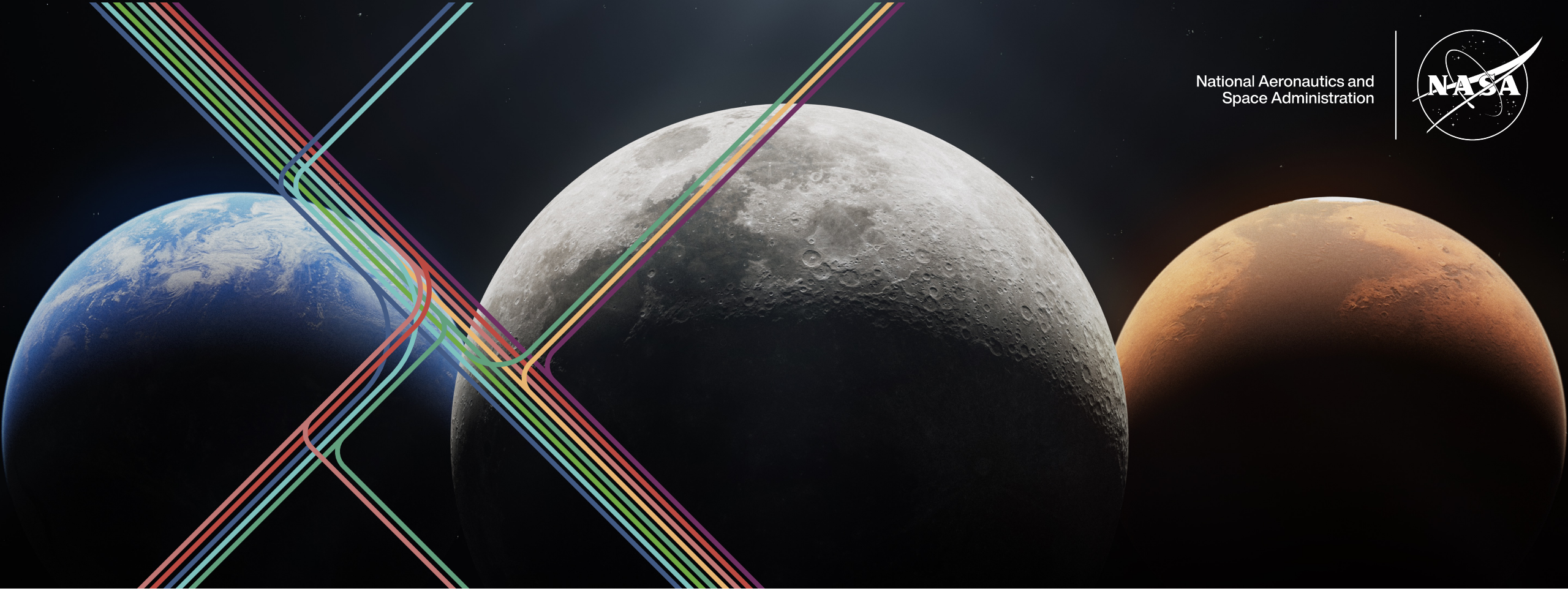


National Aeronautics and Space Administration

Moon to Mars Program Office Updates

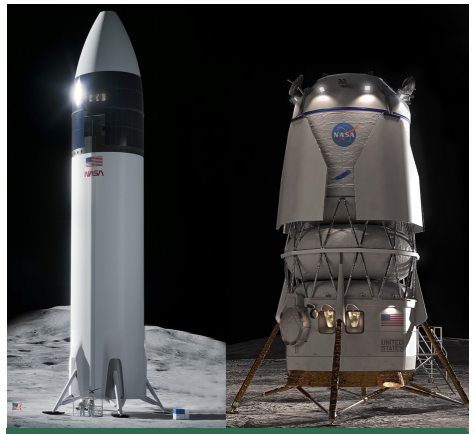
Steve Creech
Assistant DAA for Technical
Moon to Mars Program Office
NASA – ESDMD – M2MPO

