

IAA Study Group Status Report

Responsible Commission: Commission 1

Study Number and Title:

Study Group 1.16: Expanding Options for Implementing Planetary Protection during Human Space Exploration

Short Study Description (repeat from Study Group Proposal):

Considering the increase in space activities by new nations and partnerships and the current plans for human missions beyond LEO, it is important to develop ways to integrate planetary protection provisions effectively into human missions from the earliest phases. Ultimately, agreement and work at the international level regarding planetary protection research and implementation activities are necessary to ensure that all organizations avoid releasing harmful contamination on bodies with biological potential, thereby ensuring protection of the Earth and astronauts throughout missions and safeguarding the integrity of science exploration—all in compliance with the 1967 Outer Space Treaty.

Our overall work plan involved brainstorming in a number of areas:

Systems design and engineering approaches that would support implementation of the existing COSPAR planetary protection framework and requirements for human missions to Mars;

Strategies to facilitate development and testing of the various approaches on missions to other objects in the solar system where operations are not restricted; and

Specific research and technology development activities that will be important for near and long term planning, design, and implementation relevant to human missions.

Progress in past six months:

After submitting a 2014 Interim Report, Study Group 1.16 put its work on a temporary hold due to anticipated activities and workshops also focused on Planetary Protection and human missions –all of which would have direct relevance as input to our overall study.

For example, both NASA and COSPAR have undertaken deliberations and organized workshops examining how to proceed from the current COSPAR PP policy for human missions –in the form of *qualitative* principles and guidelines—to more detailed *quantitative* requirements for PP and human missions.

- a) **NASA Planetary Protection Procedural Requirements Document for Human Extraterrestrial Missions** (NPI 8020.7). See *Introductory Material* Section on: NPI 8020.7 and Path to Requirements, by B. Siegel on <https://planetaryprotection.nasa.gov/humanworkshop2015/>
- b) **NASA Workshop on Planetary Protection Knowledge Gaps for Human Extraterrestrial Missions, 2015** (Rpt. Dated 2016): <http://hdl.handle.net/2060/20160012793>
- c) **COSPAR Workshop on Refining Planetary Protection Requirements for Human Missions, 2016**. (publication expected in mid-2017)

In addition, a space community effort (NASA, academic, commercial technologies, aerospace industry, and private stakeholders) convened a series of workshop focused on the path to achievable, affordable, sustainable humans mission to Mars (2013-2016)

- a. **Achieving & Sustaining Human Exploration of Mars (AM IV)**. Workshop Dec 2016- Report anticipated March 2017
- b. **Reports for Workshops AM I (2013), AM II (2014) and AM II (2015)** available: <http://www.exploremars.org/affording-mars>

With the near-completion and publication of these many workshop reports, our group leaders recently discussed the resumption of virtual group meetings so we may complete our original charge in the next year or so.

Website Study Information update: (please give any update regarding Study Group Membership, documents, Study Plan and Schedule):

- No change in study plan or membership.
- Considerable new information relevant to our task focused on Planetary Protection and human missions (many new workshop reports and documents are ready for examination and integration in our Study efforts)
- Schedule: Plan to resume regular telecons and discussions in the coming months. See below

Issues requiring resolution? (recommend approach):

Need to integrate New Findings and Information--We anticipate resuming regular telecons (monthly or as required) to

- a. Discuss how to progress towards suggestions/recommendations for international cooperation/possible collaboration and
- b. if possible outline a shared approach to addressing the many R&TD gaps ahead for human mission and planetary protection.

Product Deliveries on Schedule? (If modified explain rationale):

Obviously our work schedule changed considerably from our original plans. We anticipate reconvening the study group by Summer /Fall, 2017, and will aim to complete a final report in 2018.

Study Team Member Changes? (List any Study Team Members that you wish to discontinue, and provide names plus contact coordinates of any Members you wish to add on the second page of this Study Update form.) Note: Complete contact information including email, tel. and fax must be provided for all additions. Only Members with complete contact information will be listed and receive formal appointment letters from the IAA Secretariat.)

- **No Changes in Team Membership** (list of study members listed below***)
- **Name of person providing Study Group Status**
Submitted by Dr. Margaret S. Race, Study Group Secretary
On behalf of Dr. Cassie Conley, Study Chair

Status Report Date: March 15, 2017

***** STUDY PARTICIPANTS INCLUDE:**

Cassie Conley, USA (Chair)
Gao Zhaohui, China
Heidmann Richard France
Kundrot Craig E. USA
Raulin Francois France
Razoumny Yury N. Russia
Rettberg Petra DLR
Rummel John D. USA
Sarkar Somya S. India
Spry James A. USA
Tian Feng China
Trushlyakov Valeriy Russia
Tatyana Zenchenko Russia
Margaret Race, USA (Study Secretary)
Pascale Ehrenfreund, Germany DLR (formerly GWU/ USA)
Guiseppe Reibaldi

Study Team Membership Changes

Effectivity Date:

Discontinue:

Add: