

National Aeronautics and Space Administration



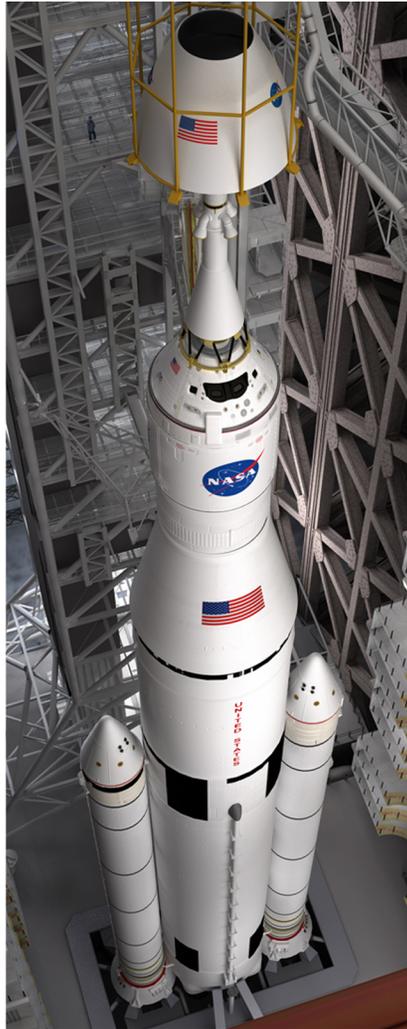
# Orion, Space Launch System, and Ground Systems Development and Operations

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**GROUND SYSTEMS DEVELOPMENT & OPERATIONS**



