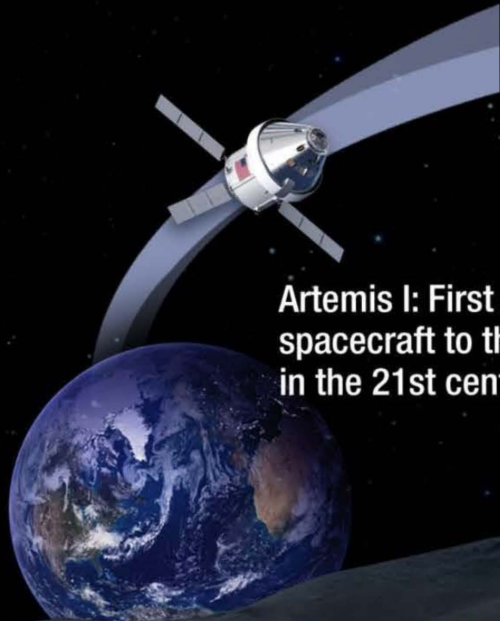


# Getting to the Moon with xEMU



# Artemis Phase 1: Path to The Lunar Surface



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

## Commercial Lunar Payload Services

- CLPS-delivered science and technology payloads

## Early South Pole Mission(s)

- First robotic landing on eventual human lunar return and In-Situ Resource Utilization (ISRU) site
- First ground truth of polar crater volatiles

## Large-Scale Cargo Lander

- Increased capabilities for science and technology payloads

## Humans on the Moon - 21st Century

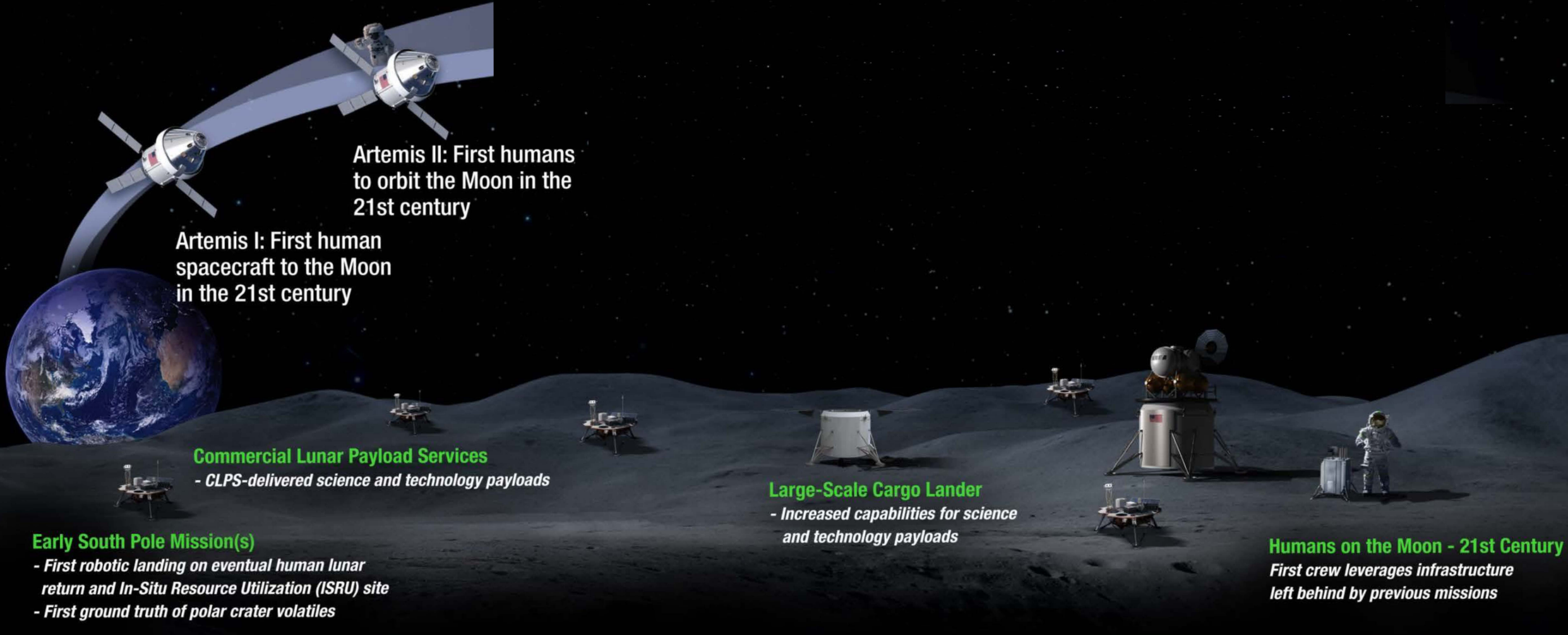
First crew leverages infrastructure left behind by previous missions

