IAA Study Group Status Report

Responsible Commission: Commission 2

Study Number and Title: 2.12-Effectiveness of Countermeasures

Short Study Description (repeat from Study Group Proposal):
To collect and summarize evidence of the effectiveness of physiological countermeasures for the protection of human health in space and present a state of the art and needed forward work for future manned deep space exploration missions.

Progress in past six months:
1. Group established with 16 members (open for expansion)
2. Kick-off meeting held June 18, 2013 (telecom) where the following Milestones for the study were decided.

Milestone 1,
September, 2013:
Establish a list of physiological countermeasures used in manned spaceflight programs divided up into short (<30 days) and long (>30 days) duration flights (A joint U. S./Russian publication in 5 volumes entitled “Space Biology and Medicine” edited by Nicogossian, Mohler, Gazenko and Grigoriev will be the basis of this work).

Milestone 2,
December 2013:
Establish a method to score or evaluate the effectiveness of countermeasures based on previous U. S and Russian experience.

Milestone 3,
February, 2014:
Describe and evaluate countermeasures that have been tested during ground analog conditions, and which are not operational yet but have shown potentials for future use.

Milestone 4,
May, 2014:
Based on milestones 1 - 3, evaluate and score the effectiveness of each countermeasure being used on ISS and of candidates, which have shown potentials for use during future long-term exploration missions.

Milestone 5,
September, 2014:
Based on milestone 4, recommend the most efficient integrated countermeasure suite for investigation in space before the end of ISS.
Milestone 6, January 2015: Establish a vision for future integrated human countermeasure suites during deep space exploration missions related to the most likely mission scenarios (e.g., divided into missions with or without planetary surface investigations and shorter or longer than 6 months and combinations thereof).

Milestone 7, March 2015: Describe the expected gaps of knowledge regarding countermeasure development from the end of ISS to the initiation of future deep space exploration missions.

Milestone 8, June 2015: Discuss and describe the usefulness of artificial gravity for future deep space exploration missions and describe the advantages and disadvantages, and how use of artificial gravity during future exploration missions will influence the utilization of ISS.

Presentation of draft report on Effectiveness of Countermeasures for HIS audience, July 2015: Discussion and afterwards implementation of comments for improvement of report.

Milestone 9, October 2015: Revision of report based on HIS and other inputs.

Milestone 10, December, 2015: Final report.

3. Plan for Milestones was confirmed by co-chairs and executive secretary in Cologne, Germany at the 19th IAA Humans in Space, with a more detailed discussion on Milestones 1-3.

**Website Study Information up to date?** (Study Group Membership, Study Plan and Schedule):

Study Plan and Schedule see above. Membership:

- Patrik Sundblad (ESA)
- Jörn Rittweger (DLR)
- Chiaki Mukai (JAXA)
- Sh. Chen (China)
Natalie Hirsch (CSA)  
(Alternate member from CSA: Perry Johnson-Green)  
(Alternate member from CSA: Valerie Gil)  
Hiroshi Ohshima (JAXA)  
Nora Petersen (ESA)  
Oliver Angerer (ESA)  
Simon Evetts (ESA)  
Judith Hayes (NASA)  
William H. Paloski (NASA)  
Elena Fomina (IBMP)  
Elena Tomilovskaya (IBMP)

**Issues requiring resolution?** (recommend approach):  
None

**Product Deliveries on Schedule?** (If modified explain rationale):  
All deliveries are on schedule at this time.

**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

**Name of person providing Study Group Status** (Study Group Chair or Co-Chair):  
Study update:  
Peter Norsk, Secretary (USRA/NASA)

**Chairs:**  
John Charles (NASA)  
Inessa Kozlovskaya (IBMP)

**Status Report Date:**  
8/19/13

**Study Team Membership Changes**

Effectivity Date:  
No Changes