**SPACE LAUNCH SYSTEM**



**ORION CREW CAPSULE**

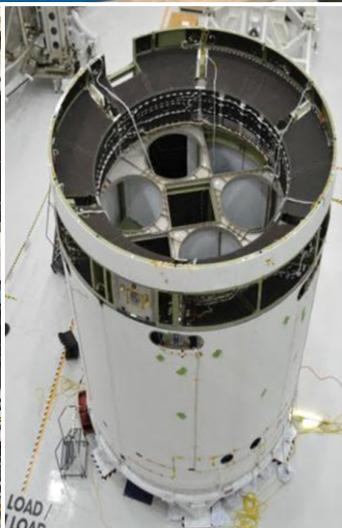
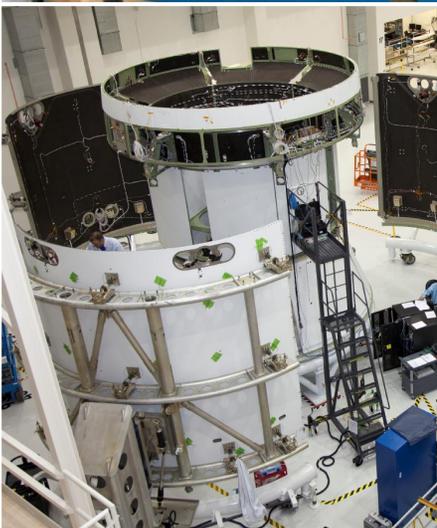
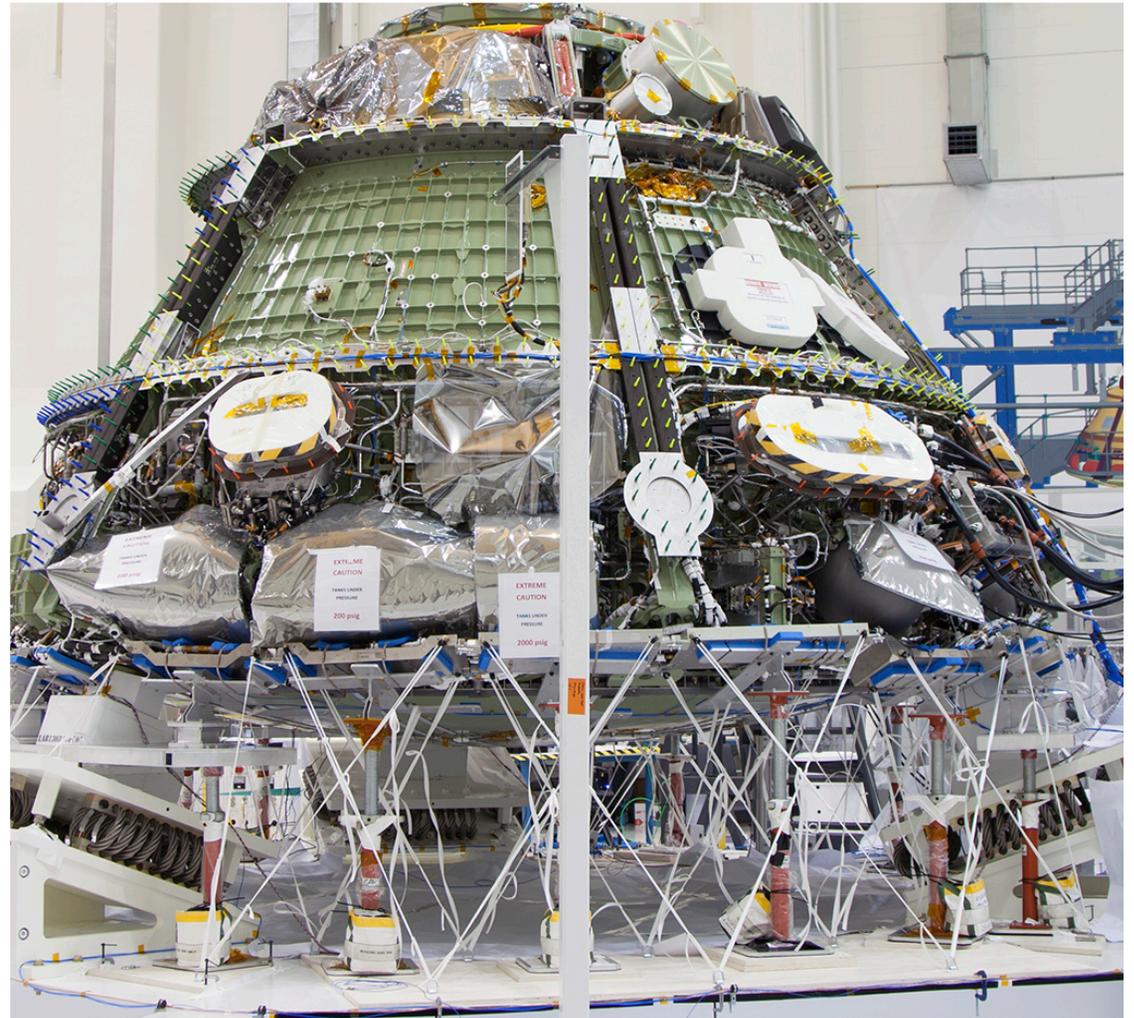
**EXPLORATION SYSTEMS DEVELOPMENT**



# Orion Spacecraft



Orion is the first spacecraft in history  
capable of taking humans to multiple destinations in deep space.  
Long Duration – Adaptable – Life Sustaining