**LUNAR SOUTH POLE TARGET SITE**

2020

2024

# Artemis Phase 1: Path to The Lunar Surface

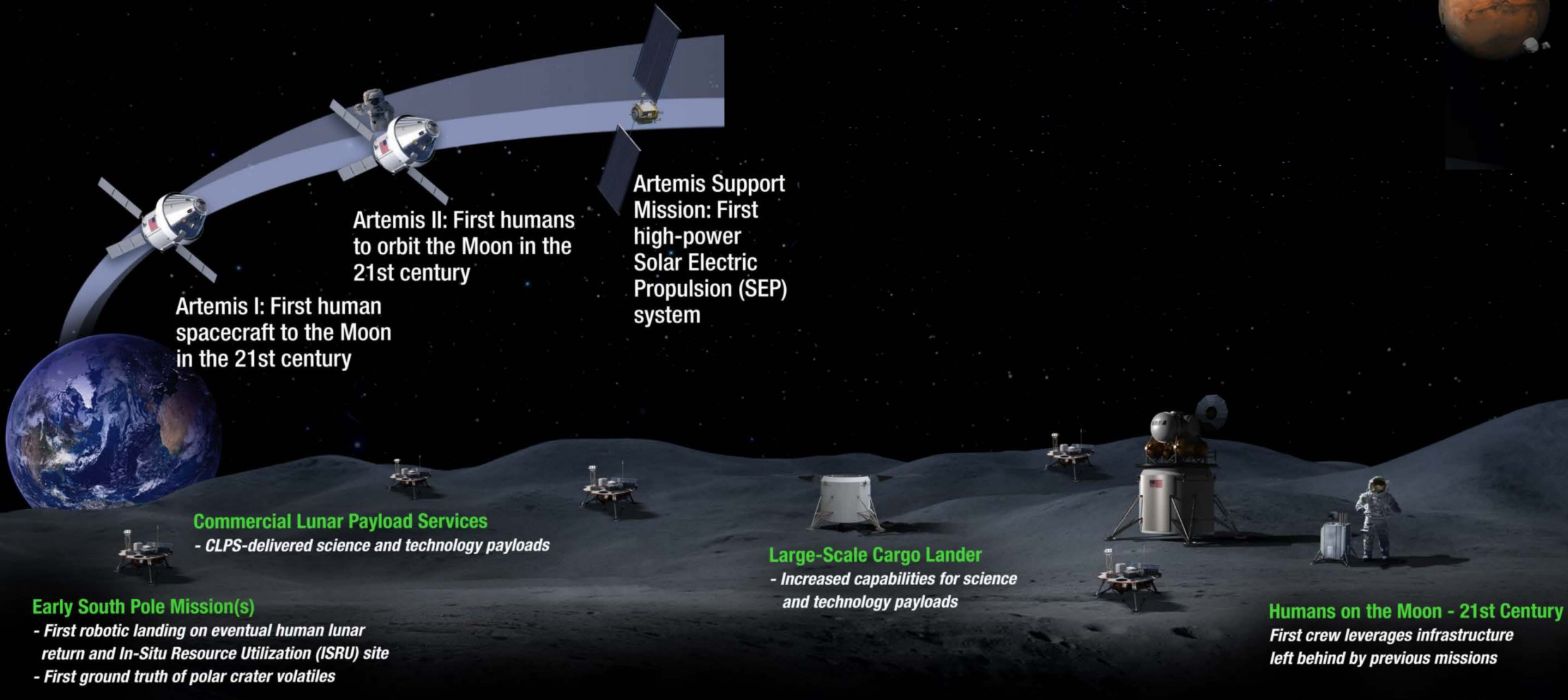


## LUNAR SOUTH POLE TARGET SITE

2020

2024

# Artemis Phase 1: Path to The Lunar Surface



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

Artemis II: First humans to orbit the Moon in the 21st century

Artemis Support Mission: First high-power Solar Electric Propulsion (SEP) system

**Commercial Lunar Payload Services**  
- CLPS-delivered science and technology payloads

**Early South Pole Mission(s)**  
- First robotic landing on eventual human lunar return and In-Situ Resource Utilization (ISRU) site  
- First ground truth of polar crater volatiles

**Large-Scale Cargo Lander**  
- Increased capabilities for science and technology payloads

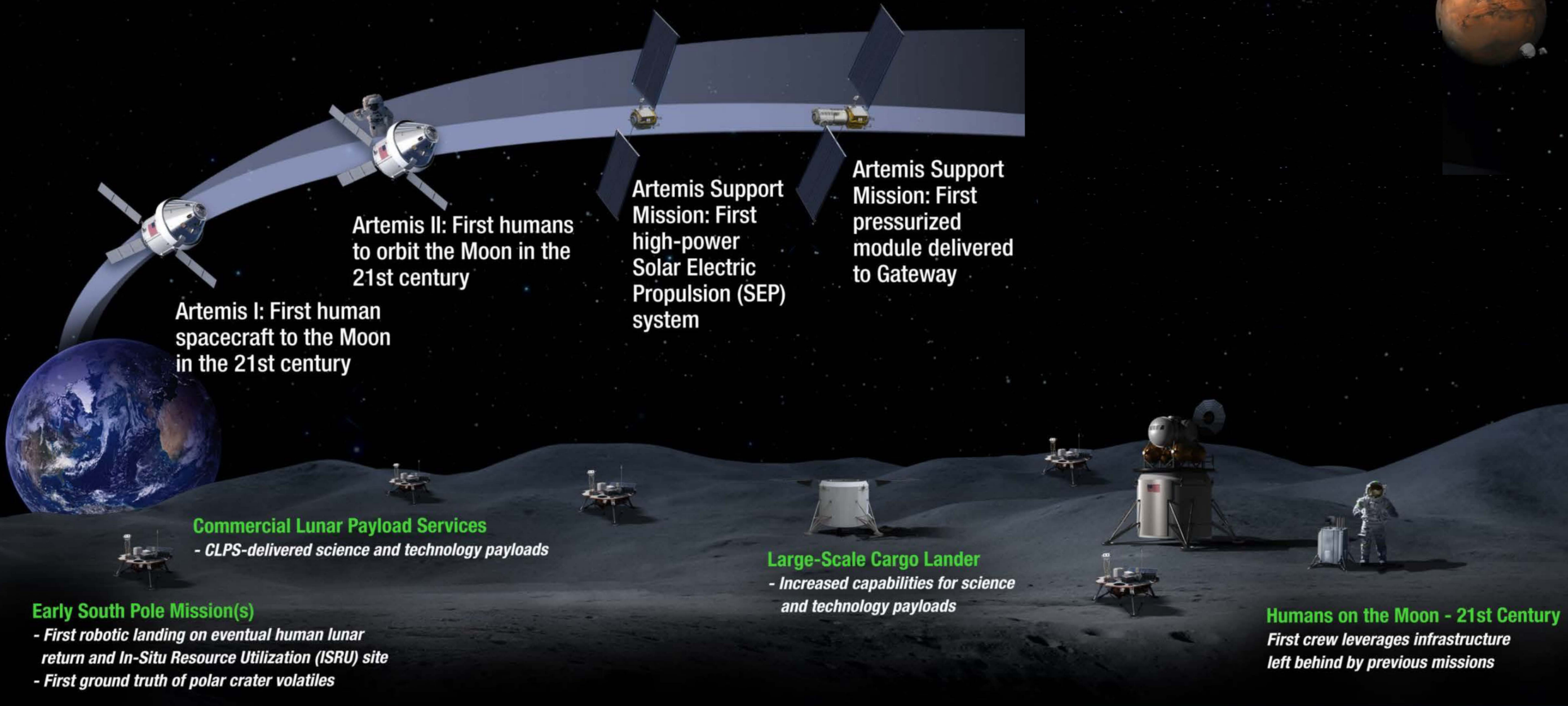
**Humans on the Moon - 21st Century**  
First crew leverages infrastructure left behind by previous missions