Artemis: A Foundation for Deep Space Exploration

National Aeronautics and Space Administration

Space Launch System

Orion Spacecraft



Human Landing System

Surface Operations

Gateway

Exploration Ground Systems

Space Communications and Navigation

Surface Mobility

Spacesuits

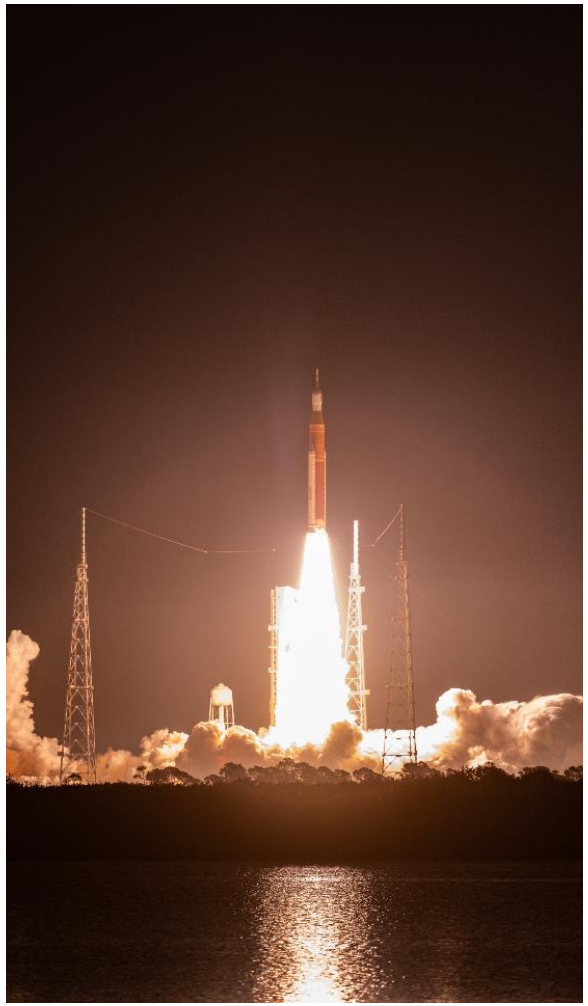
Surface Infrastructure

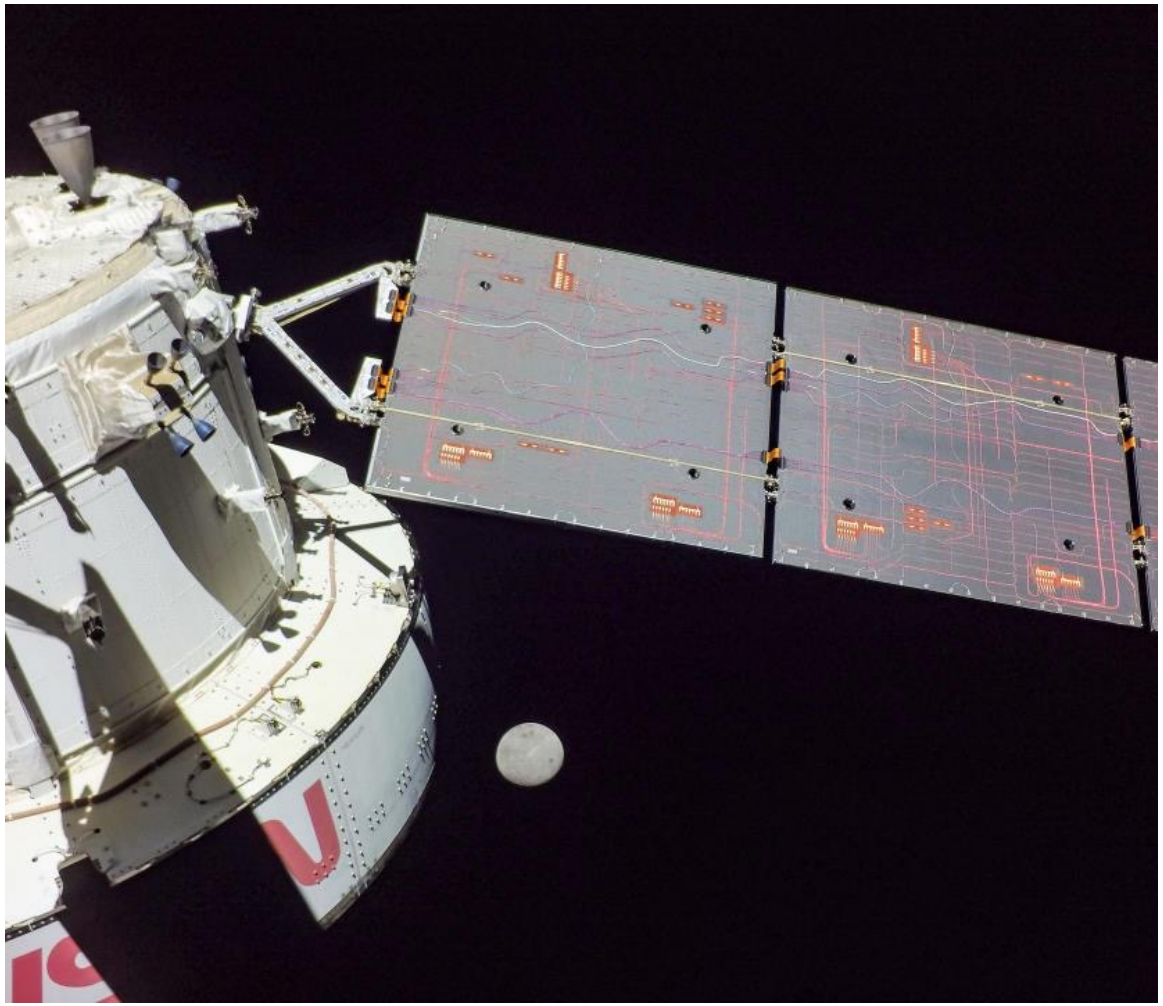
The Artemis Campaign

National Aeronautics and Space Administration

Artemis I

National Aeronautics and Space Administration





Artemis II

National Aeronautics and Space Administration

ARTEMIS FIRSTS:

- Crewed integrated flight test of the Space Launch System (SLS) rocket, Orion spacecraft, and Exploration Ground Systems (EGS) at KSC
- Active Orion Launch Abort System (LAS)
- Demonstration of Orion life support systems
- Proximity operations demonstrations
- Human data collection in transit to and from the Moon, in lunar orbit, and through reentry and splashdown
- Conducting new science and technology demonstrations in orbit

NEW ELEMENTS:

- Orion life support systems
- Launch Complex 39B emergency egress system for crew and new liquid hydrogen system

COMMON ELEMENTS:

- SLS rocket Block 1 configuration
- Orion crew spacecraft
- Mobile Launcher 1

ENSURING CREW SAFETY IS OUR TOP PRIORITY!

The Artemis II Crew

National Aeronautics and Space Administration

The Artemis II crew represents thousands of people working tirelessly to bring us to the stars.

This is their crew. This is our crew. **This is humanity's crew.**

Jeremy Hansen
Mission Specialist
Canadian Space Agency Astronaut

Reid Wiseman
Commander
NASA Astronaut

Victor Glover
Pilot
NASA Astronaut

