



Returning to the Moon: NASA's Artemis Missions

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ARTEMIS

Twin sister of Apollo and goddess of the Moon in Greek mythology, Artemis is the torch-bringer personifying our path to the Moon. During the next era of human exploration, we will discover life-saving, Earth-changing science and technology along the way.

NASA's goal is to land the first woman and first person of color on the Moon. When the Artemis astronauts land on the lunar surface, they will step into the future, bringing all of humanity with them.

VALUABLE LUNAR SCIENCE



Study of Planetary
Processes



Understanding
Volatile Cycles



Impact History of
Earth-Moon System



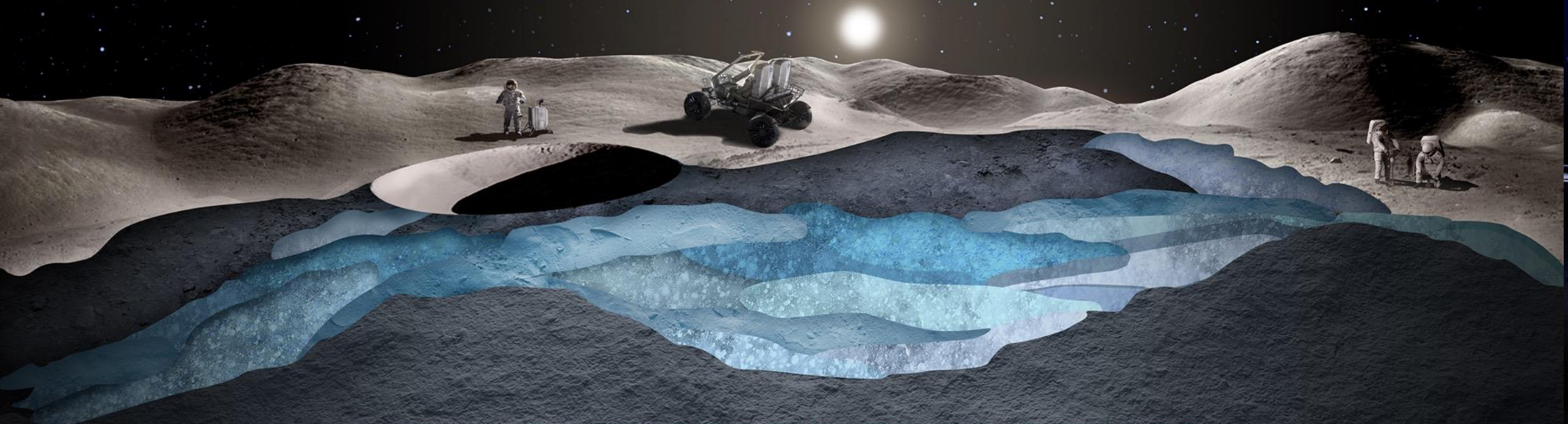
Record of the
Ancient Sun



Fundamental
Lunar Science



Platform to Study
the Universe



LUNAR SURFACE SCIENCE OBJECTIVES



SLS

BOOSTER



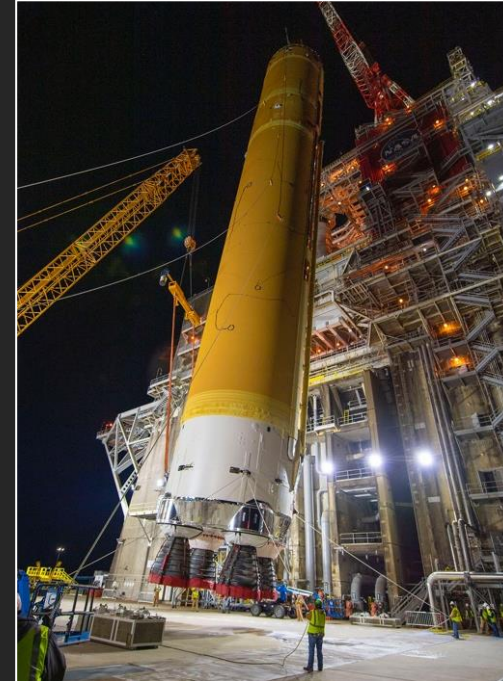
Together, the SLS twin boosters provide more than 75 percent of the total SLS thrust for two minutes at launch.

ENGINES

Each of the RS-25 engines produces more than 500,000 lbs thrust for the 8 minute climb to space.



