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DIVISION ON ENGINEERING AND PHYSICAL SCIENCES
SPACE STUDIES BOARD

Committee on Planetary Protection
Meeting No. 5 on Mars Mission Bioburden Requirements
May 17, 2021
Virtual Meeting
ALL TIMES IN US EASTERN DAYLIGHT TIME (UTC-4:00)

This agenda is a draft, subject to change, and was last updated on 5/17/2021 10:00 AM

AGENDA

MONDAY, MAY 17, 2021

OPEN SESSION

Zoom Remote Access Information – Open Session *Phone: +1-646-558-8656*
Link: https://nasem.zoom.us/j/95427976268?pwd=eHVOa2VLWm1aMHpOcVUweXFEQkhLQT09 *Meeting ID: 954-2797-6268*
Password: 132253

1:30 PM	**Welcome and Introductions**	***Mr. Joseph K. Alexander, CoPP Co-Chair / Dr. Amanda Hendrix, CoPP Co-Chair***
1:35 PM	**Brines on Mars and Implications for Liquid Water and Planetary Protection** (20 minute presentation & 10 minute discussion period)	***Dr. Edgard Rivera-Valentin, Staff Scientist, Lunar and Planetary Institute***
2:05 PM	**Mars Caves and Planetary Protection Concerns** (20 minute presentation & 10 minute discussion period)	***Dr. Jennifer Blank, Senior Research Investigator, Blue Marble Space Institute of Science***
2:35 PM	*Break* *(40 minute break)*	
3:15 PM	**Detection of Aquifers on Mars and Implications for Habitability** (20 minute presentation & 10 minute discussion period)	***Dr. Bob Grimm, Program Director Southwest Research Institute***
3:45 PM	**Martian Aquifers and Planetary Protection Considerations** (20 minute presentation & 10 minute discussion period)	***Dr. Steve Clifford, Senior Scientist Planetary Science Institute***
4:15 PM	**Additional Time for Committee Questions to Speakers** (15 minute discussion period)	

4:30 PM *Meeting Adjourns to Closed Session (or at a time at the discretion of the Co-Chairs)*

The following information is provided for any members of the general public who may be in attendance:

This meeting is being held to gather information to help the committee in its charge. This committee will examine the information and material obtained during this, and other public meetings, in an effort to inform its work. Although opinions may be stated and lively discussion may ensue, no conclusions are being drawn nor will recommendations be made. Observers who draw conclusions about the committee's work based on this meeting's discussions will be doing so prematurely.

Furthermore, individual committee members often engage in discussion and questioning for the specific purpose of probing an issue and sharpening an argument. The comments of any given committee member may not necessarily reflect the position he or she may actually hold on the subject under discussion, to say nothing of that person's future position as it may evolve in the course of the project. Any inference about an individual's position are therefore also premature.

NOTES FOR PRESENTERS

If your presentation contains unpublished data, ITAR controlled and/or other sensitive information, please be aware that the open sessions at the meeting may be recorded and/or webcast. Presentation materials given to the committee may be posted on a publicly accessible website. Please edit your presentations accordingly.

Mac users should assume that their presentation will be displayed via one of the NASEM's PCs. If your presentation is graphics heavy and best displayed via your own laptop, you should also bring a plain-vanilla pdf version of your presentation with you. The audience in the meeting room will see your presentation via your laptop and we will webcast the pdf file.

At some point a staff member will be asking you to sign a consent form allowing us to use your presentation, specifically to post it on our website.

REMOTE CONNECTION DETAILS

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Date	Start Time	Type	Meeting ID	Join Link
May 17, 2021	1:30pm EDT	Open Session	954-2797-6268	https://nasem.zoom.us/j/95427976268 Password: 132253

STATEMENT OF TASK

Task Initiated on 22 February 2021

The Committee on Planetary Protection (CoPP) shall write a report that identifies criteria for determining locations or regions on Mars that are potentially suitable for missions of less restrictive bioburden than the current requirements for Category IV. The report shall also illustrate the use of those criteria by identifying some potentially acceptable locations that meet those criteria and are suitable for reduced bioburden criteria. Additionally, the report shall consider the appropriateness of mission activities that occur beneath the Martian surface in these locations and how deep such mission activities should be allowed.

The CoPP shall determine whether the following criteria are necessary and sufficient to determine if a location on Mars is appropriate for missions with lower bioburden requirements than the current Category IV and provide methods a mission could use to show it meets the criteria. If the following criteria are not sufficient, the CoPP shall provide those that are deemed necessary.

Criteria might include:

- Temperatures at the landing site and locations of mission activities are below -25°C, or water activity is less than 0.5 (Note: water activity = water vapor pressure of a solution/vapor pressure of pure water),
- Mission activities will go no deeper than a certain distance below the surface,
- Landed spacecraft are not capable of melting the regolith, and
- Proposed landing and/or mission activity sites do not contain geomorphological characteristics of flowing water, such as recurring slope lineae, etc.

Methods to show that the above criteria are met might include:

- Observational data from orbiters, landers, rovers, and Earth-based observation;
- Modeling based on the most up-to-date knowledge of the Martian environment and its processes.

In determining criteria for locations on Mars, the CoPP shall also consider whether mission activities need to be constrained to an area of a specific diameter, including off-nominal operation margins.

Finally, the CoPP shall briefly comment on whether these locations may be suitable for an eventual human exploration mission. While this report should primarily focus on robotic missions, NASA would like to know the CoPP's views on whether these criteria may be useful (although likely not sufficient) when considering how human missions can be carried out without large-scale biological contamination of Mars.

The committee must consider the views of the broad community of stakeholders, including Mars and astrobiological scientists, government agencies dealing with spaceflight and exploration, and the aerospace industry, including emerging commercial entities.

TENTATIVE SCHEDULE FOR REPORT COMPLETION (AT PROJECT INITIATION)

March 2021	Task Initiation and Kick-Off Meetings
March – June 2021	Committee Virtual Meetings to Discuss Task, Gather Information and Input from Experts, Discuss, Deliberate, and Draft Report
1 July 2021	Target Draft Report Completion Date; Send Draft Report to Reviewers
15 July 2021	Reviews Due from Reviewers
25 August 2021	Target Date for Response to Review Submission to DEPS Report Review Officer
8 September 2021	Target Signoff Date
15 September 2021	Approved Report to DEPS Editor
22 September 2021	Deliver Report to NASA in Prepublication Format