Christina Hammock Koch
Mission Specialist
NASA Astronaut

Artemis II Progress

National Aeronautics and Space Administration

Artemis II core stage is ‘hard down’ and fully supported by the structure in High Bay 2 in the Vehicle Assembly Building on Dec. 12, 2024

Quad pods support the weight of the core stage and connect it to the support structure in High Bay 2

Stacking of Artemis II booster segments complete at Kennedy Space Center on Feb. 19, 2025

Orion completed 2nd round of vacuum chamber testing on Dec. 5, 2024; Installation of solar array underway

Artemis I Orion crew module, now the Orion Environmental Test Article, returned from Glenn after 11-month testing campaign to undergo propulsion functional testing

Artemis III

National Aeronautics and Space Administration

ARTEMIS FIRSTS:

- Human landing in South Pole region and return
- Orion to human landing system direct mission including crew docking activity
- Use of Near Rectilinear Halo Orbit (NRHO)
- Four astronauts to lunar orbit
- Two astronauts to lunar surface to collect scientific samples and data
- Conducting new science and technology demonstrations

NEW ELEMENTS:

- Orion full up rendezvous, proximity operations, and docking systems
- Starship human landing system
- Advanced spacesuits and tools to explore the surface and collect samples

COMMON ELEMENTS:

- SLS rocket Block 1 configuration
- Orion crew spacecraft
- Mobile Launcher 1

Artemis III Progress

National Aeronautics and Space Administration

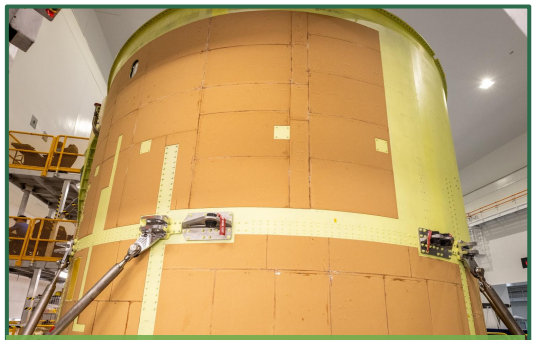
Spacesuit Test of Starship HLS

Andre Douglas (Artemis II backup astronaut), right, and Kate Rubins participate in JETT 5