**LUNAR SOUTH POLE TARGET SITE**

2020

2024

# Artemis Phase 1: Path to The Lunar Surface

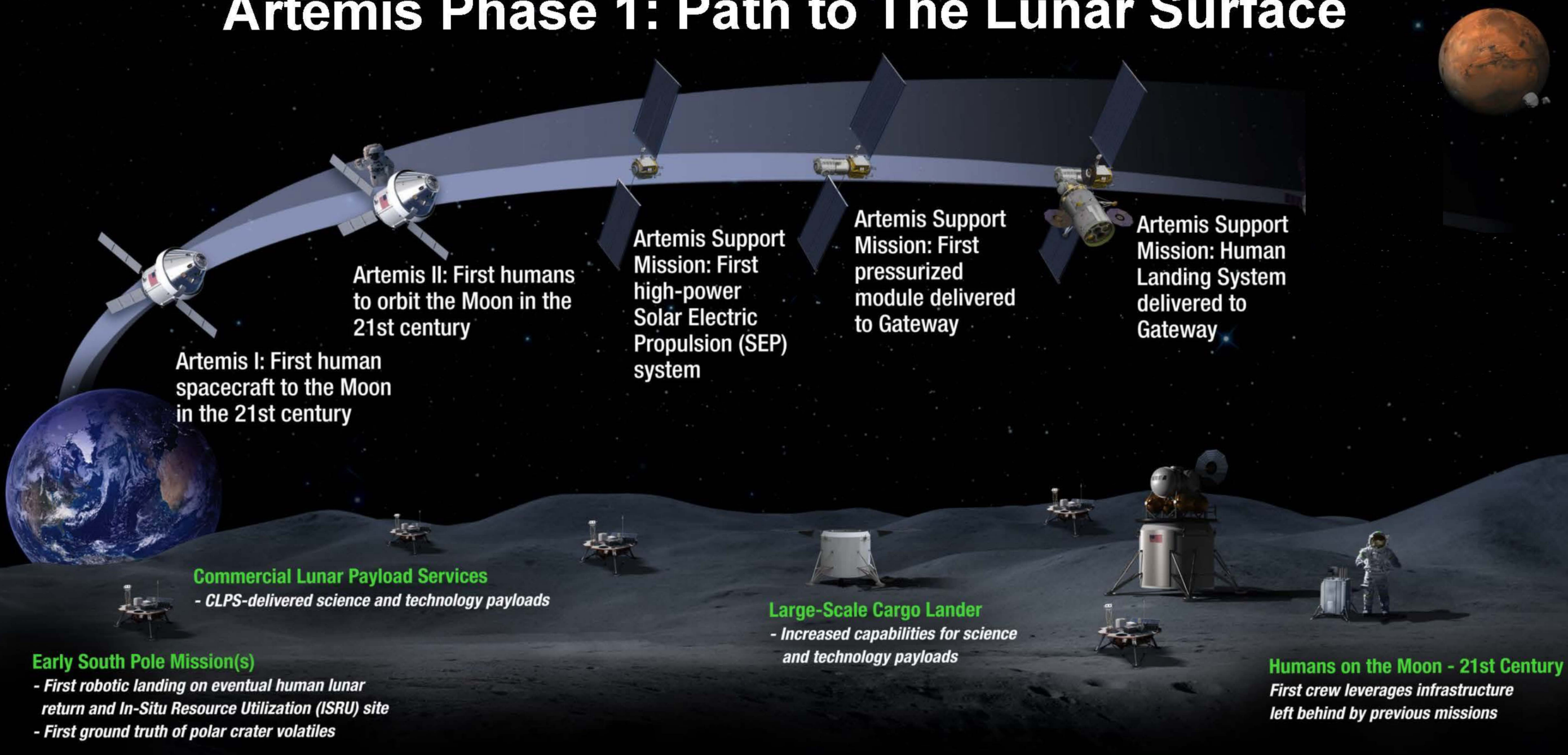


## LUNAR SOUTH POLE TARGET SITE

2020

2024

# Artemis Phase 1: Path to The Lunar Surface

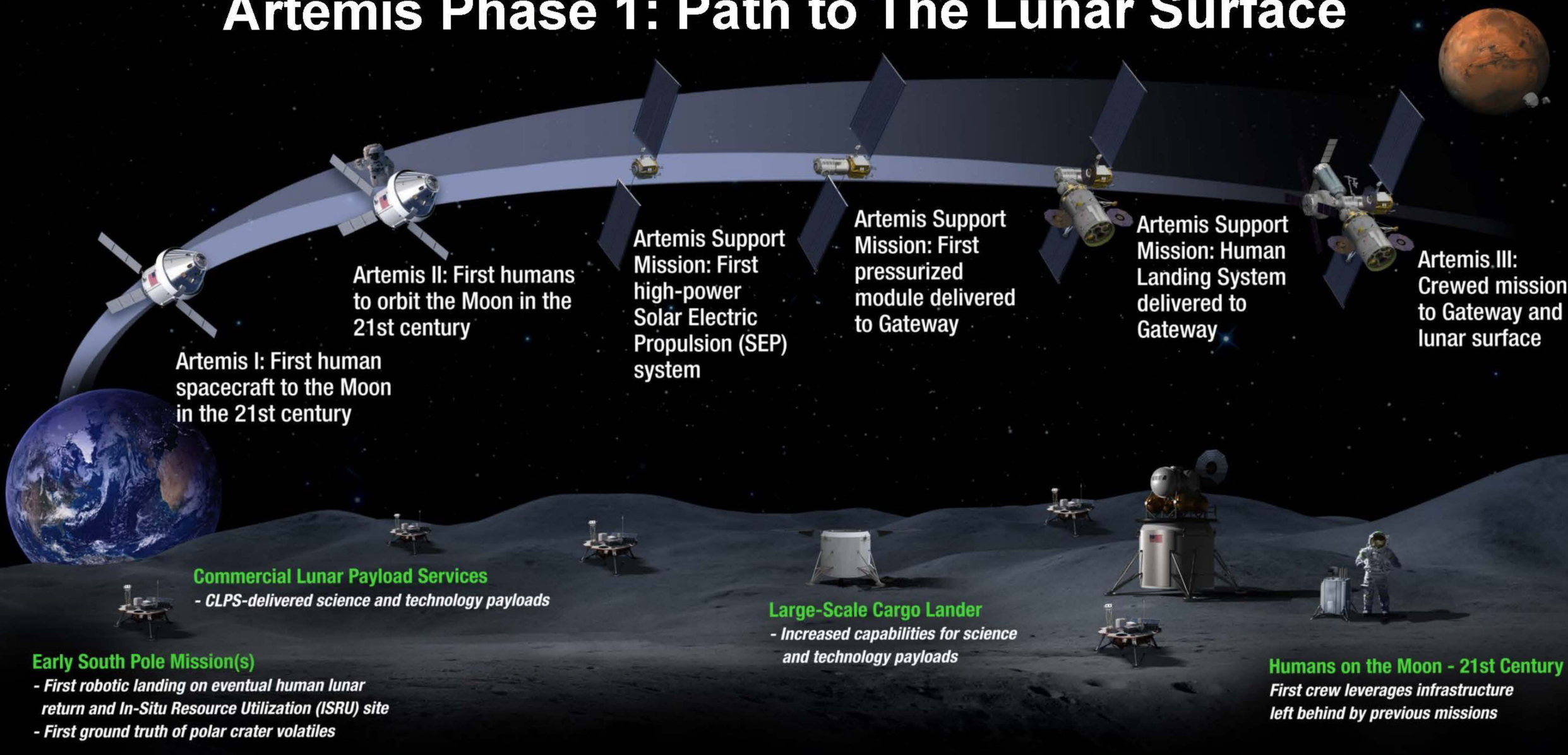


## LUNAR SOUTH POLE TARGET SITE

2020

2024

# Artemis Phase 1: Path to The Lunar Surface



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

Artemis II: First humans to orbit the Moon in the 21st century

Artemis Support Mission: First high-power Solar Electric Propulsion (SEP) system

Artemis Support Mission: First pressurized module delivered to Gateway

Artemis Support Mission: Human Landing System delivered to Gateway

Artemis III: Crewed mission to Gateway and lunar surface

**Commercial Lunar Payload Services**  
- CLPS-delivered science and technology payloads

**Early South Pole Mission(s)**  
- First robotic landing on eventual human lunar return and In-Situ Resource Utilization (ISRU) site  
- First ground truth of polar crater volatiles

