

International Academy of Astronautics

Commission II: Life Sciences

Coordination Meeting

September 29, 2003

54 IAC Bremen, Congress Centre Bremen

Room MR2

13:30 – 15:30 hrs

Summary minutes

1. The meeting was chaired by Prof. R. White and co-chaired by Dr. I. Kozlovskaya. After welcoming participants R. White transferred chairmanship to I. Kozlovskaya for a two-year, G. Horneck becoming co chair of the Commission 2. R. White thanked all members of IAA Commission 2 for their contributions and active participation during his term. A list of participants of the meeting is enclosed (Annex I).
2. The draft agenda – distributed to participants prior to the meeting – was agreed upon (Annex II). Copies of the draft minutes from last Commission 2 meeting in Paris were handed to participants for comments and amendments. The final version of these minutes has sent to participants and is also available on the IAA website (<http://www.ianet.org/commissions/>).
3. **Scientific Activities Report, last Board of Trustees**
R. White informed participants on the results of the last meeting of the Board of Trustees. The current president – Mr. Yarymovych – has retired and Ed Stone -former Vice-President Scientific Programs – has been elected as new IAA President. Prof. Ed. Stone is expected to introduce new initiatives on how to run the future business of the Academy.
4. **Study Group proposals/activities:**
I. Kozlovskaya asked the Chair of Study Group to present proposals and to report on current status of the work. She further explained that after Commission 2 consensus, the proposals will be formally approved by the Board of Trustees.

Nick Kanas: Psychology and Culture in Long Duration Space Missions (annex III)
The objective is to produce a position paper within the next 3 years. Meetings took already place during the Humans in Space symposium in Banff and during IAC in Bremen.

Larry Young: Artificial Gravity as a Tool in Biology & Medicine (Annex IV)
R. White explained on behalf of L. Young, who could not participate to the meeting that the envisaged members of the study group have not been yet formerly invited to participate. The concept has been prepared, but is not yet fully matured. Objective of

the study is to describe the use and value of various types of centrifugation and to produce a review article to be published in a recommended scientific journal.

Ron White: Mathematical Modeling & Physiological Simulation: The Digital Astronaut/Cosmonaut (Annex V)

R. White explained that the idea behind the proposal was to bridge the existing split between “reductionism” and system level approach in Human physiology. The connection of both approaches is necessary and should lead to a research program on a general theory how the human body works. The programme with expected support by NSF and NASA should ultimately look for the best health care for astronauts.

G. Gerzer: Bio systems for future extraterrestrial habitats and in terrestrial applications (Annex VI)

The general objective of the study is to develop a publishable position paper addressing the key issues related to bio systems for future extraterrestrial habitats and in terrestrial applications. The consultation of the envisaged participants has been not yet finalised.

J. Rummel: Astrobiological Studies of Solar Systems (Annex VII)

The general objective of the study is to write a position paper addressing the key issues related to an exobiology/astrobiology strategy for the exploration of this solar system and extra-solar planetary systems. Embodied will be new concepts developed by the Study Team based on existing roadmaps for astrobiological study, explicit reference to international capabilities and interests, and a timeline for accomplishment of astrobiology objectives implicit in the strategy.

After presentation at the meeting I. Kozlovskaya remarked that the proposals – despite all looking in the future – are expected to result in short- and mid- term activities. The proposed study groups will be recommended to the Board of Trustees for approval. Regarding the research on life support system she mentioned that present models were based on 20 year old information, which requires an urgent update. I. Kozlovskaya intends therefore to provide an additional proposal on advanced system and technology of life support systems (preliminary title) on the occasion of the next meeting of the Commission 2 in Vancouver.

5. Programme activities

I. Kozlovskaya explained the status of preparation for the next IAC in Vancouver 2004. The scientific programme will be finalised during the spring meetings 2004 in Paris. Regarding the study group on EVA Mr. Skoog informed that the session for Vancouver has been cancelled due to the fact that the planned study group has not shown enough momentum to continue. The final discussion how to continue should be done in Commission 4, but Commission 2 will be ready to take over these activities if appropriate.