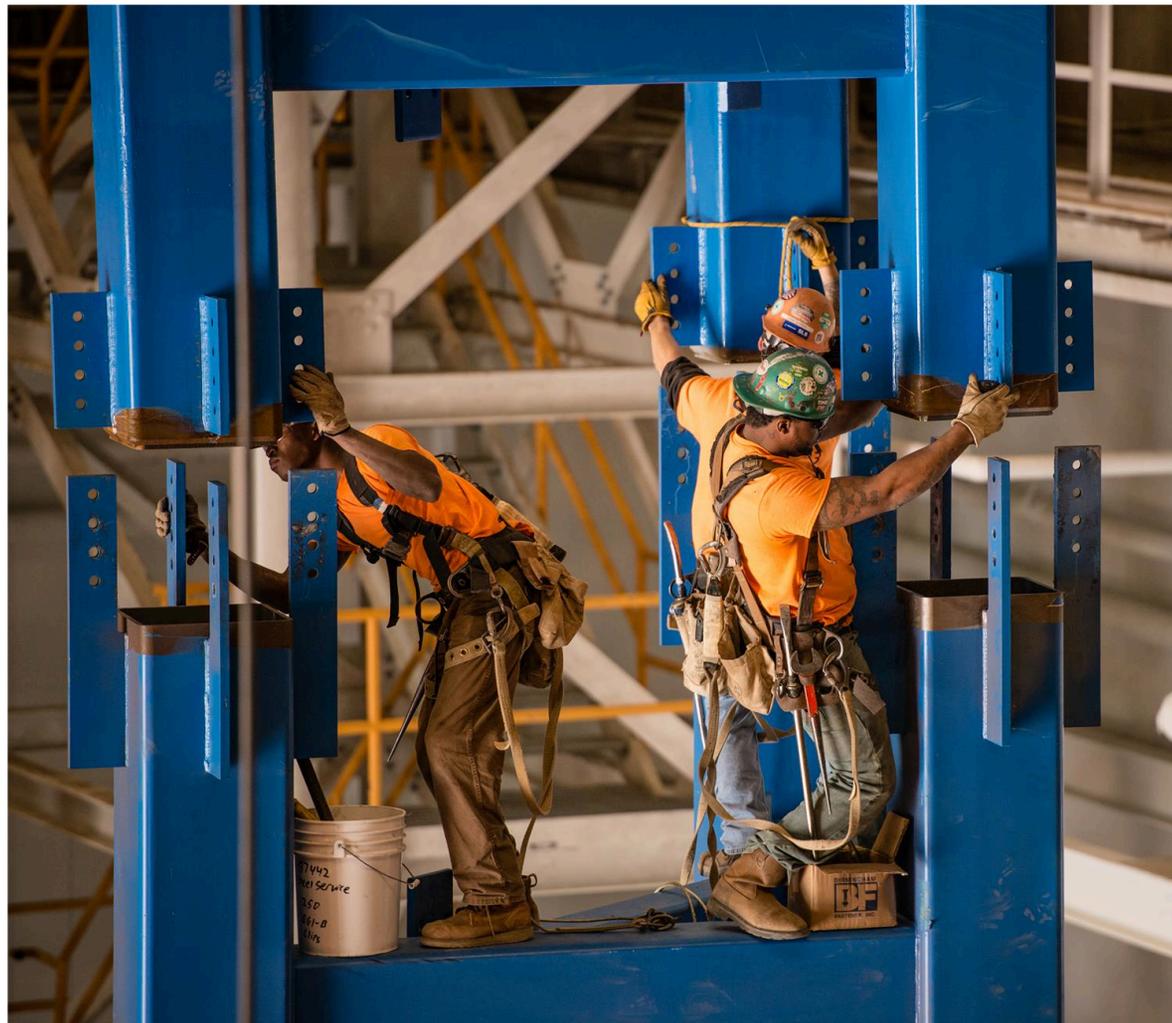


# Space Launch System



SLS is the rocket and launch system capable of transporting humans, habitats and support systems directly to deep space.