**Large-Scale Cargo Lander**  
- Increased capabilities for science and technology payloads

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

## LUNAR SOUTH POLE TARGET SITE

2020

2024

**Communications**

**Carbon  
Dioxide  
Scrubbing**

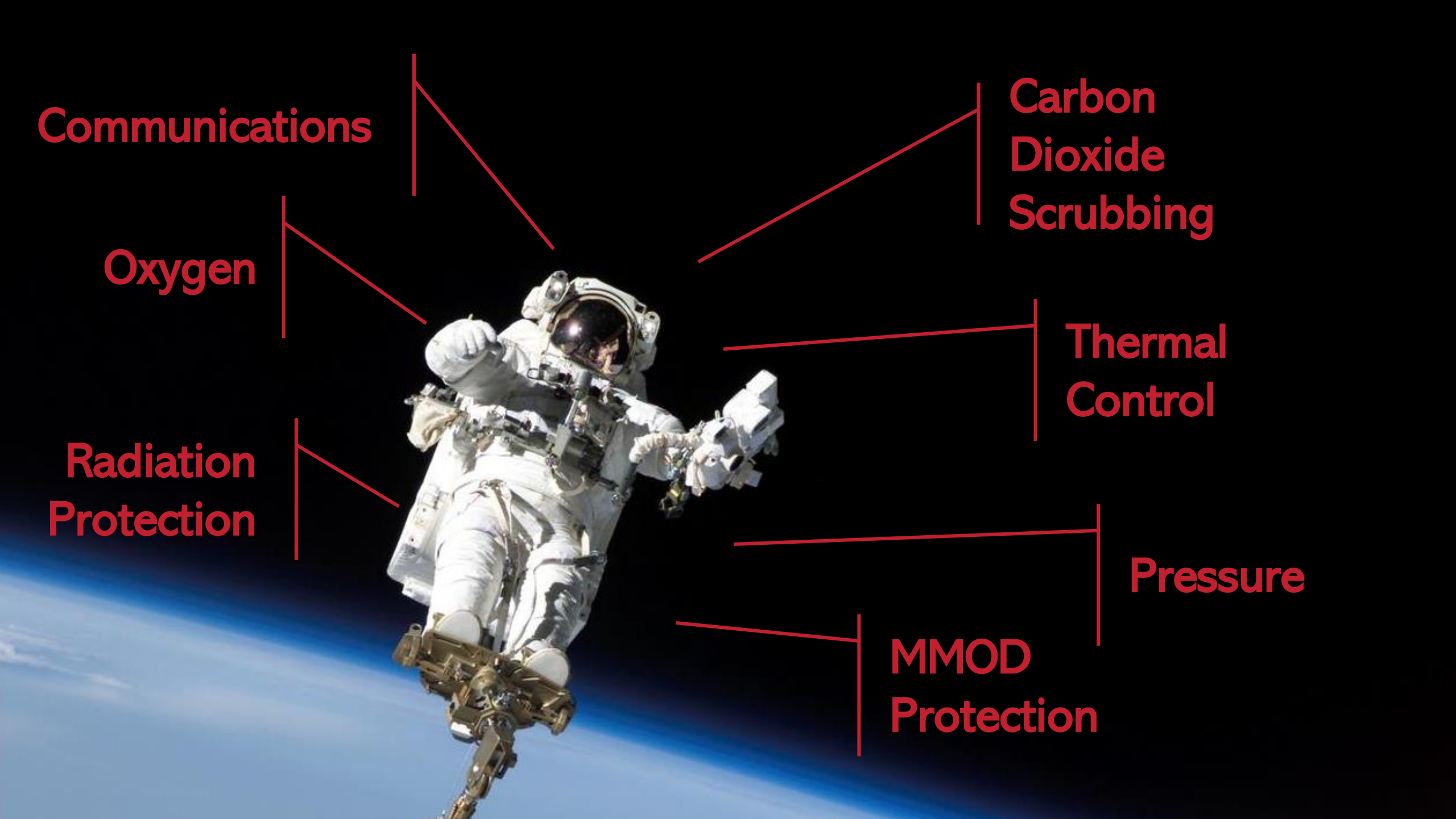
**Oxygen**

**Thermal  
Control**

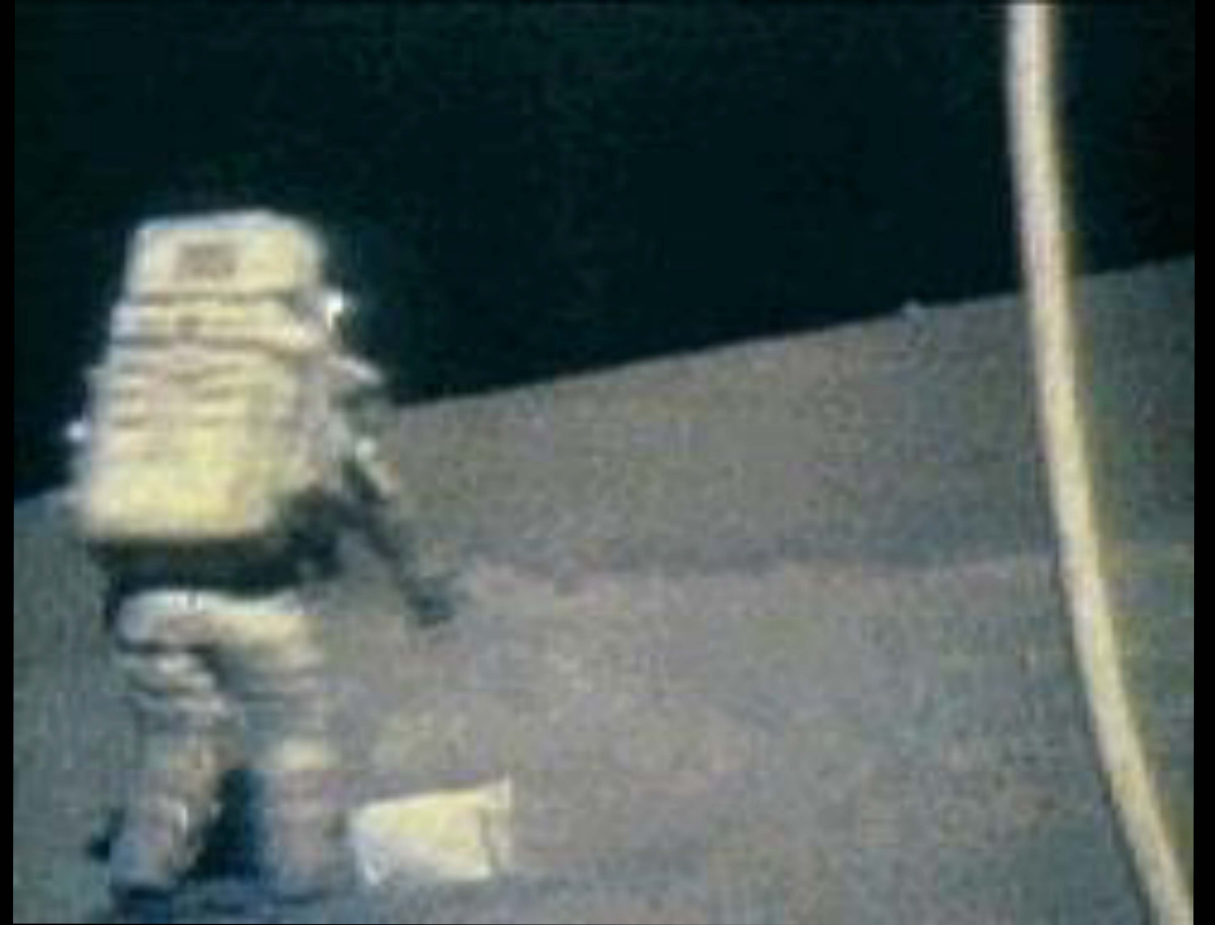
**Radiation  
Protection**

**Pressure**

**MMOD  
Protection**







# EXPLORATION EXTRAVEHICULAR MOBILITY UNIT (xEMU)

National Aeronautics and  
Space Administration



- High Speed Data Comm.
- HD Video and Lights
- Informatics Display and Control**
- Integrated Communications (No Snoopy Cap)