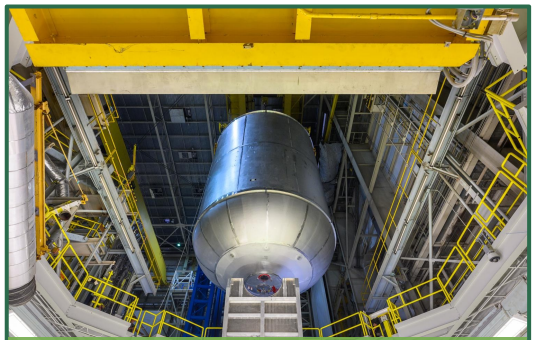
SpaceX Starship 6th Test Flight Nov. 21, 2024: In Orbit Maneuvers

Interim cryogenic propulsion stage complete final testing and checkout

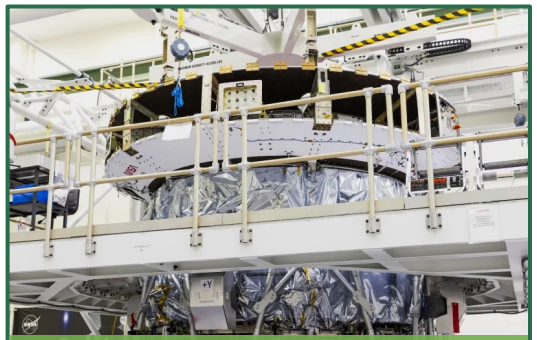
Axiom Spacesuit Design Unveiled at IAC 2024



Artemis III Core Stage Engine Section



Core stage liquid oxygen tank completed hydrostatic proof testing



European Service Module 3 joined with Crew Module Adapter

Artemis IV

National Aeronautics and Space Administration

ARTEMIS FIRSTS:

- Crewed mission to Gateway
- Launch, delivery, and integration of a space station module in lunar orbit
- Crew transfer from Orion to human landing system (HLS) via Gateway
- Precursor Deep Space Logistics flight to Gateway
- Conducting new science and technology demonstrations

NEW ELEMENTS:

- Space Launch System rocket Block 1B configuration Mobile Launcher 2 with supporting ground systems
- SpaceX Sustaining Starship HLS
- Gateway modules: Power and Propulsion Element and Habitation and Logistics Outpost (pre-staged in orbit); International Habitat (launched on SLS Block 1B alongside the crew aboard Orion); Deep Space Logistics

COMMON ELEMENTS:

- Common SLS elements
- Orion crew spacecraft
- Spacesuits and support systems

Artemis IV Progress

National Aeronautics and Space Administration

Mobile Launcher 2 Rig & Set 1.5 Weeks Ahead of Schedule; Tower Mod 4 Installed

Work continues on Mobile Launcher 2 tower segments January 14, 2025

Liquid hydrogen tank for core stage in progress

Artemis IV Core Stage Engine Section Oct. 15, 2024

All four universal stage adapter structural qualification article panels are aligned and loaded on Vertical Assembly Tool

Artemis V

National Aeronautics and Space Administration

ARTEMIS FIRSTS:

- Use of the lunar terrain vehicle (LTV) rover by crew to access more of the lunar surface and collect diverse scientific samples
- Use of second lunar lander design
- Use of new RS-25 engines
- Conducting new science and technology demonstrations

NEW ELEMENTS:

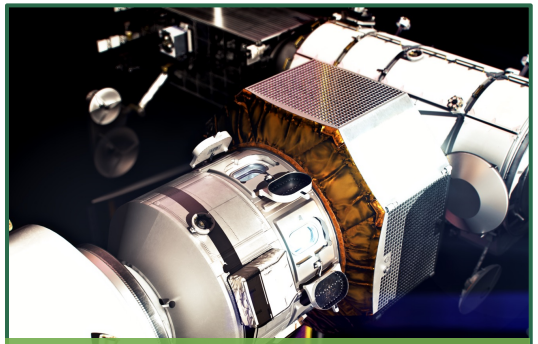
- Blue Moon human landing system
- LTV unpressurized rover with scientific instruments
- Gateway modules: ESPRIT Refueling Module (European System Providing Refueling Infrastructure and Telecommunications), Canadarm3 robotic arm

