

National Aeronautics and Space Administration



Artemis and Human Landing System Program Overview

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The Artemis Program

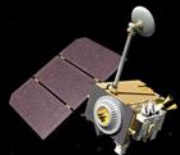
Artemis is the twin sister of Apollo and goddess of the Moon in Greek mythology. Now, she personifies our path to the Moon as the name of NASA's program to return astronauts to the lunar surface.

When they land, Artemis astronauts will step foot where no human has ever been before: the Moon's South Pole.

With the horizon goal of sending humans to Mars, Artemis begins the next era of exploration.



ARTEMIS: Landing Humans on the Moon



Lunar Reconnaissance Orbiter: Continued surface and landing site investigation



Artemis I: First human spacecraft to the Moon in the 21st century



Artemis II: First humans to orbit the Moon and rendezvous in deep space in the 21st Century



Gateway begins science operations in lunar orbit with launch of Power and Propulsion Element and Habitation and Logistics Outpost



Initial human landing system delivered to lunar orbit



Artemis III: Orion and crew dock to human landing system for crew expedition to the surface

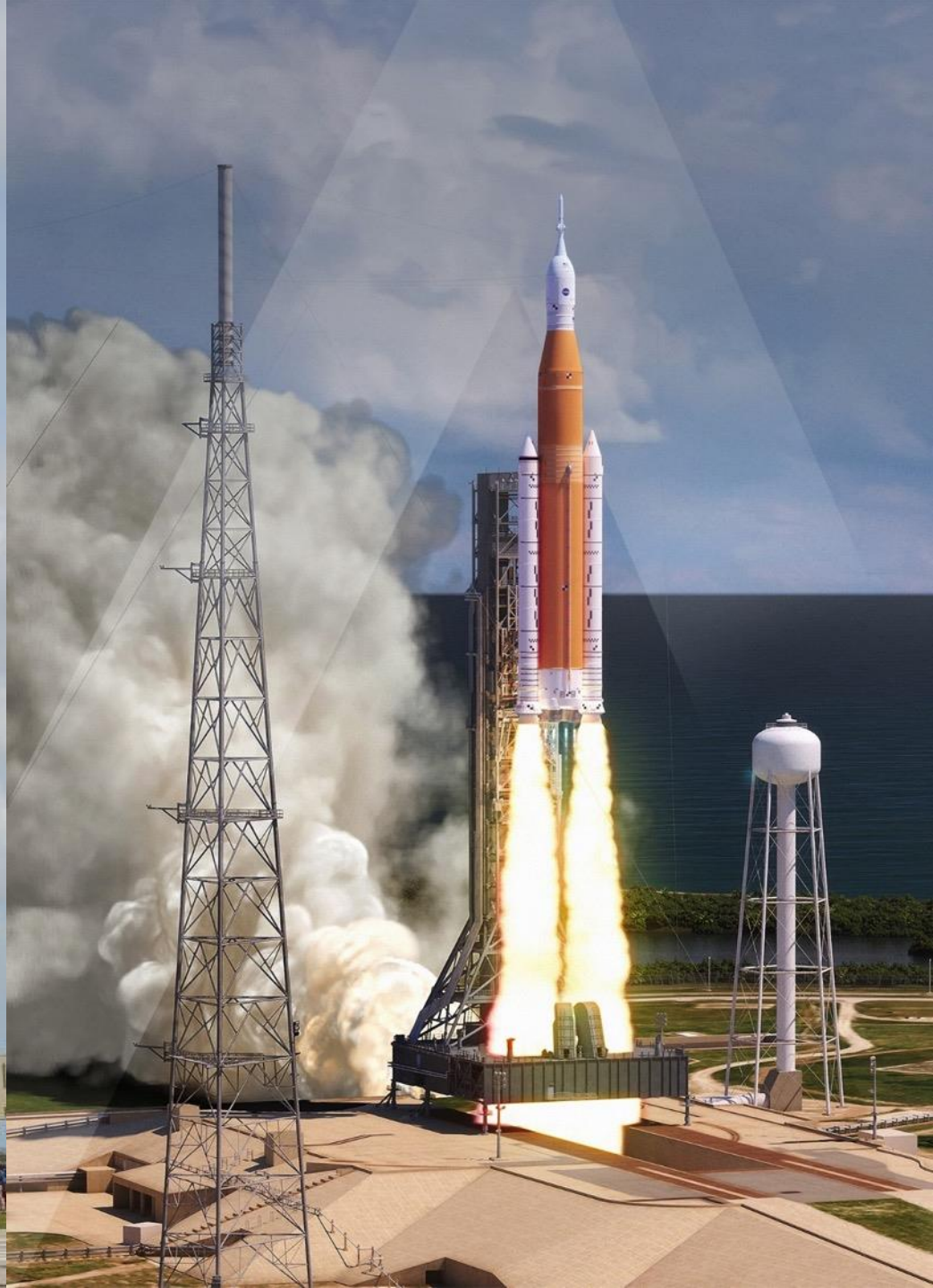
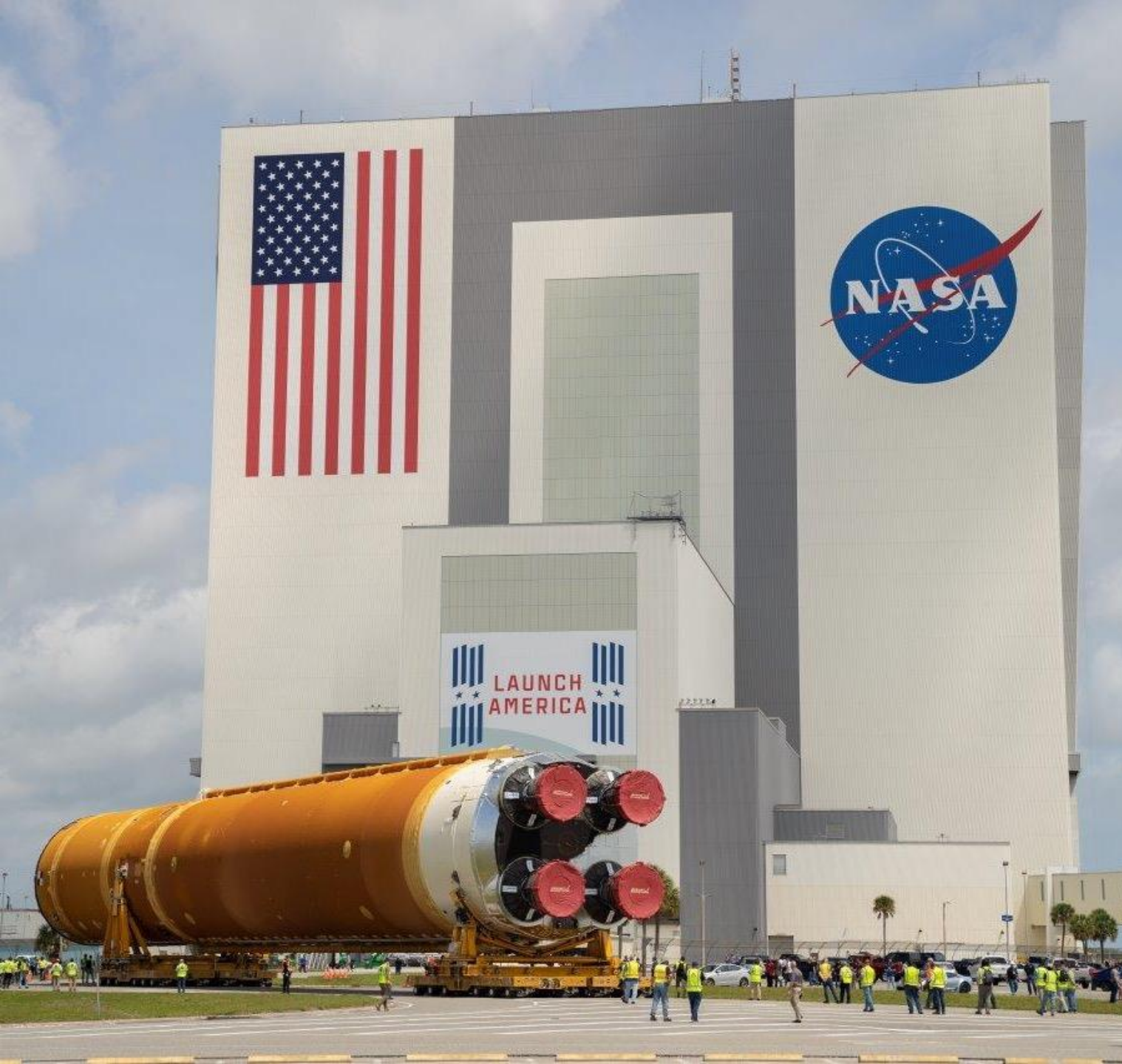


Early South Pole Robotic Landings
Science and technology payloads delivered by Commercial Lunar Payload Services providers

Volatiles Investigating Polar Exploration Rover
First mobility-enhanced lunar volatiles survey

Humans on the Moon - 21st Century
First crew leverages infrastructure left behind by previous missions

LUNAR SOUTH POLE TARGET SITE





ARTEMIS III

HUMANS ON THE MOON: ARTEMIS III

The Artemis III mission will land the first woman and the next man on the Moon. This mission will be the culmination of the rigorous testing and more than two million miles accumulated in space on NASA's deep space transportation systems during Artemis I and II.