CORE STAGE



The core stage holds the hydrogen and oxygen propellant tanks and the avionics.

UPPER STAGE & ADAPTERS

The upper stage provides in-space propulsion with one RL10 engine. Two adapters connect elements and finish the SLS stack.

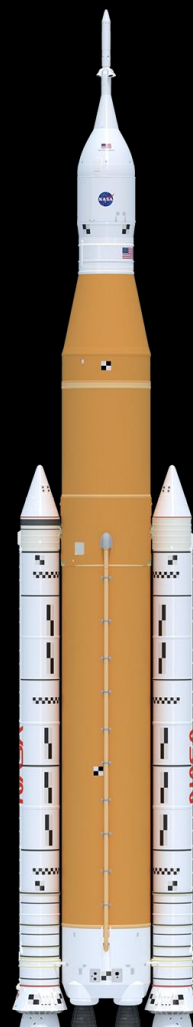




STATUE OF LIBERTY
305 ft.



SPACE SHUTTLE
184 ft.



SLS / ORION Block I
322 ft.



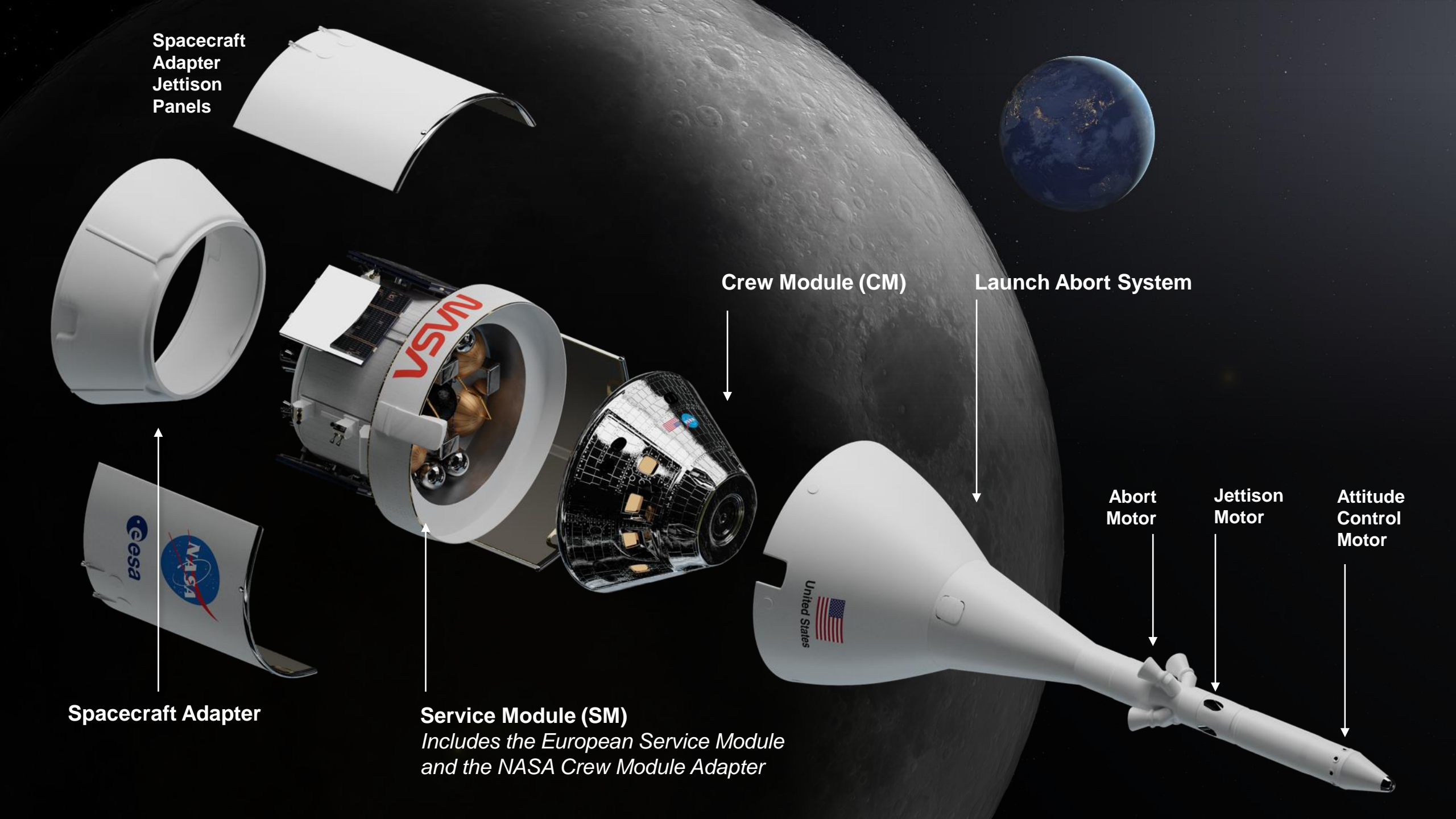
SLS / ORION Block II
364 ft.