Powerful – High-Capacity – Flexible

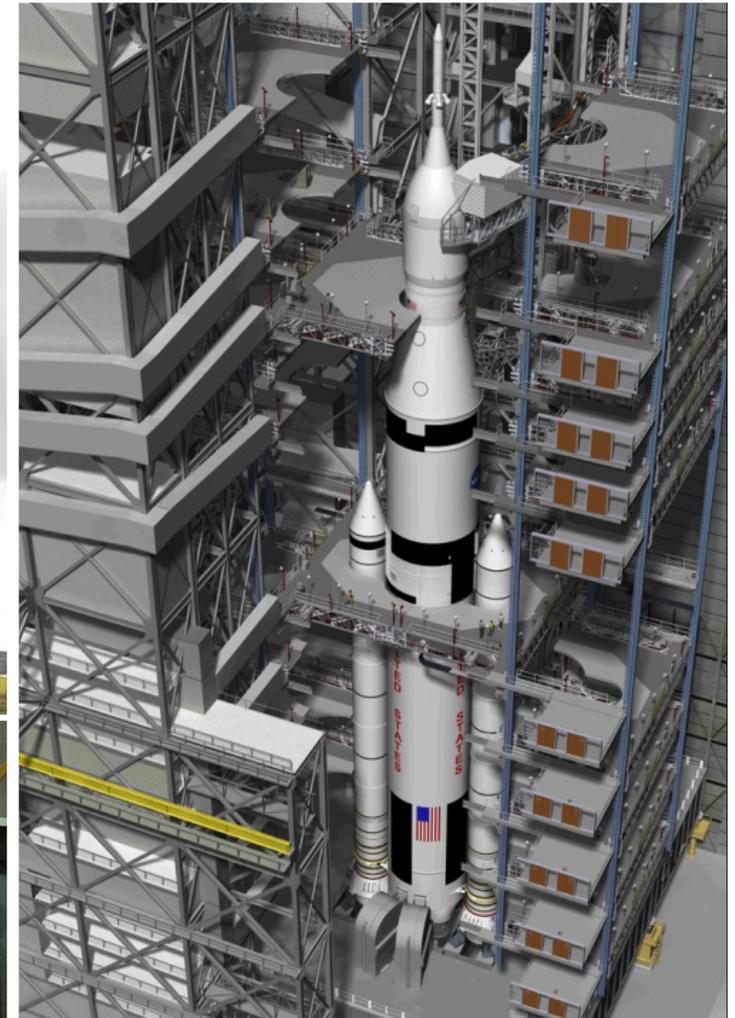
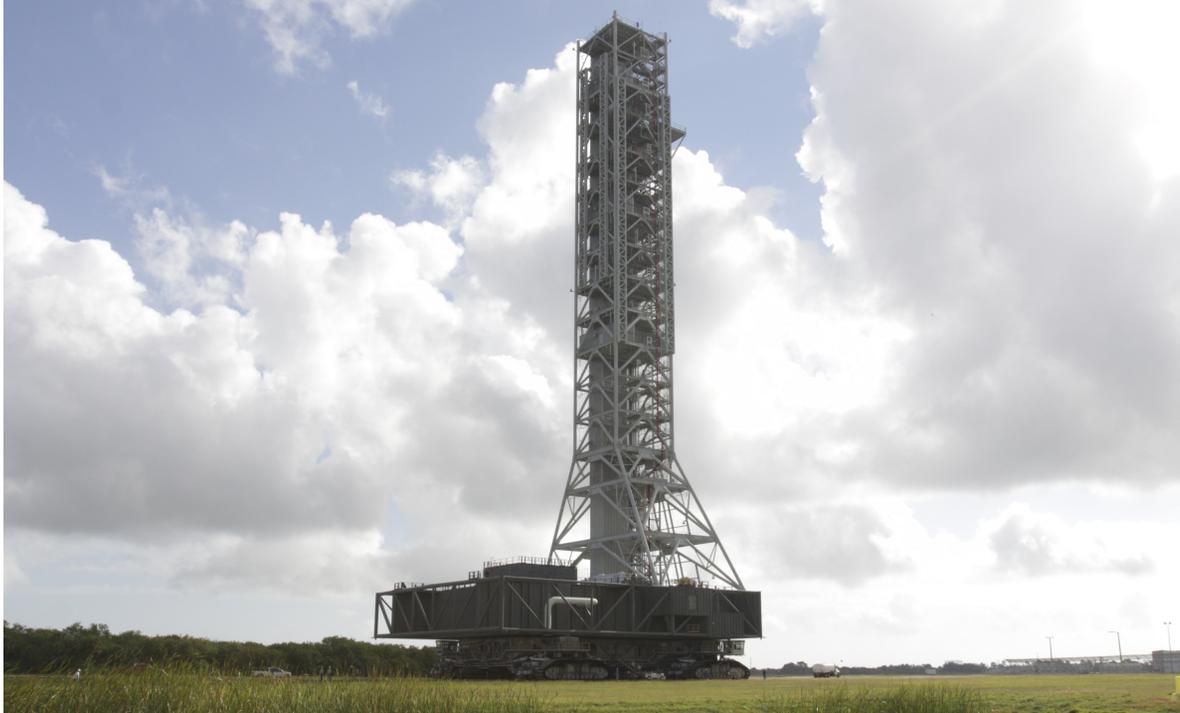


# Ground Systems Development & Operations



GSDO is modernizing Kennedy's spaceport with the capabilities to launch spacecraft built and designed by both NASA and private industry.