- Automated Suit Checkout
- Enhanced Upper Mobility**
- Environment Protection Garment (EPG) w/Dust Mitigation
- Planetary Mobility**



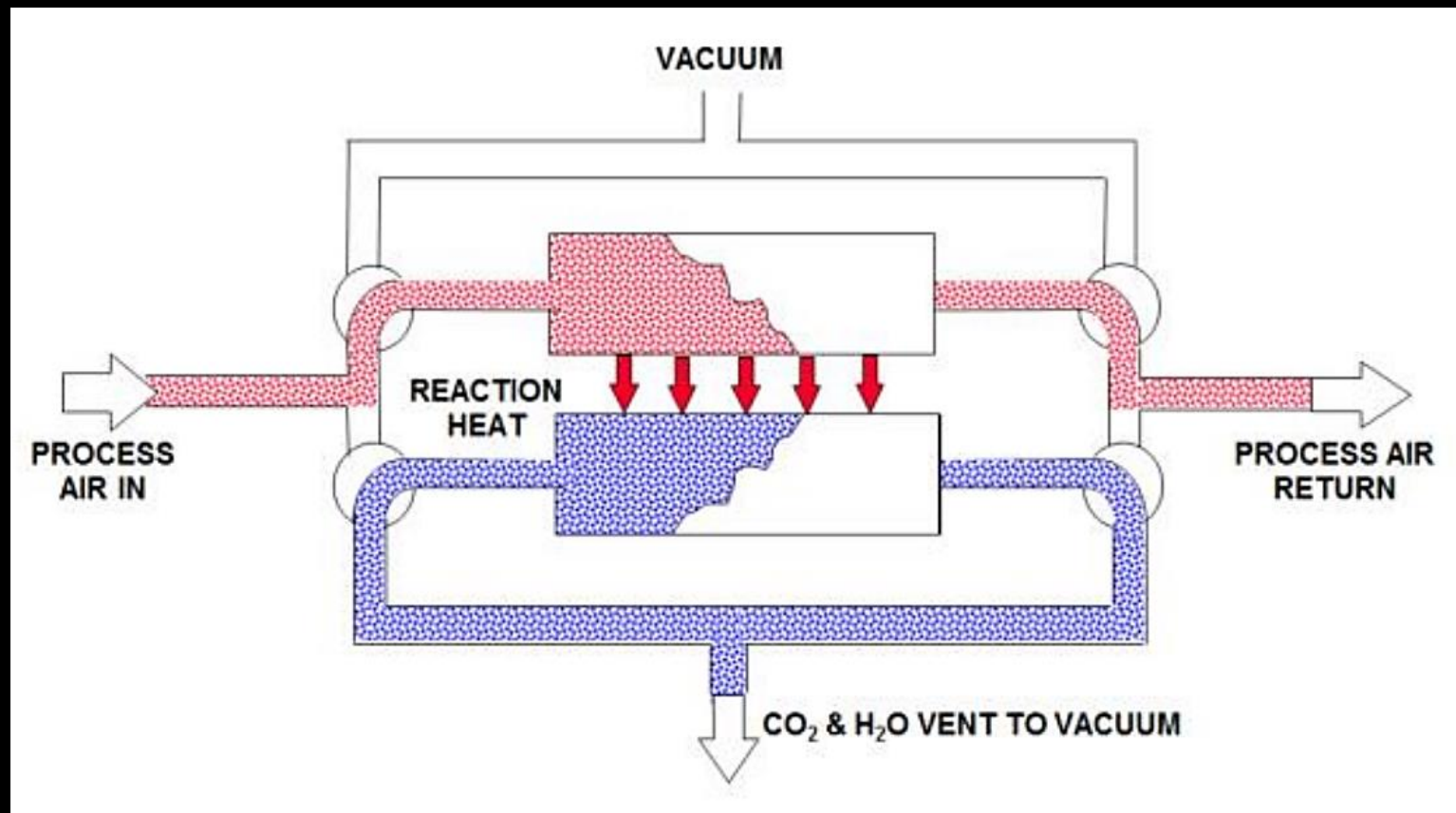
- 4.3 – 8.2 psi Variable Pressure
- 1 Hr. Emergency Return
- Vacuum Regenerative CO2 Removal System**
- Membrane Evaporation Cooling**
- Modular/ORU PLSS Design
- Rear Entry Ingress/Egress**

The xEMU is the spacesuit that will be worn by the first woman and next man to walk on the Moon. The new generation of technologies and capabilities incorporated into this spacesuit enable spacewalks (EVAs) in deep space, on the lunar surface, and on Mars.