SATURN 5
363 ft.



ORION



Spacecraft
Adapter
Jettison
Panels

Crew Module (CM)

Launch Abort System

Abort
Motor

Jettison
Motor

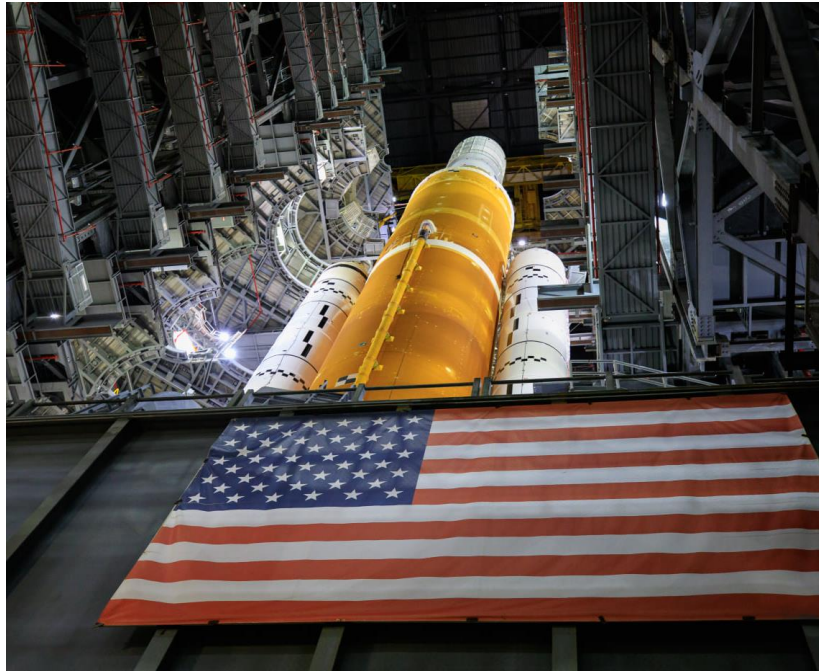
Attitude
Control
Motor

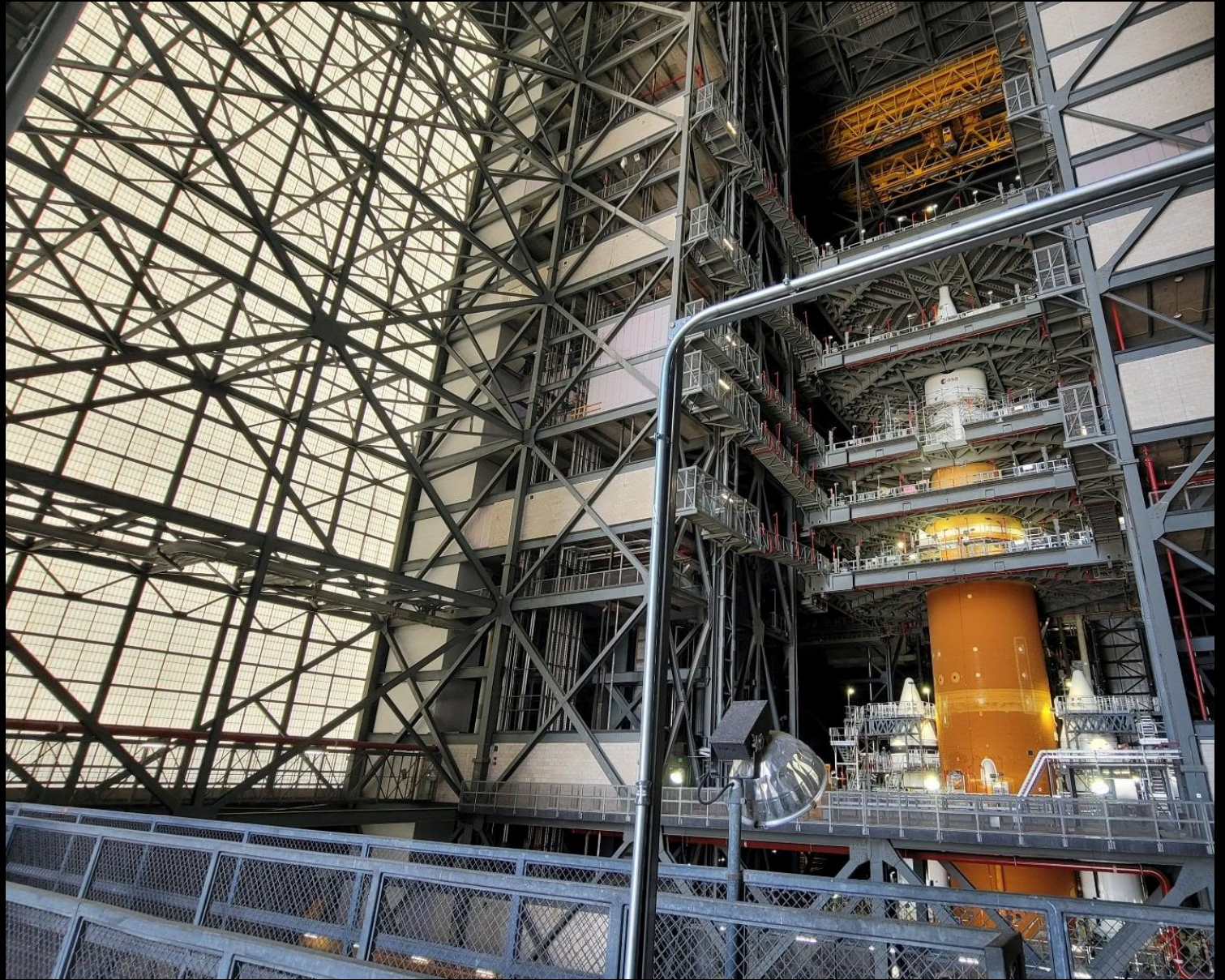
Spacecraft Adapter

Service Module (SM)
*Includes the European Service Module
and the NASA Crew Module Adapter*

egs











A B C
CUBESATS DEPLOY
ICPS deploys 10
CubeSats total

MISSION DURATIONS:
Total: 26–42 days
Outbound Transit: 8–14 days
DRO Stay: 6–19 days
Return Transit: 9–19 days

ARTEMIS I

The First Uncrewed Integrated Flight Test of NASA's Orion Spacecraft and Space Launch System Rocket

- 1 LAUNCH**
SLS and Orion lift off from pad 39B at Kennedy Space Center.
- 2 JETTISON ROCKET BOOSTERS, FAIRINGS, AND LAUNCH ABORT SYSTEM**
- 3 CORE STAGE MAIN ENGINE CUT OFF**
With separation.
- 4 PERIGEE RAISE MANEUVER**
- 5 EARTH ORBIT**
Systems check with solar panel adjustments.
- 6 TRANS LUNAR INJECTION (TLI) BURN**
Maneuver lasts for approximately 20 minutes.