Regarding the preparation of the scientific programme for future IAC the Chair stated that Commission 2 will follow only one set of rules (IAA Commission rules). Commission 2 will therefore forward the proposals for the scientific program directly to IPC/IAF with copy to the Scientific Activities Committee and later on posted on the

IAA web site. Since the process has produced in the past avoidable misunderstandings further clarification seems necessary and will be looked for by the Chair.

Proposals for the 2005 Humans in Space Symposium:

The proposal received by Austria has been distributed to the participants of the meeting. China indicated in writing to the Chair its interest to organise the Human in Space Symposium in 2008. However this proposal does not fit with the present alternate planning with COSPAR and needs further clarification.

The participants took the opportunity to discuss the Austrian proposal and finally recommended it for acceptance. The chair however made clear that acceptance of the proposal in principal does not mean automatically even the acceptance of the programme proposals as proposed. The Commission 2 feels free to recommend changes and amendments and leaves the final approval to the Commission 2 Chair.

6. Next meetings:

Paris: March 23, 2004, Commission 2,
March 23, 2004, Board of Trustees,
March 24 – 25, 2004, IPC

Annex I

International Academy of Aeronautics

Commission 2: Life Sciences

Coordination Meeting, 29 September 2003, 54 IAC Bremen, Congress Centre, Germany

List of Participants

Baronov	V.	info@imbp.ru
Boles	Vincent C.	vincent.c.boles@aero.org
Gerzer	Rupert	Rupert.gerzer@dlr.de
Graef	Peter	peter.graef@dlr.de
Horneck	Gerda	gerda.horneck@dlr.de
Kanas	Nick	nick21@itsa.ucsf.edu
Kozlovskaya	Inessa	ikozlovs@imbp.ru
Kreuzberg	Karlheinz	karlheinz.kreuzberg@esa.int
Lue	Chung Chu	aduola@public.fz.fj.cn
McPhee	Jancy	jmcphee@bcm.tmc.edu
Melo	A.	ayary.melo@squitter.com
Rummel	J.D.	jrummel@hq.nasa.gov
Skoog	Ingemar	ake.ingemar.skoog@t-online.de
White	Ronald	rwhite@bcm.tmc.edu

Annex II

IAA COMMISSION II

Life Sciences Coordination Meeting

September 29, 2003 13:30 – 15:30
Location: room MR2
54 IAC Bremen, Congress Centre Bremen

Draft Agenda

7. Welcome/ Introduction
8. Review of minutes from last Commission II meeting in Paris
9. Scientific Activities Report, last Board of Trustees meeting
10. Study Group proposals/activities
 - 10.1 General overview
 - 10.2 Status/Progress report from Study Groups chairmen
 - 10.3 Discussion on new proposals
11. Programme Committee activities
 - 11.1 General
 - 11.2 Status for Vancouver 2004
 - 11.3 Programme discussion for the 56th IAC 2005 in Fukuoka, Japan
 - 11.4 Proposals for the 2005 Humans in Space Symposium
12. Next meeting and work between meetings
13. Any other business

Annex III

Proposal for Forming an IAA Study Group

Title of Study:
Psychology and Culture in Long Duration Space Missions

Proposer:
Nick Kanas, M.D.

Primary IAA Commission Preference: Commission II: Life Sciences
(From Commission 1 to Commission 6)
Secondary IAA Commission Interests:
(From Commission 1 to Commission 6)

Members of Study Team

Chair: Nick Kanas, M.D.
Co-Chair: Gro Sandal, Ph.D.
Secretary: Jennifer Ritsher, Ph.D.

