NATIONAL ACADEMIES Sciences Engineering Medicine

SPACE STUDIES BOARD
BOARD ON PHYSICS AND ASTRONOMY
AERONAUTICS AND SPACE ENGINEERING BOARD

Committee on Key Non-Polar Destinations Across the Moon to Address Decadal-level Science Objectives with Human Explorers

Meeting No. 1

May 7-9, 2025

Hybrid Meeting

Keck Center, 500 5th Street, NW, Washington, DC

ALL TIMES IN US EASTERN DAYLIGHT TIME (UTC-4:00)

WEDNESDAY, MAY 7, 2025

OPEN SESSION

Livestream: https://vimeo.com/event/5101813

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10:00 AM	**Welcome**	**Dr. James Day, Co-Chair / Mr. Daniel Dumbacher, Co-Chair**
10:05 AM	**Perspective of Task with NASA Science Mission Directorate (NASA-SMD)** (30-minute presentation and 30-minute discussion)	**Dr. Nicola Fox, Assoc. Administrator, NASA-SMD**
11:05 AM	*Working Lunch for Members, Speakers, and Invited Guests*	
12:00 PM	**Planetary Science Decadal Objectives Overview** (30-minute presentation)	**Dr. Robin Canup and Dr. Phil Christensen*, Decadal Co-Chairs**
12:30 PM	**Biological and Physical Sciences in Space Decadal Objectives Overview** (30-minute presentation)	**Dr. Robert Ferl and Dr. Krystyn Van Vliet*, Decadal Co-Chairs**
1:00 PM	*Break*	
1:15 PM	**Solar and Space Physics Decadal Objectives Overview** (30-minute presentation)	**Dr. Stephen Fuselier and Dr. Robyn Millan*, Decadal Co-Chairs**
1:45 PM	**Astronomy and Astrophysics Decadal Objectives Overview** (30-minute presentation)	**Dr. Robert Kennicutt* and Dr. Fiona Harrison*, Decadal Co-Chairs**

2:15 PM **Panel Discussion of Decadal Co-Chairs on Science Priorities to Accomplish on the Moon with Human Explorers**
(45-minute discussion)

Panelists:
Dr. Robin Canup and Dr. Phil Christensen, Planetary Decadal Co-Chairs
Dr. Robert Ferl and Dr. Krystyn Van Vliet, Biological and Physical Sciences in Space Decadal Co-Chairs
Dr. Stephen Fuselier and Dr. Robyn Millan, Solar and Space Physics Decadal Co-Chairs
Dr. Robert Kennicutt and Dr. Fiona Harrison, Astronomy Decadal Co-Chairs

3:00 PM *Break into Closed Session*

*remote participant

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THURSDAY, MAY 8, 2025

OPEN SESSION

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9:25 AM	**Reconvening of the Committee**	**Dr. James Day, Co-Chair / Mr. Daniel Dumbacher, Co-Chair**
9:30 AM	**Perspective of Task with NASA Exploration Systems Development Mission Directorate (NASA-ESDMD)** (30-minute presentation and 30-minute discussion)	**Dr. Lori Glaze, Acting Assoc. Administrator, NASA-ESDMD**
10:30 AM	**Perspective of the Artemis III and Artemis IV Science Team Leaders** (25-minute presentation and 20-minute discussion)	**Dr. Barbara Cohen, Artemis IV Science Lead, NASA-GSFC / Dr. Noah Petro, Artemis III Science Lead, NASA-GSFC**
11:15 AM	*Break*	
11:30 AM	**Orbital Lunar Reconnaissance** (25-minute presentation and 20-minute discussion)	**Dr. Brett Denevi, Planetary Scientist, Johns-Hopkins U. Applied Physics Lab.**
12:15 PM	*Working Lunch for Members, Speakers, and Invited Guests*	
1:15 PM	**Science Traceability Matrices** (25-minute presentation and 20-minute discussion)	**Dr. Sabrina Feldman, Program Manager Planetary Science Formulation Office Jet Propulsion Laboratory**
2:00 PM	*Adjourn to Closed Session*	

*remote participant

FRIDAY, MAY 9, 2025

Committee Meets All Day in Closed Session

*remote participant

Committee on Key Non-Polar Destinations Across the Moon to Address Decadal-level Science Objectives with Human Explorers
May 7-9, 2025

IMPORTANT NOTES

Members of the General Public:

- Remote access will be provided through a live stream on Vimeo. This will also be publicly available and posted on the Board website. You do not need to register.

Thank you all for your cooperation, and we look forward to a successful meeting.

STATEMENT OF TASK

Task Initiated on March 17, 2025

The National Academies of Sciences, Engineering, and Medicine will convene an ad hoc committee to address the topic of "Key Non-Polar Destinations across the Moon to Address Decadal-level Science Objectives with Human Explorers." To address this topic, the committee will:

- Define a strategy and provide a prioritized list of high-value human sortie destinations for lunar exploration across the Moon (except for the poles), along with any time-ordering constraints, using published documentation, expert testimony, and other input, as appropriate.
    - A sortie is defined here as two crew members to the surface for 1-4 EVAs, destination-dependent.
    - Site prioritization might be based on addressing single highest-priority objectives at a single destination.
    - Discuss whether the number or sequence of destinations explored influences the prioritization, e.g., if exploration at one site would benefit from a preceding mission to another destination.
- For each target destination identified, provide
    - Key science objectives to be addressed at that location, tied to the National Academies report *Origins, Worlds, and Life: A Decadal Strategy for Planetary Science and Astrobiology 2023-2032* (OWL) and NASA's Moon to Mars Objectives.
    - Key measurements, made in situ, needed to achieve the identified science objectives.
    - Key measurements that can or must be enabled via samples collected and returned to terrestrial labs to achieve the identified science objectives
    - Justification for why these measurements or sample collection efforts would require or would most effectively be enabled by human explorers (as opposed to robotic rovers or sample return)
    - Discussion of what, if any, pre-placed assets would be necessary or enabling to accomplish these measurements (e.g., tools, mobility devices, robotic hardware, and equipment delivered to the lunar surface prior to human landing)
    - Key resources available at this destination that might be useful for in-situ resource utilization.
- Produce a report that describes the recommended strategy, that also includes at a minimum:
    - Science traceability matrices for each target destination.
    - A visual summary of targeted geographic locations on the Moon and the associated key science objectives addressed.

*remote participant