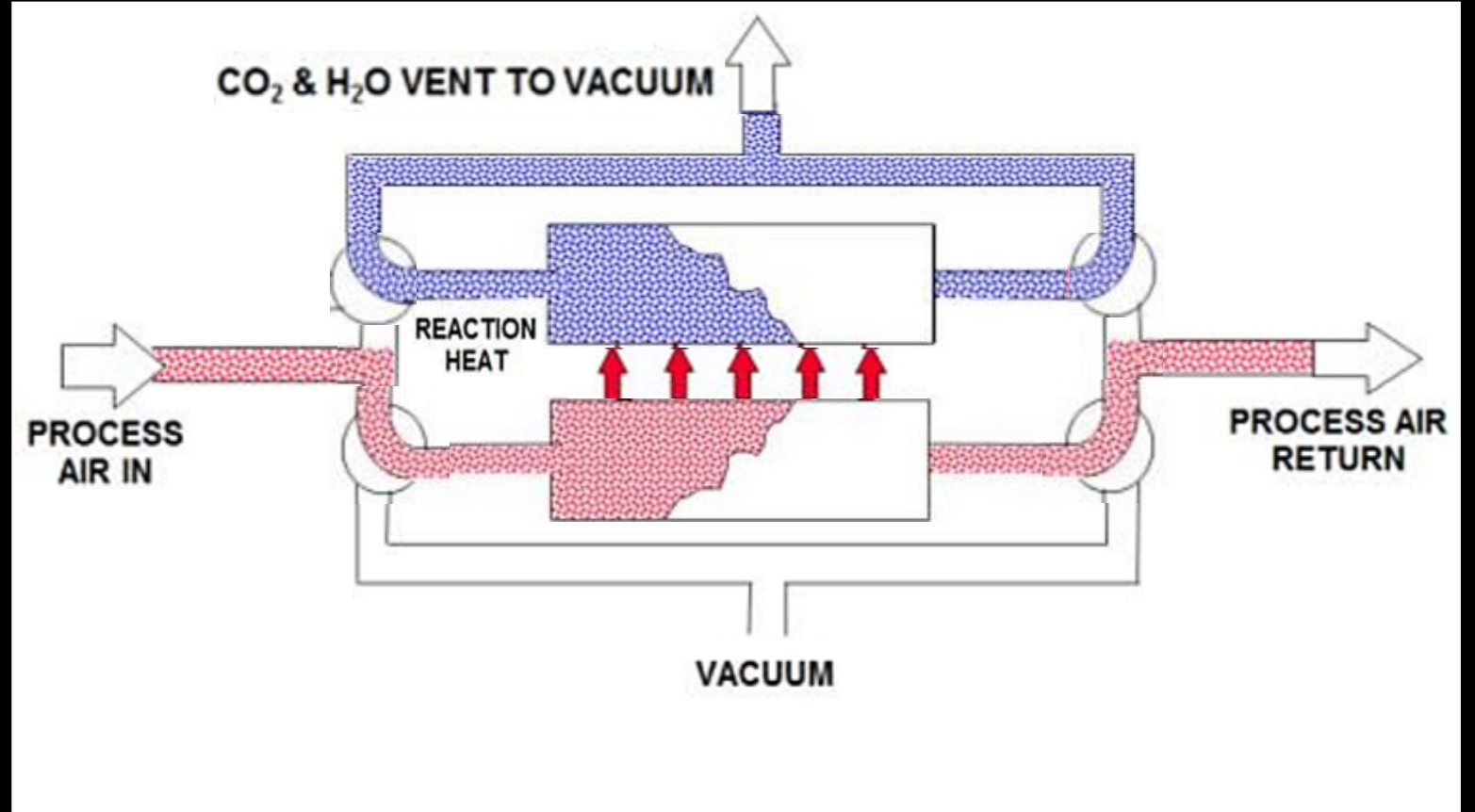




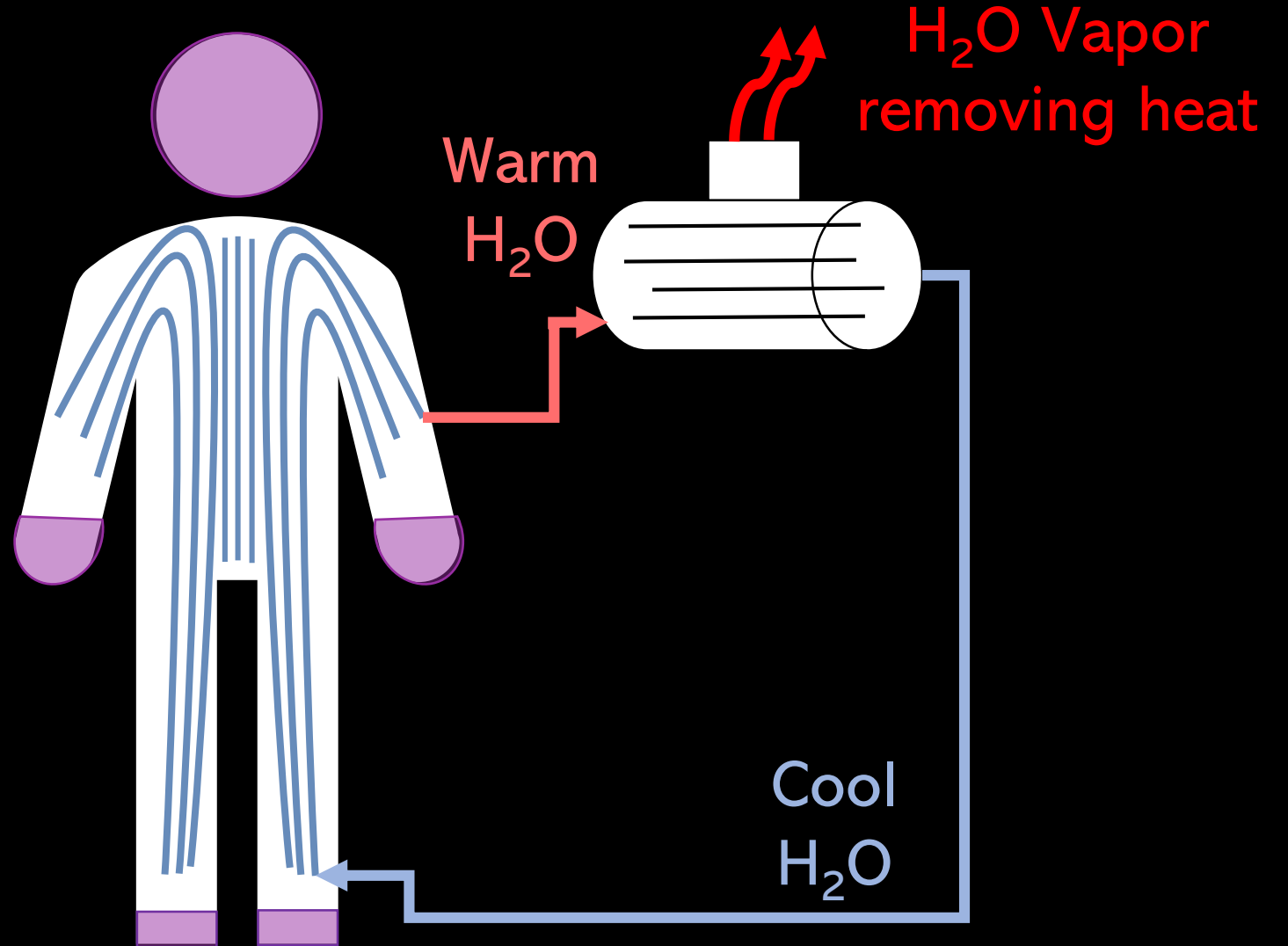
# Rapid Cycle Amine (RCA) Bed



# Rapid Cycle Amine (RCA) Bed



# Spacesuit Water Membrane Evaporator (SWME)



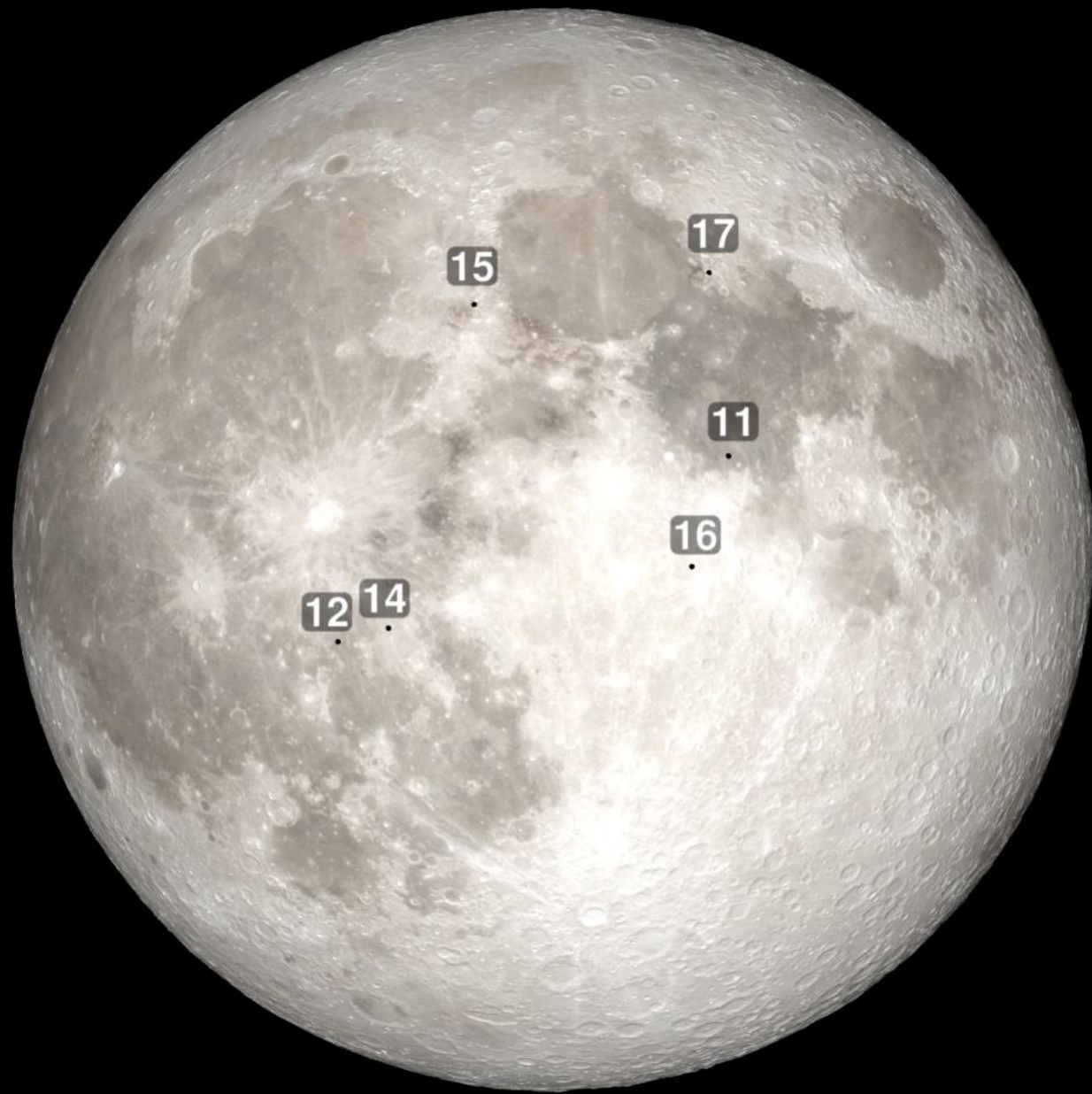