Other Members:

Sheryl Bishop, Ph.D.	David Musson, M.D.
Ken Dion, Ph.D.	Larry Palinkas, Ph.D.
Chris Flynn, M.D.	Elisabeth Rosnet, Ph.D.
Vadim Gushin, M.D.	Jack Stuster, Ph.D.
Natsuhiko Inoue, Ph.D.	Peter Suedfeld, Ph.D.
Berndt Johannes, Ph.D.	Vyacheslav Salnitskiy, Ph.D.
Norbert Kraft, M.D.	David Tomko, Ph.D.
Gloria Leon, Ph.D.	Joanna Wood, Ph.D.
Dietrich Manzey, Ph.D.	Daniel Kealey, Ph.D.
Ichiyo Matsuzaki, M.D.	

Short Description of Scope of Study

Overall Goal: To write a position paper addressing the key issues related to psychological and cultural factors that affect long duration space missions.

Intermediate Goals: Identify the issues; review the literature; propose presentations at scientific meetings, including IAA-IAC symposia and Humans in Space symposia; hold study group meetings at these conferences; draft the position paper.

Methodology: Presentations at IAA and other scientific meetings; study group meetings at these scientific conferences; frequent telecom and e-mail communications.

Time Line: Three years: 2003-2006

Final Product (Report, Publication, etc.): A publishable quality position paper summarizing the area and making recommendations for future research and counter-measures.

Target Community: IAA, space agencies, space life sciences community, aerospace industry, scientific community in general.

Support Needed: Space on program at IAA-sponsored scientific conferences; meeting room at such IAA conferences; travel funds to meetings and conferences are the responsibility of the individual travelers; optional final presentation of position paper issues and recommendations at special meeting, if the support of space agencies for the meeting can be obtained.

Potential Sponsors: IAA; space agencies, particularly NASA, ESA, CSA, RSA, and NASDA.

To be returned to IAA Secretariat Paris fax: 33 1 47 23 82 16 email: sgeneral@iaanet.org

Date: 8/25/03

Signature: Nick Kanas, M.D.

For IAA Use Only:

Annex IV

Proposal for Forming an IAA Study Group

Title of Study:

Artificial Gravity as a Tool in Biology & Medicine

Proposer:

Laurence R. Young, Sc.D.

Primary IAA Commission Preference: Commission II: Life Sciences

(From Commission 1 to Commission 6)

Secondary IAA Commission Interests:

(From Commission 1 to Commission 6)

Members of Study Team

Chairs: Larry Young and Kazuyoshi Yajima

Secretary: William Paloski

Other Members:

G. Clement
S. Glasauer
K. Iwasaki
A. LeBlanc
J. Vernikos

R. Gerzer
H. Hecht
I. Kozlovskaya
J. McPhee
F. Vil-Villiams

Short Description of Scope of Study

Overall Goal: To assess the state of current knowledge concerning the requirements and effectiveness of Artificial Gravity.

Intermediate Goals: To plan for a transition from ground studies of AG to flight investigations with animals and humans; to propose presentations at scientific conferences; to hold study group meetings at these conferences; to draft the position paper.

Methodology: Work with the scientific leadership of the current international AG/Bed Rest Project and with the National space agencies to lay the groundwork for space flight AG studies. Both the planned ISS centrifuge and a possible new human flight AG facility are to be considered. Periodic meetings will be held in conjunction with the IAA and the Humans in Space symposia and the activity will be carried out through frequent telecom and e-mail communications in addition.

Time Line: Initial coordination during 2004 – leading to a first Study meeting in Vancouver, October. 2004. Subsequent study meetings annually, to 2007.

Final Product (Report, Publication, etc.): Preparation of a set of recommendations for AG flight research, reflecting the results of the AG/Bed Rest studies and other research, for presentation at the 2007 IAA meeting. Preparation of a final report and submission of a manuscript containing the methodology and recommendations.

Target Community: The human exploration scientific community, to assist in planning of long duration missions; the Gravitational Biology scientific community; and the National space agencies, for guidance concerning future space centrifuge facilities for animals and humans.