COMMON ELEMENTS:

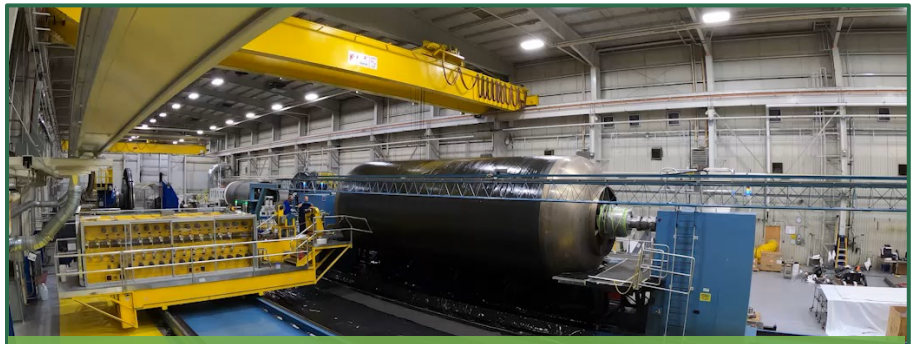
- Space Launch System rocket Block 1B configuration
- Orion crew spacecraft
- Mobile Launcher 2 with supporting ground systems
- Spacesuits and support systems

Artemis V+ Progress

National Aeronautics and Space Administration



ESA Lunar View Refueling Module will supply cargo, storage, and fuel for Gateway



Trial Booster Obsolesces and Life Extension (BOLE) for Artemis 9 composite case winding

Testing of Intuitive Machines' Moon RACER lunar terrain vehicle at NASA's Johnson Space Cetner

Artist 's concept of Blue Origin's Blue Moon human landing system

Japan Pressurized Rover agreement signed

Testing of Lunar Outpost's Eagle lunar terrain vehicle at NASA's Johnson Space Center

Testing of Astrolab's FLEX lunar terrain vehicle at NASA's Johnson Space Center

International Collaboration | Global Partners

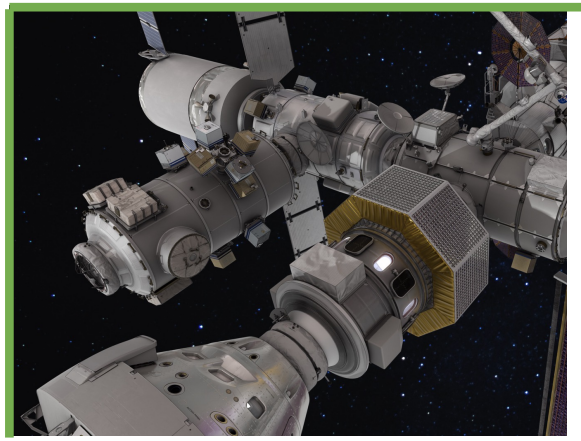
National Aeronautics and Space Administration

PEOPLE

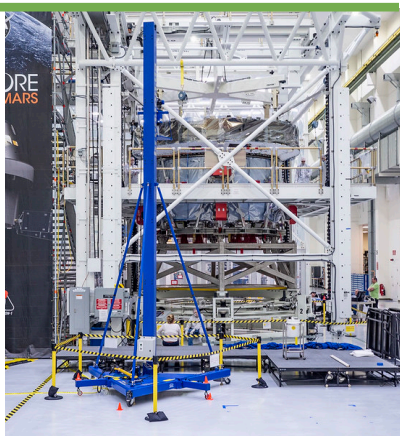
Artemis II will be the first to send crew around the Moon and will include a Canadian crew member

NASA's annual Moon to Mars Architecture Workshops engage space agencies from around the world. In 2024, 18 countries were represented

HARDWARE



Artist's concept of Gateway, including Canadarm3 and United Arab Emirates Gateway Airlock



Orion European Service Module , provided by ESA and involving 10 European countries

LUNAR SCIENCE

NASA completes agreement with Japan for the provision of the Pressurized Rover, which will also host multiple science instruments

PAYLOADS

Several international partner science payloads were flown on Artemis I; NASA currently negotiating with several entities, including international partners, to again fly CubeSats

COMM AND NAV

Deep Space Station 53 is a new waveguide antenna that went online in February 2022 at NASA's Deep Space Network's ground station in Madrid

Closing

National Aeronautics and Space Administration

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