15

17

11

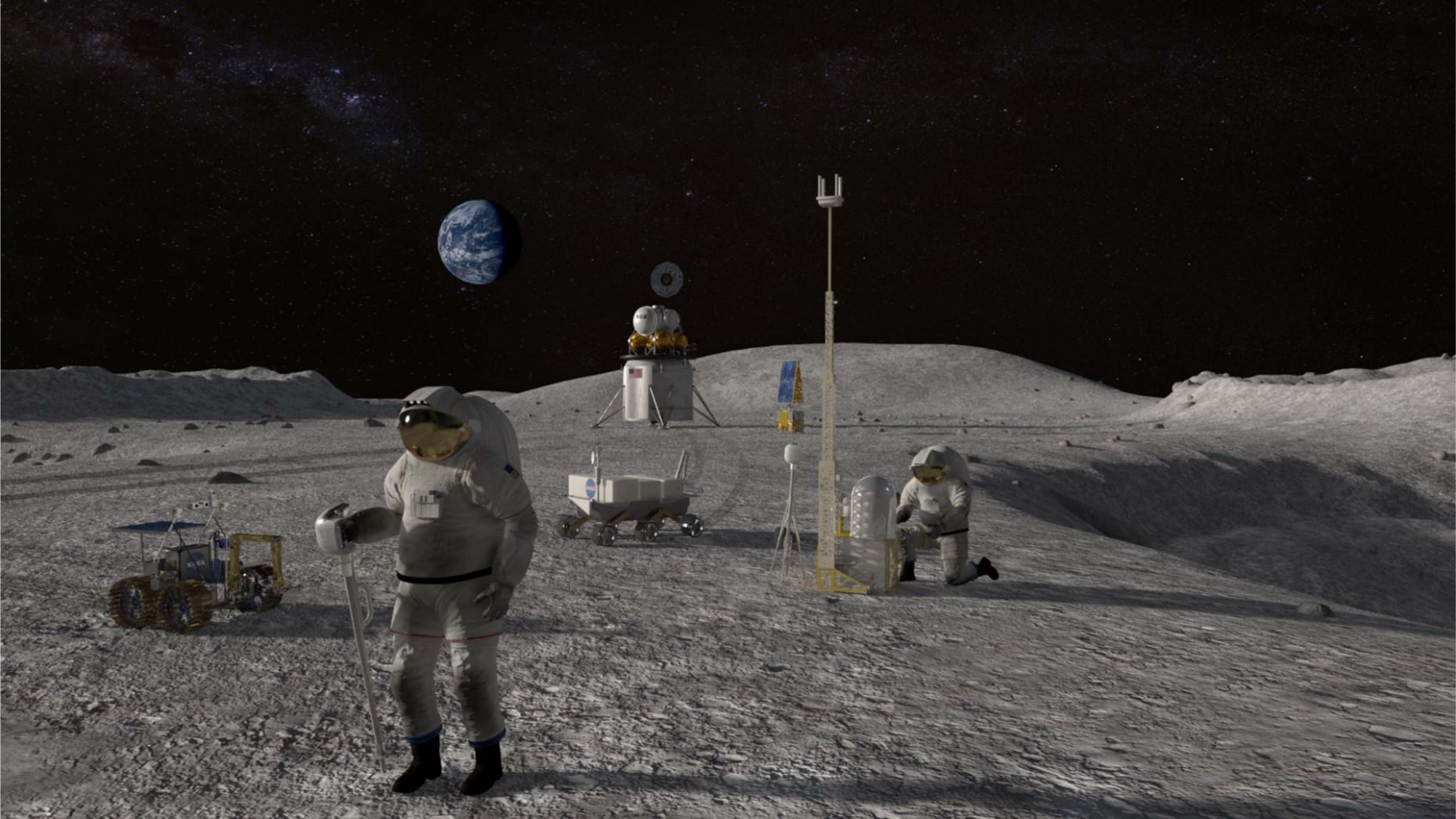
16

12

14







Backup Slides

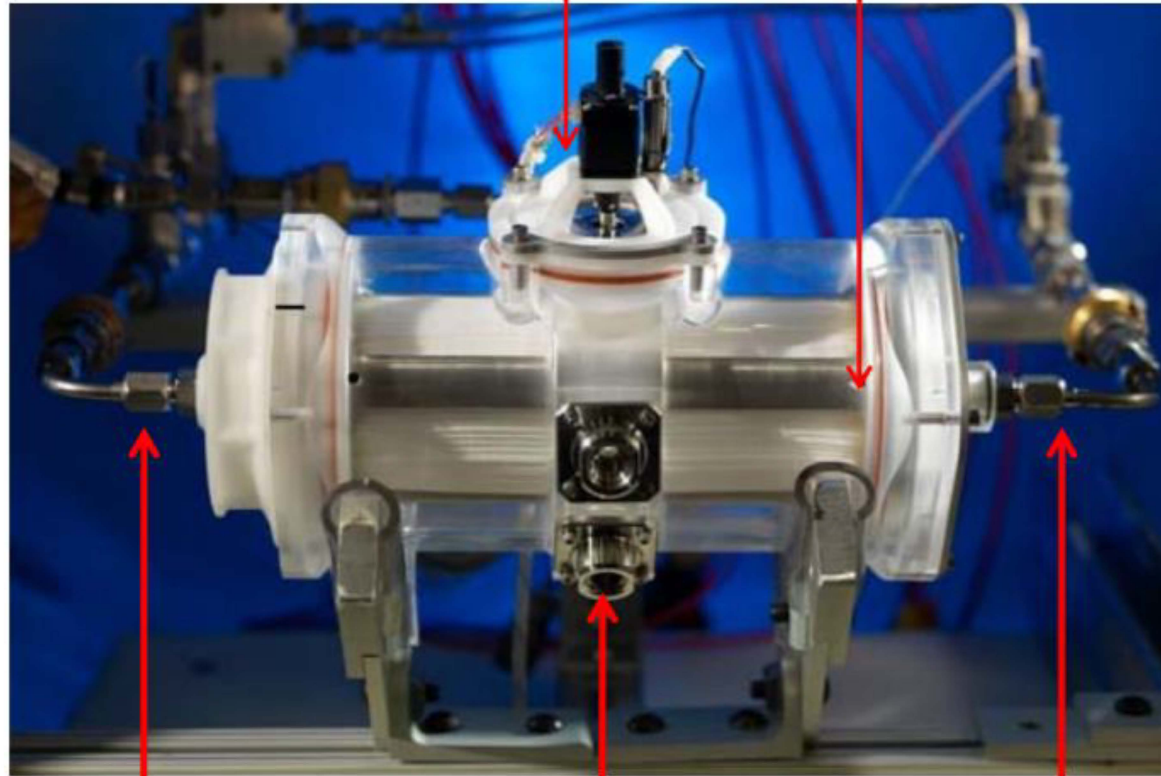


**Back Pressure**

**Valve**

**Cage**

**Valve  
Position  
