

IAA COMMISSION II

Life Sciences Coordination Meeting

September 23, 2007 08:30 – 11:00

Location: Hyderabad International Convention Centre (HICC)

Room G02

Summary minutes (draft)

1. **Welcoming** the participants **R. Gerzer**, replacing the current chair, briefly reported on activities since the last meeting in Paris and outlined the objectives for the present meeting. The draft agenda (annex I) for the meeting was adopted. A list of participants of the meeting is enclosed (annex II).
2. **Draft minutes** from the last Commission II meeting in Paris had been e-mailed to Commission members. Comments have been requested to be sent to the secretary. Since no comments had been received, the minutes were approved. The final version of these minutes has been sent to all members of Commission II and is also available on the IAA website (<http://www.ianet.org/commissions/>).
3. **Reports by the Chair: Scientific Activities, Board of Trustees, Membership of Commission II, general news from IAA**
R. Gerzer reported on ongoing activities in the Board of trustees. **R. White** informed that new candidates for section life sciences in the board of trustees will be nominated. He reported in details on the nomination process and the need for clarification. A status report on ongoing IAA activities has been delivered to the participants of the meeting.
4. **Study Group proposals/activities (Annex III)**
Status/Progress report from Study Groups chairs
S 2.1 Mathematical Modelling & Physiological Simulation: The Digital Astronaut/Cosmonaut. **R. White** reported that the study group will have to take a decision on its further activities, especially either to finish the work or to quit, the study. Decisions are expected in the upcoming meetings.
S 2.2 Artificial Gravity as a Tool in Biology and Medicine
The report has been finalised and was forwarded for the review. process, which needs to be organized by the chair. Three reviewer are requested, one of them outside the commission II. The report needs to be made mature by iteration between authors and commission II for further submission to SAC.
The publication could be done either by Acta Astronautica in a regular way, as separated issue, or in other journals (with sponsorship). R. Gerzer proposed to use the possibility for a rapid short publication.

S 2.4 Psychology and Culture in Long Duration Space Missions

N. Kanas confirmed that the report has been finalised and currently under reviewing.

S 2.5 Astrobiological Studies of Solar Systems

J. Rummel could not join the Commission meeting due to a conflict of dates. The study was for the time being on hold. The situation requires further clarification.

S 2.6 Medical Safety Guidelines for Passengers on Commercial Orbital Space flights

R. Gerzer confirmed that the report was nearly done. A session on legal aspects will be added. The next meeting of the study group will take place on Wednesday. The finalisation of the report is expected by the end of the year.

S2.7 Integrative Physiology in Long-duration Space Flight: Nutritional Aspects

M. Heer delivered a short progress report on the study.

The Commission recommended not to proceed with new study proposals till the ongoing ones had been successfully finished or clarification reached of those studies still on hold.

5. Programme preparation activities

R. Gerzer delivered a report on the **16th Human in Space Symposium, Beijing**. He reported that the publication of papers seems to be difficult in the foreseen time frame for Prof. Zhuang, who could unfortunately not come himself to Hyderabad. 60 from the 89 papers related to Humans in Space seem to be acceptable for publication. All papers will be assessed by 2 reviewers. The Elsevier system has been proven as very convenient, for the processing of publication.

Status for 59th IAC 2008 in Glasgow, Scotland

The sessions have been already defined during the last programme meetings in Paris. Proposals for plenary events are expected to be forwarded during the upcoming meeting of IPC. The Commission agreed to renew the proposal made by N. Kanas on psychology in space and to add one additional topic e.g. medical aspects of space tourism. The Commission members debated lengthily on the right approach and concluded that the final plenary proposals should be appealing for a large auditorium.

The Commission finally agreed to propose (order accordingly)

- 1) Medical aspects of space tourism
- 2) New challenges of sending Human expedition to Mars
- 3) From space to earth

5.3 Status for the 60th IAC 2009 in Korea

Programme proposal will be decided during the March meetings 2008.