- 7 INTERIM CRYOGENIC PROPULSION STAGE (ICPS) SEPARATION AND DISPOSAL**
ICPS commits Orion to moon at TLI.
- 8 OUTBOUND TRAJECTORY CORRECTION (OTC) BURNS**
As necessary adjust trajectory for lunar flyby to Distant Retrograde Orbit (DRO).
- 9 OUTBOUND POWERED FLYBY (OPF)**
60 nmi from the Moon; targets DRO insertion.
- 10 LUNAR ORBIT INSERTION**
Enter Distant Retrograde Orbit.
- 11 DISTANT RETROGRADE ORBIT**
Perform half or one and a half revolutions in the orbit period 38,000 nmi from the surface of the Moon.
- 12 DRO DEPARTURE**
Leave DRO and start return to Earth.
- 13 RETURN POWERED FLYBY (RPF)**
RPF burn prep and return coast to Earth initiated.
- 14 RETURN TRANSIT**
Return Trajectory Correction (RTC) burns as necessary to aim for Earth's atmosphere.
- 15 CREW MODULE SEPARATION FROM SERVICE MODULE**
- 16 ENTRY INTERFACE (EI)**
Enter Earth's atmosphere.
- 17 SPLASHDOWN**
Pacific Ocean landing within view of the U.S. Navy recovery ship.





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QUESTIONS?