Support Needed: Space on program at IAA-sponsored scientific conferences; meeting room at such IAA conferences; travel funds to meetings and conferences are the responsibility of the individual travelers; optional final presentation of position paper issues and recommendations at special meeting, if the support of space agencies for the meeting can be obtained.

Potential Sponsors: IAA; space agencies, particularly NASA, ESA, CSA, RSA, and NASDA.

To be returned to IAA Secretariat Paris fax: 33 1 47 23 82 16 email: sgeneral@iaa.net.org

Date: 8/25/03

Signature: Laurence R. Young, Sc.D.

For IAA Use Only:

Annex V

Proposal for Forming an IAA Study Group

Title of Study:

Mathematical Modeling & Physiological Simulation: The Digital Astronaut/Cosmonaut

Proposer:

Ronald J. White, Ph.D.

Primary IAA Commission Preference: Commission II: Life Sciences

(From Commission 1 to Commission 6)

Secondary IAA Commission Interests:

(From Commission 1 to Commission 6)

Members of Study Team

Chair: Ronald J. White, Ph.D.

Co-Chair: Rupert Gerzer, Prof. Dr. med.

Secretary: Jancy McPhee, Ph.D.

Other Members:

Brian Athey, Ph.D.

James Coolahan, Ph.D.

Jiri Kofranek

Martin Kushmerick, M.D., Ph.D.

Andrew McCulloch, Ph.D.

James B. Bassingthwaight, M.D., Ph.D.

Guy Fogleman, Ph.D.

Inessa Kozlovskaya, M.D., D.Sci.

Friedrich C. Luft, M.D.

Denis Noble, CBE, FRS, Hon FRCP

Short Description of Scope of Study

Overall Goal: To develop a report outlining a community-based research and technology plan for an international research program aimed at the physiological basis of a digital human/astronaut (cosmonaut). This report should be written within two years (October 2005).

Intermediate Goals: Hold two major workshops (already funded), one in Europe and one in the U.S. over the next nine months. Develop an interim report within one year (October 2004).

Methodology: Major workshop in Berlin in Winter 2004 and in Washington in Spring 2004. Discussions by telecom. Communication and report writing via e-mail links.

Time Line: Two years to final report: 2003-2005

Final Product (Report, Publication, etc.): A publishable report on the steps necessary to develop an international program in the mathematical modeling and simulation of the human body, with particular emphasis in applications to astronaut/cosmonaut health.

Target Community: Governmental bodies funding space and health research around the globe, space life sciences community, biomedical research community in general.

Support Needed: IAA co-sponsorship of workshops (no funding), IAA endorsement of final report and circulation of report to appropriate agencies.

Potential Sponsors: IAA, NASA, DLR, ESA, ... NSF, NIH, ...

To be returned to IAA Secretariat Paris fax: 33 1 47 23 82 16 email: sgeneral@iaanet.org

Date: 29 September 2003

Signature: _____

Ronald J. White

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Annex VI

Proposal for Forming an IAA Study Group

Title of Study:

Biosystems for future extraterrestrial habitats and in terrestrial applications

Proposer(s):

Rupert Gerzer

Primary IAA Commission Preference: Commission II: Life Sciences

(From Commission 1 to Commission 6)

Secondary IAA Commission Interests:

(From Commission 1 to Commission 6)

Members of Study Team

Chairs: Gerda Horneck

Co-Chair: Josef I. Gitelson

Secretary: Petra Rettberg

Other Members: ..to be confirmed:

Blüm, V. (Germany)	Nelson, M. (USA)
Degermendj (Russia)	Nitta (Japan)
Franck, S. (Germany)	Noga, G. (Germany)
Gerzer, R. (Germany)	Poughon, G. (France)
Henninger, D. (USA)	Rabbow, E. (Germany)
Jverson, T.H. (Norway)	Schurr, U. (Germany)
Kliss, M. (USA)	Sichev (Russia)
Knott, B. (USA)	Tichomirow (Russia)
Lasseur, C. (ESA)	

Short Description of Scope of Study

Overall Goal:

To develop a publishable position paper addressing the key issues related to biosystems for future extraterrestrial habitats and in terrestrial applications

Intermediate Goals:

Two major workshops, one at the beginning of the study in 2004, the other approximately 6 months before the end of the study, in the middle of the year 2006.