5.4 Proposal for the next Humans in Space symposium in 2009

Russia has delivered a proper proposal. Decision to be taken at the next meeting in Paris 2008.

5.5 Intervention of Mr. Nair

Mr. Nair briefly informed on the current status of the ongoing meetings in Hyderabad,

6 Next meeting and work between meetings

Next meeting of IAA Commission II will take place on Wednesday, 26 March, starting at 8:00 hrs at Immeuble Aeroclub de France, 6, rue Galilee, 75016 Paris, room tbc.

7 Any other business

The situation of Human Space Flight has been briefly discussed.

Annex I

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Draft Agenda

1. Welcome/ Introduction
2. Review of minutes from last Commission II meeting in Paris
3. Reports by the Chair: Scientific Activities, Board of Trustees, Membership of Commission II, general news from IAA
4. Study Group proposals/activities
 - a. General overview
 - b. Status/Progress report from Study Groups chairs
 - S 2.1 Mathematical Modelling & Physiological Simulation: The Digital Astronaut/Cosmonaut
 - S 2.2 Artificial Gravity as a Tool in Biology and Medicine
 - S 2.4 Psychology and Culture in Long Duration Space Missions
 - S 2.5 Astrobiological Studies of Solar Systems
 - S 2.6 Medical Safety Guidelines for Passengers on Commercial Orbital Space flights
 - S2.7 Integrative Physiology in Long-duration Space Flight: Nutritional Aspects
 - c. Discussion on new proposals (tbc)
5. Programme preparation activities
 - a. General
 - b. Report on the 16th Human in Space Symposium, Beijing,
 - c. Status for 59th IAC 2008 in Glasgow, Scotland
 - d. Status for the 60th IAC 2009 in Korea
 - e. Proposal for the nex Humans in Space symposium in 2009
 - f. Programme proposal for the 60th IAC
6. Next meeting and work between meetings
7. Any other business

Annex III

IAA Study Group Status Report

Responsible Commission: Commission 2. Life Sciences

Study Number and Title: 2.1 Mathematical Modeling & Physiological Simulation:
The Digital Astronaut/Cosmonaut

Short Study Description: The overall goal of this IAA Study Group is to develop an Academy-endorsed, community-based publishable report on the issues, problems and benefits of an international program to develop a mathematical modeling and simulation system focused on the physiological and medical problems of space travelers.

Progress in past six months: Very little progress to report.

Website Study Information up to date? TBD

Issues requiring resolution? A decision must be taken whether to continue with the report or to abandon the project. The Chair will confer with the group members concerning this matter and a decision will be taken shortly.

Product Deliveries on Schedule? TBD

Study Team Member Changes?

Name of person providing Study Group Status (Study Group Chair): R. J. White

Status Report Date: September 10, 2007

IAA Study Group Status Report

Responsible Commission:

Study Number and Title:

Integrative Physiology in Long-duration Space Flight: Nutritional Aspects

Short Study Description (repeat from Study Group Proposal):

To write a position paper addressing the key issues of malnutrition during long duration space missions and the potential of nutrient supplementation/nutraceuticals to prevent microgravity and radiation induced risks for long-duration space flight.

Intermediate Goals: Identify the potential effects; review the literature; propose presentations at scientific meetings; hold study group meetings at these conferences; draft the position paper.

Progress in past six months:

Presentations at Experimental Biology 2007
Discussions on the report and its structure by E-mail

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

Issues requiring resolution? (recommend approach):

N/A

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

Since there is so much actual research going on right now in this field of interest compared to the past centuries and since we would like to include those results into our report, we need to extend the schedule. We most likely will have the report finished by autumn 2008.

