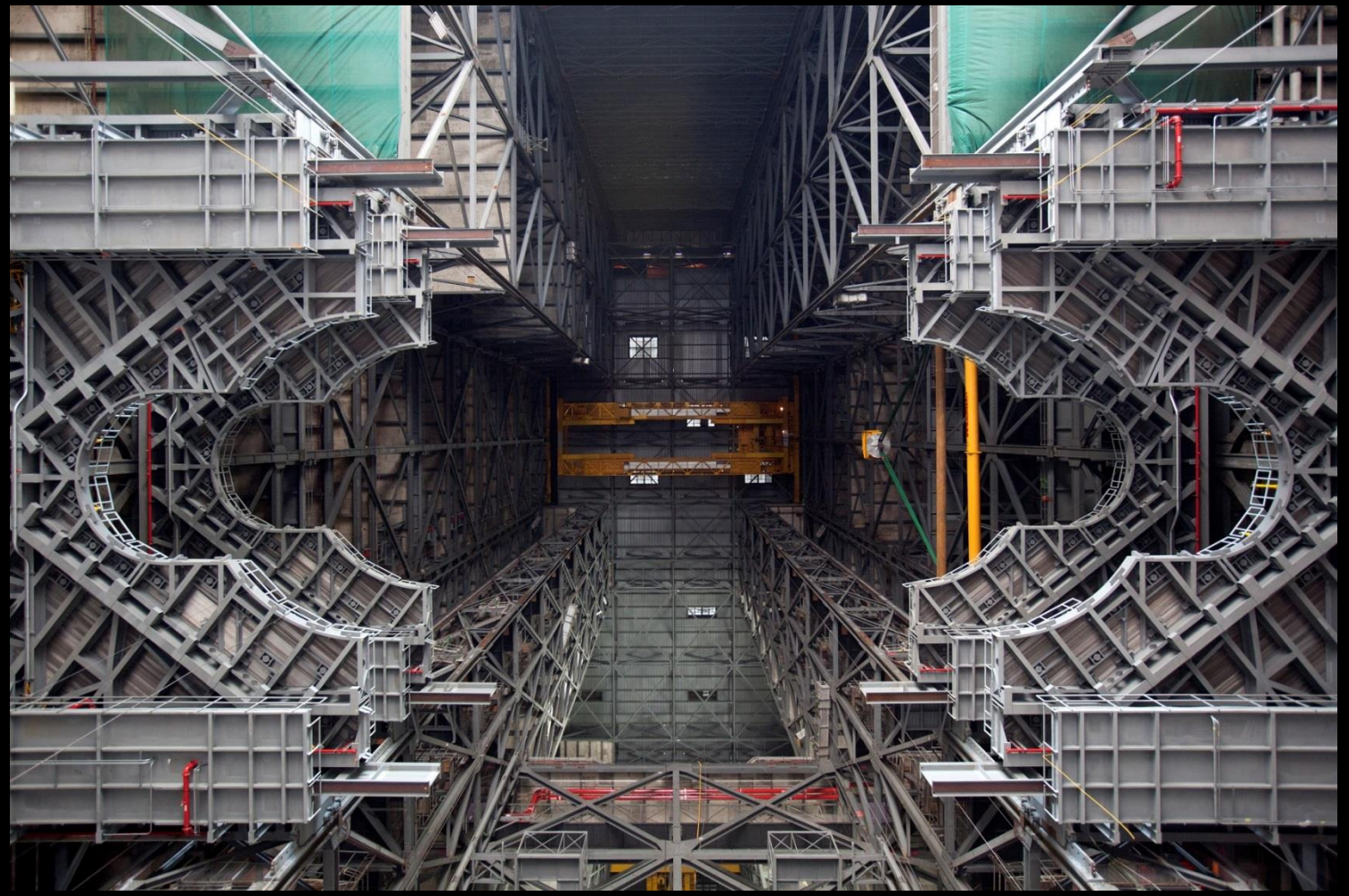
www.nasa.gov

Vehicle Assembly Building (VAB)
SLS Platform Installations

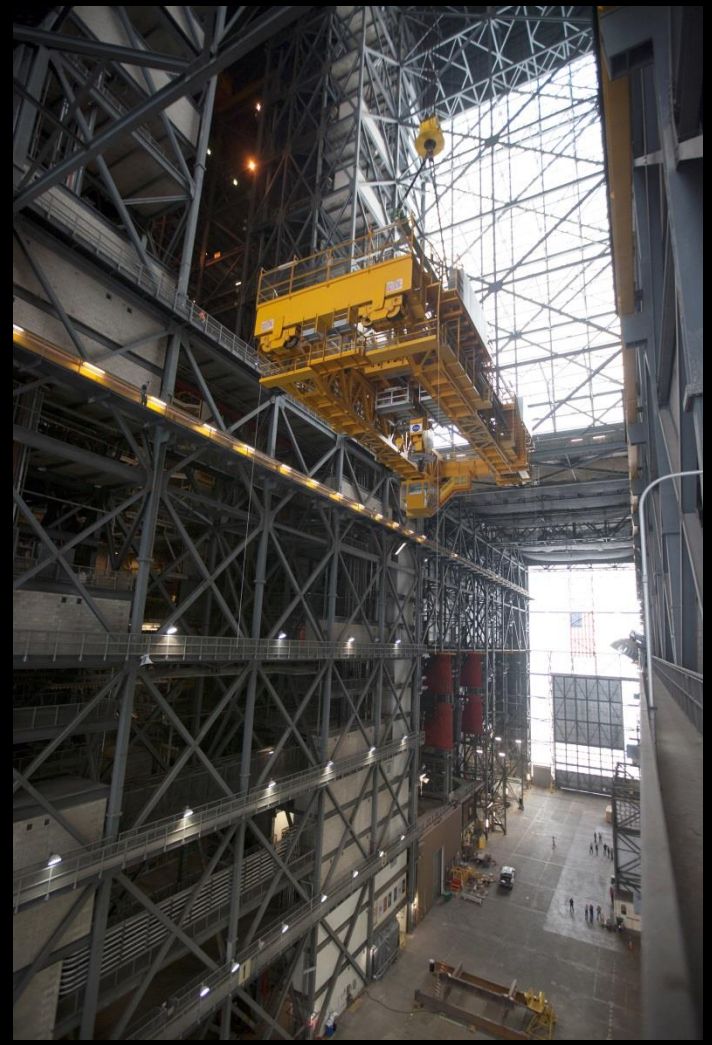


ML Modifications and VAB SLS Platforms





VAB 175-Ton Crane Upgrades



Processing Procedures and MPPF Modifications

Crawler Transporter Upgrades

Command & Control Application Software

Orion TPS Production / Recovery Operations

Summary

- Jacobs has been a key partner with NASA for several decades
- Jacobs continues to be NASA's largest engineering services provider
- For a time, NASA was Jacobs' largest client
- Jacobs is involved with every mission directorate at NASA
- Jacobs looks forward to future growth of work with NASA and continuing to support the success of NASA's vision: *We reach for new heights and reveal the unknown for the benefit of humankind.*