Orion and its crew will once again travel to the Moon, this time to make history with the first woman and next man to walk on the surface. Two astronauts will board the human landing system, which will carry them to the lunar South Pole with science tools and equipment.

The exact landing site depends on several factors, including the specific science objectives and the launch date.

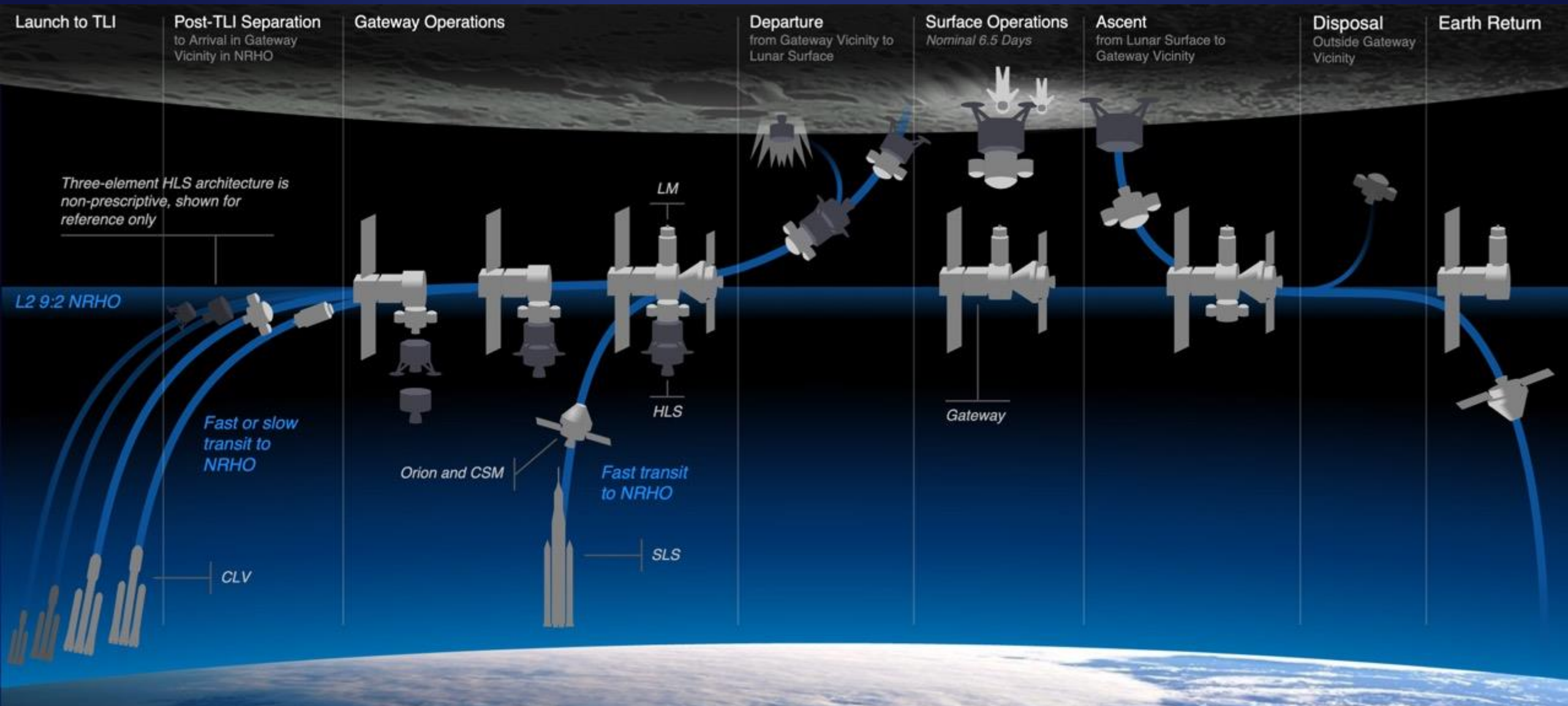
HLS – Appendix H

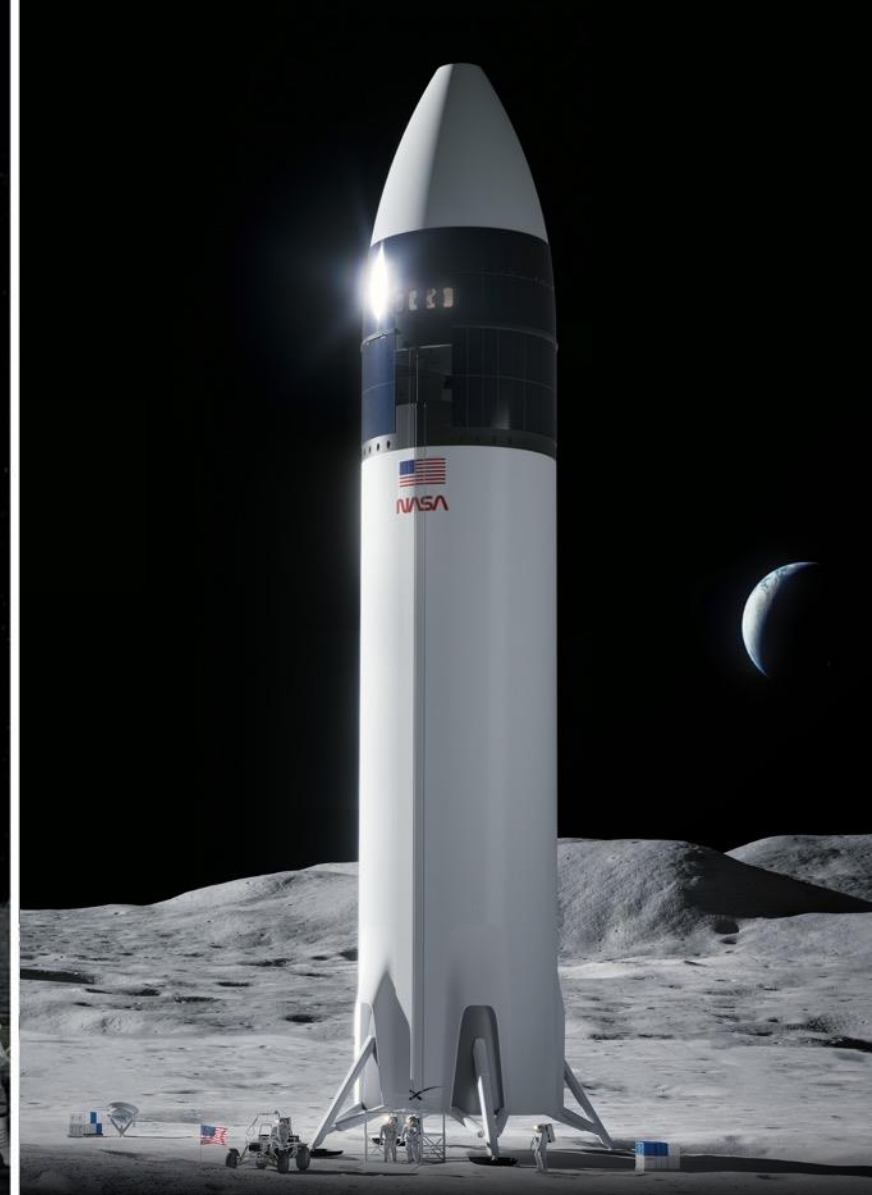
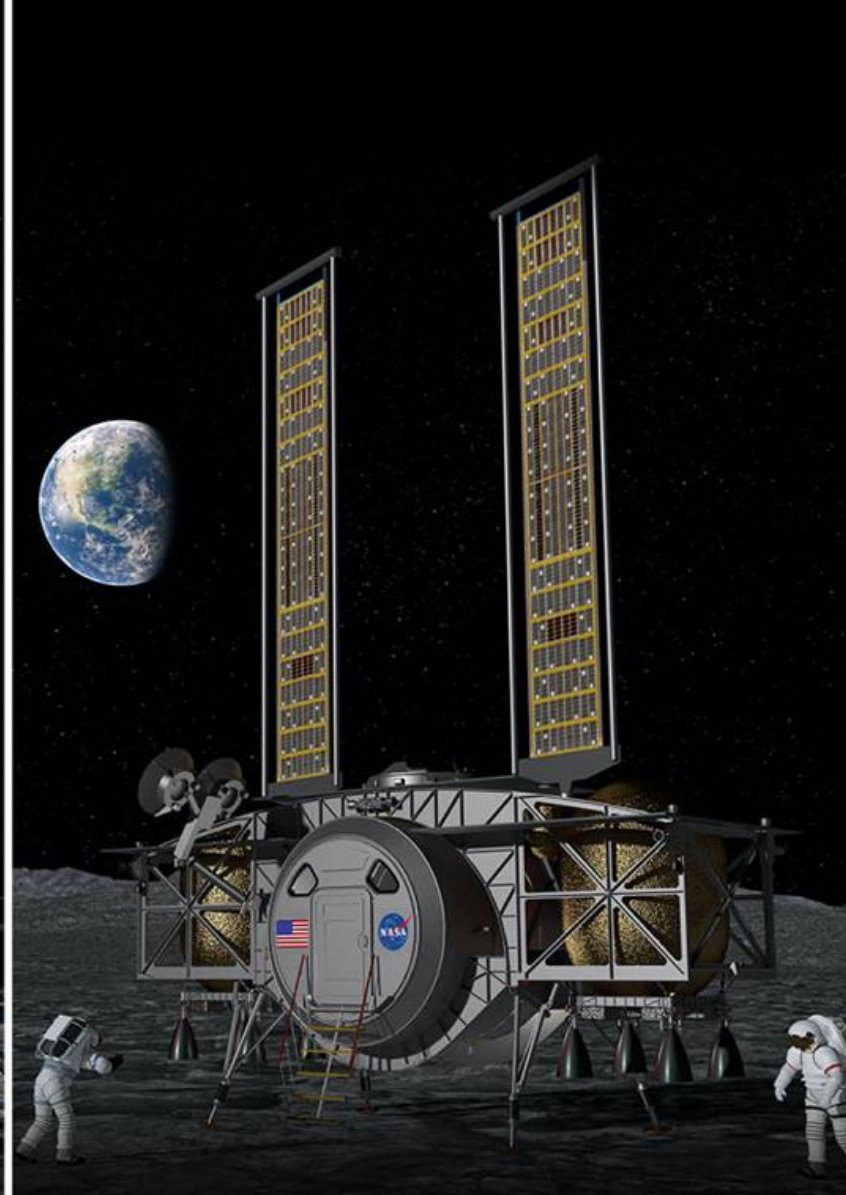
- Firm Fixed Price Broad Agency Announcement for rapid development and crewed demonstration to return humans to the lunar surface
- Leveraging commercial capabilities to the maximum extent possible; may tailor the traditional NASA program management and systems engineering processes to expedite the schedule
- NASA will not take ownership of the HLS hardware/software
- HLS will launch as commercial cargo; checkout and testing will occur on orbit prior to any crew launch and egress
- NASA provides certification and technical expertise