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.) Please add the following member:

Michael Boschmann, MD
Charité Universitätsmedizin Berlin
Lindenberger Weg 80
D - 13125 Berlin
Tel. +49 30 9417 2267
Fax +49 30 9417 1509
michael.boschmann@charite.de

Name of person providing Study Group Status (Study Group Chair or Co-Chair):

Martina Heer

Status Report Date:

13.09.2007

Study Team Membership Changes



Report for The 16th IAA Humans in Space Symposium to the Commission of Space Life Science, International Academy of Astronautics

The 16th IAA Humans in Space Symposium was successfully held from May 20 to 24, 2007 in Beijing, China. The theme of this symposium was “From Dream to Reality: Living, Working and Creating for Humans in Space”. The topics for this symposium were :

I: Living in Space

- I.1, Physiological changes and countermeasures
- I.2, Psychosocial aspects
- I.3, Operational medicine
- I.4, Radiation health issues
- I.5, Environment monitoring and control
- I.6, Space biological research

II: Working in Space

- II.1, Human factors
- II.2, Extra Vehicle Activity(EVA)
- II.3, Task design
- II.4, Performing Experiment in space
- II.5, Communication

III: Exploring in Space

- III.1, Advanced life support system
- III.2, AI application and Man-AI system
- III.3, Scientific exploration (Moon, Mars)
- III.4, Protection issues
- III.5, Astrobiology
- III.6, In situ resource utilization
- III.7, Production

IV: Relation to the General Public

- IV.1, Outreach education
- IV.2, Application of space life science achievements to public society
- IV.3, Space tourism



16th IAA Humans in Space Symposium

21-24 May, 2007, Beijing, China



V: Other Topics Related to Humans in Space

This symposium had three parallel sessions and a technical tour to the China Astronaut Research and Training Center and the Chinese Academy of Space Technology. Two invited lectures were given at opening ceremony, they were:

1. Dr. Jean-Michel Contant “45 years of Manned Space Flight”.
2. Dr. Shanguang Chen “ Theory and Practice of Space Medical Engineering in China”

The program included seven keynote lectures, they were:

1. Dr. Nick Kanas “Psychology and psychiatry on orbit: lessons learned for missions to the Moon and Mars.
2. Dr. Thomas Lang “Skeletal atrophy and long term recovery in long-duration space flight”
3. Dr. Martina Heer “Bone turnover in immobilization: impact of nutrients”.
4. Dr. Victor Baranov “On ground experiment on simulation of Martian manned mission : Status and objectives of the program”.
5. Dr. Yinghui Li “ Space biology in China”
6. Dr. Lynn Rothschild “Astrobiology enables humans in space”
7. Dr. Ronald White “Humans health and performance in space as exploration begins”

There were two panel discussions, they were:

1. Astronaut panel “Living and working on the Moon”, Coordinated by Dr. Claudie Haignerè and Dr. Shanguang Chen, the panelists were: Astronauts Mr. Liwei Yang, Mr. Franz Viebock, Mr. Jean-Francois Clervoy, Ms. Julie Payette, Mr. Leroy Chiao, Mr. Valentina Tereshkova.
2. Panel “ To Moon and Mars: Challenges, Risks and Benefits”, Coordinated by Dr. Gerda Horneck and Dr. Hefeng Yu, the panelists were: Drs. William Carey, Jitendra Joshi, Ji Wu, Jean Claude Worms, V.A. Shunrshakov, Monique van Donzel.