Adaptable – Partner-Oriented – Versatile



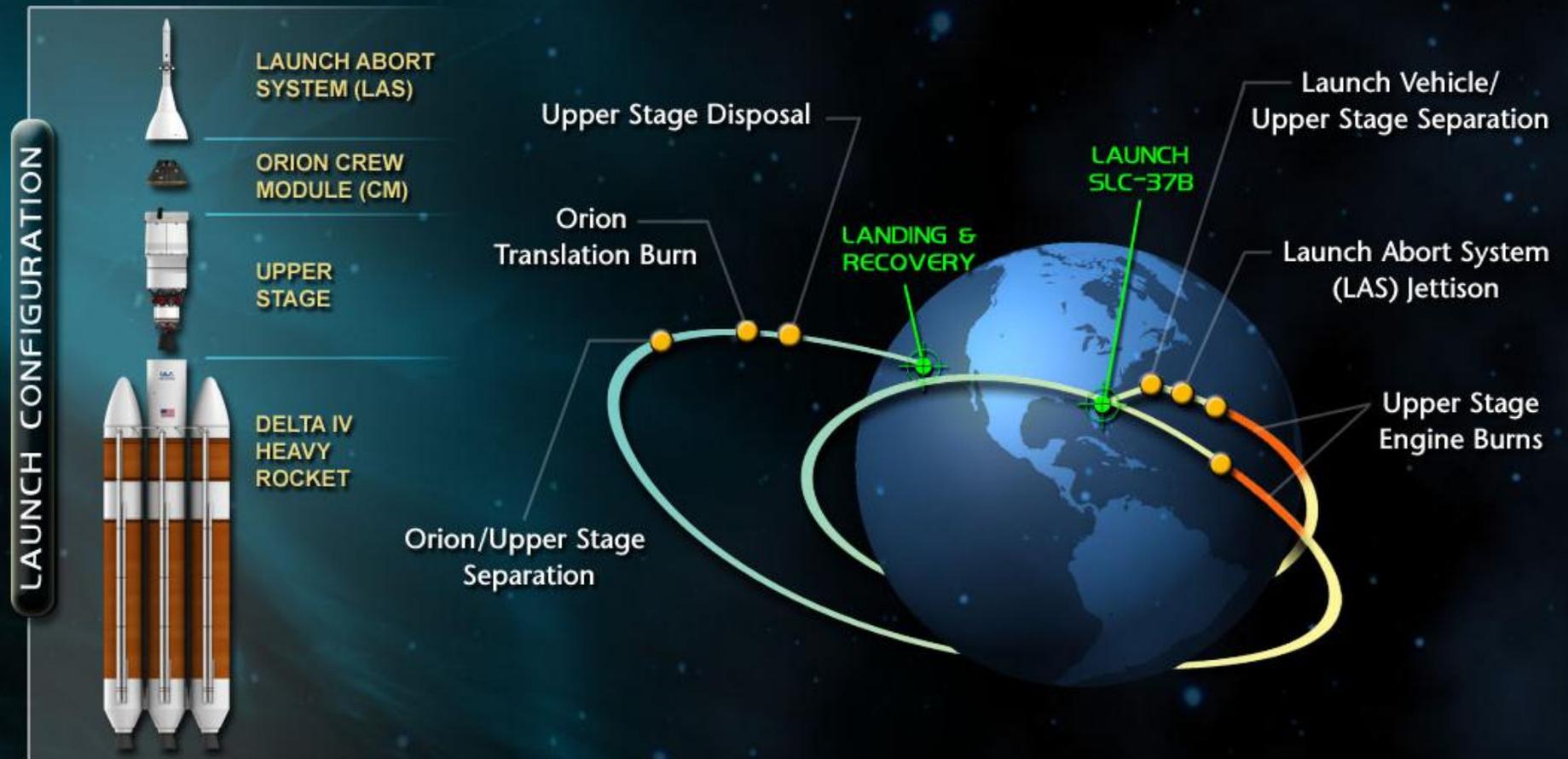
# 2014: Exploration Flight Test-1



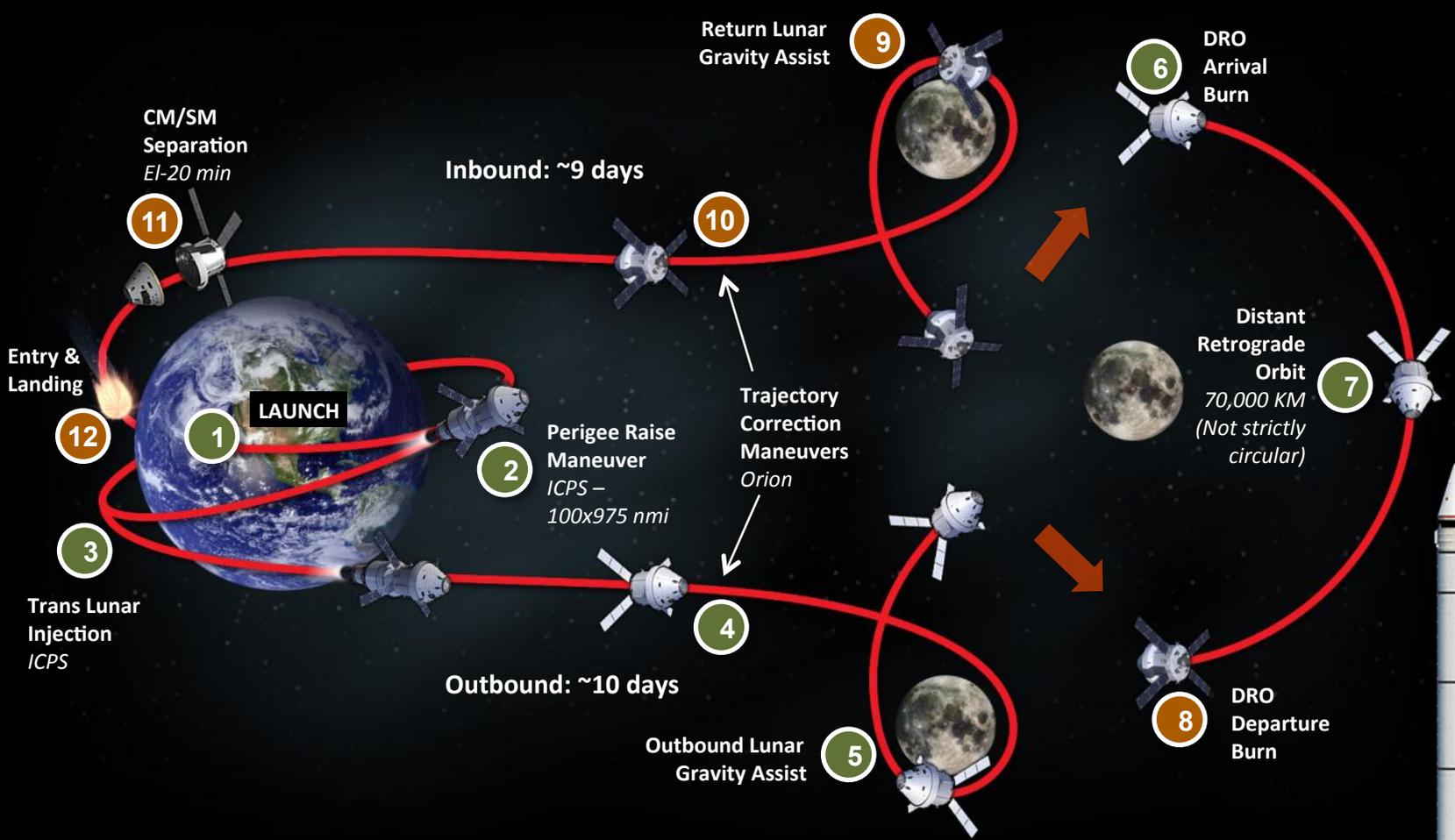
## EXPLORATION FLIGHT TEST ONE

OVERVIEW

TWO ORBITS ♦ 20,000 MPH ENTRY ♦ 3,671 MILE APOGEE ♦ 28.6 DEGREE INCLINATION