A draft structure will be prepared after the first workshop. Funding of workshops tbd.

Methodology:

Two major workshops, communication and report writing via e-mail and ftp-server.

Time Line:

Three years to final position paper: 2004-2006

Final Product (Report, Publication, etc.):

A publishable position paper on biosystems for future extraterrestrial habitats and in terrestrial applications with special emphasis on terrestrial application and international collaboration.

Target Community:

Governmental bodies funding space and health research around the globe, space life sciences community, biomedical research community in general and ecological research community.

Support Needed:

IAA co-sponsorship of workshops (no funding), IAA endorsement of final report and circulation of report to appropriate agencies.

Potential Sponsors:

NASA, DLR, ESA,NSF, NIH,....

To be returned to IAA Secretariat Paris fax: 33 1 47 23 82 16 email: sgeneral@iaanet.org

Date: 29 September 2003

Signature:

Rupert Gerzer

For IAA Use Only:

Annex VII

Proposal for Forming an IAA Study Group

Title of Study:
Astrobiological Studies of Solar Systems

Proposer:
John D. Rummel, Ph.D.

Primary IAA Commission Preference: Commission 2: Life Sciences
(From Commission 1 to Commission 6)
Secondary IAA Commission Interests: Commission 1: Space Physical Sciences
(From Commission 1 to Commission 6)

Members of Study Team

Chair: John D. Rummel, Ph.D.
Co-Chair: Gerda Horneck, Ph.D.
Secretary: Gerhard Kminek, Ph.D.

Other Members: (Tentative)

Pascale Ehrenfreund, Ph.D.
Christopher McKay, Ph.D.
Michael A. Meyer, Ph.D.

Wesley T. Huntress, Ph.D.
Victoria Meadows, Ph.D.
Jill Tarter, Ph.D.

Others TBD

Short Description of Scope of Study

Overall Goal: To write a position paper addressing the key issues related to an exobiology/astrobiology strategy for the exploration of this solar system and extra-solar planetary systems. Embodied will be new concepts developed by the Study Team based on existing roadmaps for astrobiological study, explicit reference to international capabilities and interests, and a timeline for accomplishment of astrobiology objectives implicit in the strategy.

In addition, the question of an application of human capabilities to this strategy will be included by reference to the IAA cosmic study undertaken by Commission 1, " Next Steps in Exploring Deep Space."

Intermediate Goals: Identify the issues; review the literature; provide presentations at scientific meetings (e.g., Vancouver, Fukuoka); hold study group meetings electronically and at these conferences; draft the position paper and publish it.

Methodology: Review and coalescence of existing strategies; presentations at IAA and other scientific meetings; study group meetings at scientific conferences; e-mail communications.

Time Line: Two years.

Final Product (Report, Publication, etc.): A publishable quality position paper summarizing the area, reviewing existing strategic resources, and making recommendations for future missions and ground-based research.

Target Community: IAA, space agencies, aerospace industry, space life scientists, planetary scientists; astronomical scientists, other managers, scientists, and engineers planning space missions.

Support Needed: Space on program at IAA-sponsored scientific conferences; meeting room at such IAA conferences; publication costs (website and paper versions).

Potential Sponsors: IAA; space agencies (e.g., NASA, ESA, CSA, CNES, DLR, Russian Space Agency, Japanese Space Agency[Jaxa]).

To be returned to IAA Secretariat Paris fax: 33 1 47 23 82 16 email: sgeneral@iaanet.org

Date: 9/29/03

Signature: John D. Rummel, Ph.D.

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