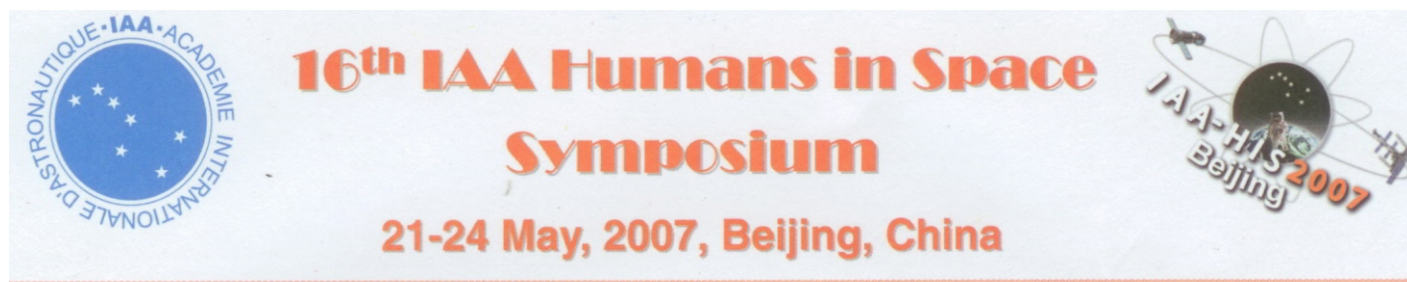
There were totally 236 submitted abstracts for the symposium, among them from China 84, USA 61, Germany 21, Russia 22, France 16, Belgium 5, Canada 4, Italy 4, Hungary 4, Japan 4, Sweden 3, Ukraine 2, Austria 2, Netherlands 1, Britain 1, Mexico 1, India 1.

There were 206 delegates registered, among them from China 91(students 30), USA 41(student 1), Germany 21 (students 3), France 12 (student 1), Russia 9 (students 3), Canada 6, Sweden 5 (student 1), Japan 5 (student 1), Austria 3 (student 1), Britain 2, India 2 (student 1), Italy 2

(student 1), Netherlands 2 (student 1), Hungary 2 (students 2), Belgium 1, Greek 1, Mexico 1.

There were 10 astronauts attending our symposium, they were:

Dr. Jean-Francois Clervoy (France), Dr. Leroy Chiao (USA), Mr. Junlong Fei (China), Dr. Julie Payette (Canada), Dr. Franz Viehböck (Austria), Dr. Yury Lonchakov (Russia), Dr. Yury Baturin (Russia), Mr. Haisheng Nie (China), Mr. Liwei Yang (China) and Dr. Dr. Claudie Haignerè



(France), except the astronaut panel discussion, there were three astronaut public meeting with students from universities and middle schools as follows: an astronaut public meeting in Tsinghua University, in Beihang University (Beijing University of Aeronautics and Astronautics) and in the middle school affiliated with People University.

Upon the evaluation by the Scientific Program Committee the student oral presentation awards were conferred to the awardees:

First Student Award for Mr. Tatsuya Arai from Japan Title:

“Educational tool for modeling and simulation of a closed regenerative life support system.”

Second student awards for Ms. Katarina Gustafson from Sweden Title:

“Simulations of the radiation environment at ISS altitudes”

and for Mr. Peng Zhang from China, Title: “Role of Smad3 in weightlessness-induced muscle atrophy”

The poster awards were conferred to the following awardees:

The First poster award for Dr. Chun Yang from China, Title: “The force induced by organelles’ gravity in microfilament is in the range of 0.1-1pN”

The second poster awards for Dr. Tamas Haidegger from Hungary Title: “Surgical robotic support for long duration space missions”

and for Dr. Olga V. Turtikova from Russia, Title: “Muscle progenitor cells proliferation didn’t sufficiently contribute to maintaining stretched soleus muscle mass during gravitational unloading”.

After the symposium we have received 96 full manuscripts submitted to ACTA ASTRONAUTICA for the special proceeding of the 16th IAA Humans in Space Symposium in Beijing, the peer review is in processing.

The principle sponsor is International Academy of Astronautics

This symposium was supported by: China National Space Administration

Ministry of Science and Technology, China

Chinese Academy of Sciences

National Natural Science Foundation of China



There were four organizing institution, they are: Chinese Society of Space Science

Chinese Society of Space Science

China Astronaut Center

Beihang University

Chinese Society of Astronautics

General Secretary for the 16th IAA Humans in Space Symposium in
Beijing, China

Fengyuan Zhuang

Prof. And Director of Institute of Bioscience and Bioengineering

Beihang University, Beijing Univ. Beijing 100083, China

E mail: zhuangfy@buaa.edu.cn and zhuangfy@yahoo.com.cn

Tel. 86-10-82314453 mobile 86-13693674857