Sensor**

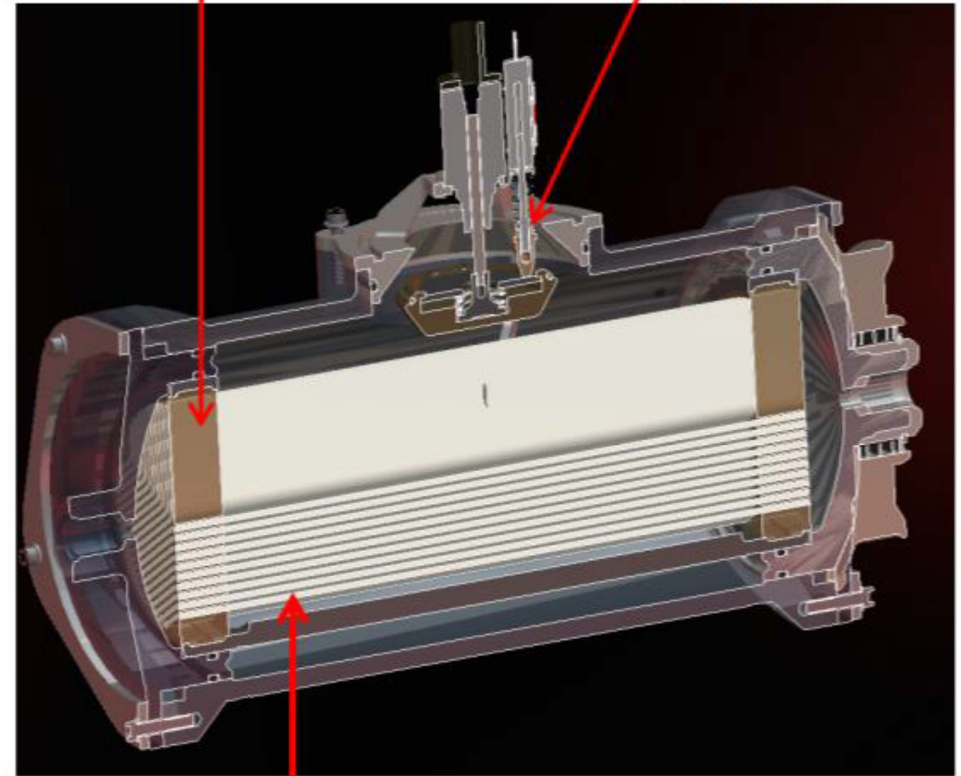


**Water Inlet  
(warm water  
from LCVG)**

**Instrumentation  
Ports**

**Water  
Outlet  
(cool water  
to LCVG)**

**Polyurethane  
Plug**



**Hollow  
Fibers**