The HLS plan is to leverage the speed and operating models of the commercial space industry while applying NASA expertise to ensure safety and mission success



App H Generic Concept of Operations





LOCKHEED MARTIN

BLUE ORIGIN

NORTHROP GRUMMAN

DRAPER

Dynetics
A Leidos Company

SPACEX

HLS & Propulsion

Systems & Capabilities

- In-space Engine Development
- Cryogenic Propulsion Systems
- Refueling
- In-situ Resource Utilization

Challenges

- Efficiency & Mass Reduction
- Vacuum, Microgravity, Lunar Gravity
- Cryofluid Management & Boiloff



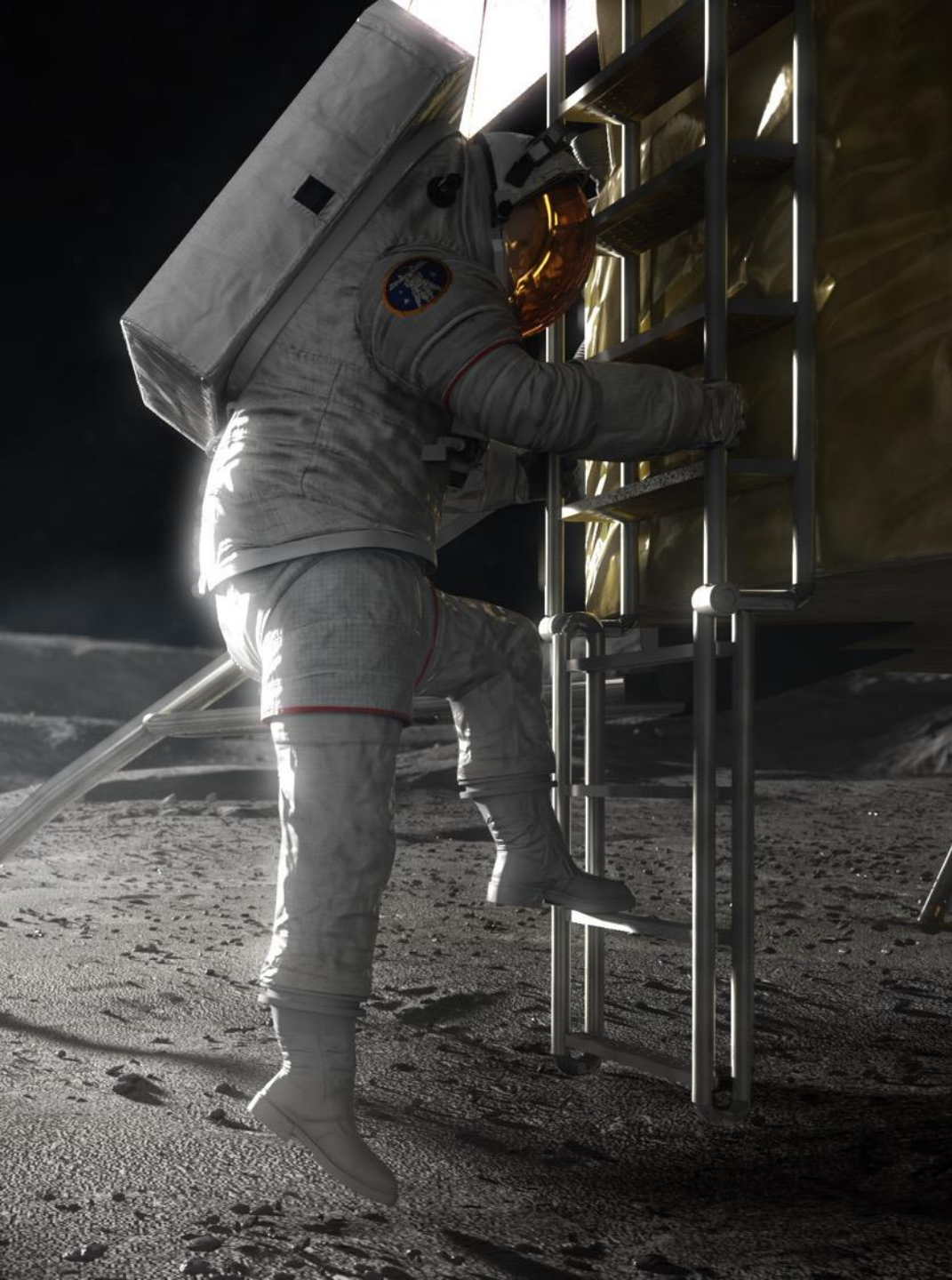


Human Landing System App H Status

- APR 2020** ✓ Base Period Selections Announced
- MAY 2020** ✓ Base Period Contracts Awarded
- AUG 2020** ✓ Contractor Certification
Baseline Reviews (CBRs)
- OCT 2020** ✓ Issue Option A Solicitation
- DEC 2020*** ✓ Contractor Continuation Reviews/CR
Closeouts
- MAR 2021** ✓ Base Period was extended up to
April 30, 2021
- APR 2021** ✓ **NASA selects SpaceX to develop HLS

***Option A selection under protest*

NCEs extended thru Aug 4, 2021



Human Landing System App N Status

APR 2021



NASA issues App N RFI



App N/LETS Industry Forum

Summer 2021

App N RFP issued

Fall 2021

App N Awarded



Moon Before Mars

On the Moon, we can take reasonable risks while astronauts are just three days away from home.

There we will prove technologies and mature systems necessary to live and work on another world before embarking on what could be a 2-3 year mission to Mars.

Mission Needs Drive Design

LOW EARTH RETURN

3 HOURS

3,000°F

17,500 MPH

250 MILES



LUNAR RETURN

3 DAYS

5,200°F

24,700 MPH

240,000 MILES



MARS RETURN

9 MONTHS

6,200°F

26,800 MPH

39,000,000 MILES





**Let's go.
*The time is now.***

We have the capability

We have the purpose

We have the charge

We have the responsibility

ARTEMIS



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