# EM-1 Uncrewed Distant Retrograde Orbit



## Objectives:

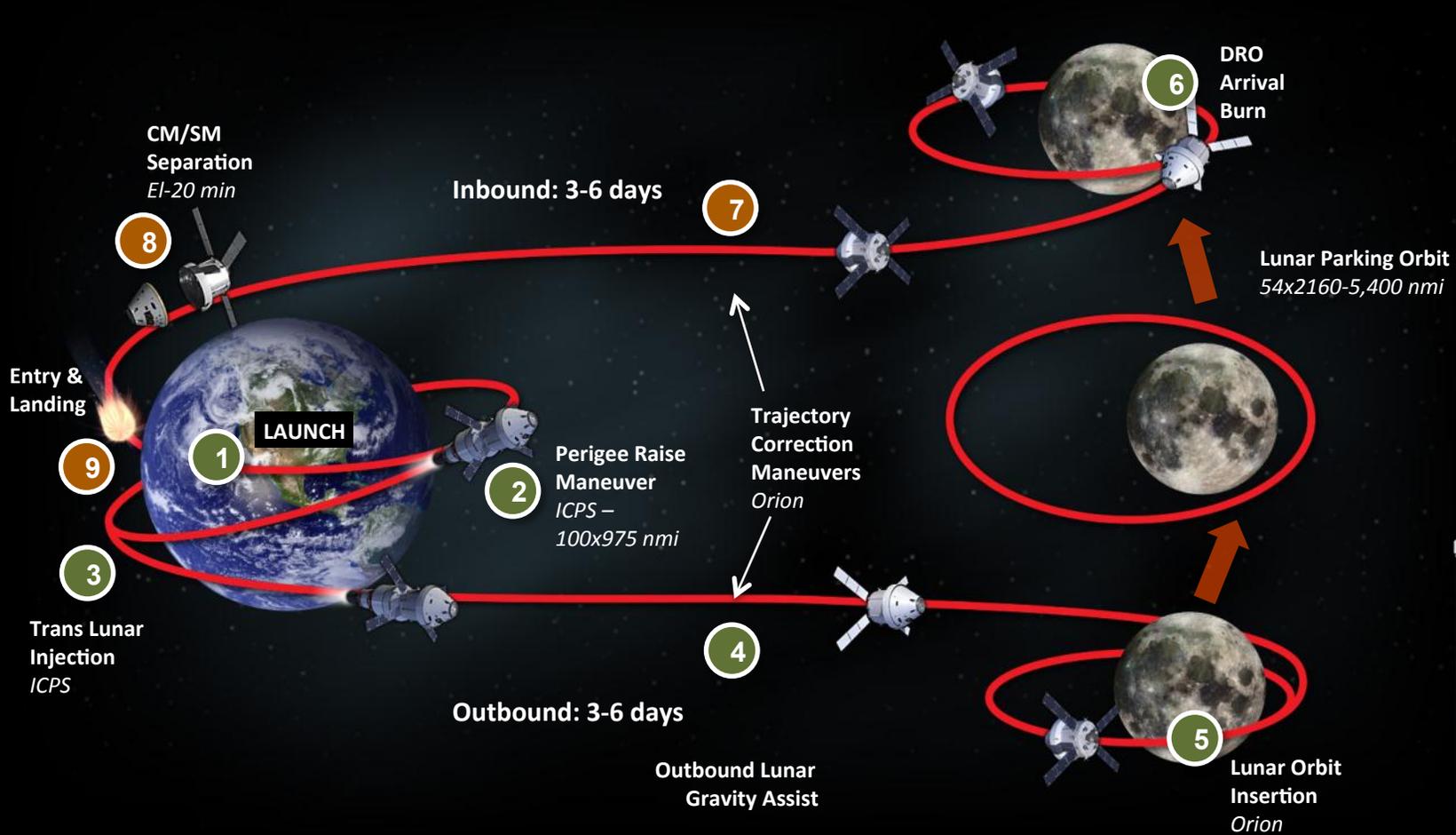
- Demonstrate spacecraft systems performance prior to crewed flight
- Demonstrate high speed entry (~11 km/s) and TPS performance prior to crewed flight

## DRM - Uncrewed MPCV

- Lunar capable heat shield
- 4 tank SM with full prop load
- EM-2 systems not included: ECLSS, Crew Systems, LAS Abort Motors (Inert)

## Interim Cryogenic Propulsion Stage (ICPS) used to provide TLI burn

# EM-2 Crewed High Lunar Orbit



## Objectives:

- Demonstrate crewed flight beyond LEO

## DRM - Uncrewed MPCV

- Lunar capable heat shield
- 4 tank SM with full prop load
- Up to 4 crew

