

IAA Commission 1 'Space Physical Sciences' Meeting
17 March 2009 (Tuesday) 09h00-11h00, 6 rue Galilee (Metro Boissière)
Mezzanine Room, Paris, France

Minutes of the meeting

Meeting Attendance:

Gerhard Haerendel (Chairman), Nickolay Smirnov (secretary), Stamatios Krimigis, Bernard Foing, Susan McKenna-Lawlor, Claudio Maccone, Antonio Viviani, Greg Vane, Michel Combes, Stephan Ulamec, Ji Wu, Christos Zerefos.

Agenda:

- (1) Welcome and adoption of agenda
- (2) Report on and Minutes of the meeting in Montréal on 17 July 2008
- (3) Report on Academy Day in Glasgow
- (4) Report on ongoing studies
- (5) Preview of Commission 1 items at 60th IAC at Daejeon/Korea
- (6) New Vice-Chair
- (7) Next Meeting

1. Welcome and adoption of agenda

List of Attendees was signed. Commission papers were delivered to participants. Gerhard Haerendel remarked on IAA having prepared the meeting on a very high level: all papers were ready and printed in sufficient amount.

The agenda was adopted.

Stamatios Krimigis suggested additional item to be included: "Geographical distribution of IAA Members", which was approved.

2. Report on and Minutes of the meeting in Montréal on 17 July 2008

Gerhard Haerendel reported on meeting in Montreal. The attendance was rather low due to poor information on Commissions meetings.

Academy Day was very well organized. On-going studies were discussed.

Question: What about changes in the position paper on SETI? – That still remains an open question. The changes suggested during the Commission 1 meeting in Hyderabad have not been approved yet.

3. Minutes from the meeting on September 28, 2008, Glasgow, UK.

Greg Vane was present at the meeting and made notes, which he kindly presented to the audience.

Notes by Greg Vane:

Attendees: Susan McKenna-Lawlor, Claudio Maccone, Antonio Viviani, Marlan Othman, Seth Shostak, Stephan Ulamec, Robert Farquhar, Bernard Foing, Tom Krimigis, David Kendall, Gregg Vane, acting chair and secretary

Study Group 1.4: The Next Steps for Human Exporation.... Bob Farquhar reporting

- Team Roster was sent to IAA this summer
- Team meeting Tuesday, September 30 here at IAC
- Will try to identify a new leader for the study on Tuesday
- Session at Conference this week Thursday afternoon, 3-6 PM, 8 papers
- Publication of Final Report, Fall 2010
 - o Preliminary draft, Fall 2009

- *Planetary Report* March/April 2008 published some early concepts and options
- Team roster to be updated by the end of this week after the team meeting and session on Thursday.

Study Group 1.5: Particle Radiation Hazards en route to and at Mars. Susan McKenna-Lawlor reporting.

- Big progress has been made since the Paris meeting in March 2008
- Key questions to be addressed have been identified and eight study groups have been formed to address them
- End of calendar year 2008 is the deadline for input from each study group in the form of a book chapter
- In addition to the team-generated chapters, Susan has identified a few additional topics for chapters by colleagues external to the team
- At least one chapter will be ready for submission to Academy for review within the next week or two.
- Overall, Susan presented a very detailed status report, chapter by chapter.
- Publication goal: no later than end of CY09.
- Tom Krimigis suggests external publication in addition to Academy publication of this, "the Bible," of the radiation environment between earth and Mars orbit.

Study Group 1.6: Protected Antipode Circle on Lunar Farside. Claudio Maccone reporting.

- The chief concern of this study is with the legal situation, not the scientific one. The case is clear, scientifically, but there is a US company "selling" land on the Moon that could cause problems in the future.
- The goal is to have IAA study ready in advance of negotiations for an international treaty banning human activity in the protected region. The UN is likely to lead the creation of such a treaty.
 - o **The UN representative at this Commission 1 meeting suggests that IAA makes a presentation to the UN in Vienna at the February (scientific) and April (legal) meetings.**
- Some small progress has begun on this study but other events have distracted the study group from making significant progress to date.
- Goal: Report at next IAC, 2009, with major progress to be reported there, and a progress report at the Paris meeting in March 2009.

Potential new study: Suggested by Seth Shostak.

- Pull together past SETI-related research papers and presentations into an IAA book
- Re-work the SETI protocols and instruments used for detection
- There will be proposals for these new studies at the March 2009 Paris meeting

The committee unanimously recommends a later start, 10 AM, for future Commission 1 meetings as they rarely require four hours.

The minutes of Glasgow meeting were adopted. Commission highly appreciated the efforts by Gregg Vane.

4. Reports on ongoing studies

1. SG 1.3. "SETI" *Claudio Maccone* reported that SETI conference took place in the period of 22-26 September 2008 in Paris in UNESCO. The conference was very successful due to the efforts of J.M. Contant. A Special Issue of *Acta Astronautica* is being prepared by the guest editor John Elliot.
2. SG 1.4: "The Next Steps for Human Space Exploration: What are the Alternatives?" *Gerhard Haerendel* informed: "The new head of the group Ernst Messerschmidt is

pessimistic on continuation of the study” Human exploration is not timely due to very small funding. Proposal to put the study on hold.

Bernard Foing was still enthusiastic, and suggested to write a position paper based on the session to be held in Daejeon.

The commission’s decision: Put on hold now, and come to a final decision in Daejeon, because now priorities changed: most of activities are concentrated on Earth observation, communication and navigation.

3. SG-1.5. “Particle Radiation Hazards en route to and in orbit about Mars”. *Susan McKenna-Lawlor* presented an interim report to the Commission 1. Based on study group activities a book will be published incorporating 1 introductory paper and 12 chapters. During Glasgow meeting it was reported that the text was in the stage of preparation and reviewing. There are 8 chapters ready, 3 chapters have outlines, and 2 chapters are not ready. Susan was about to finalize the book, but received suggestion from the IAA to include new academy members into the group activities.

Gerhard Haerendel: The head of group should have final decision, guide the studies and include necessary chapters.

Ji Wu: Chapter from China should be expected contributing to flight radiation hazard to Mars. The instrument to provide data will be small satellite sent to Fobos (150 kg). The satellite has particle detectors: electrons, protons, ions, magnetic field measurements. The satellite had already been sent to Lavochkin. The launch date – October 2009. One year mission is foreseen. The goal is to check the theoretical forecasts for solar wind near Mars.

Stamatios Krimigis : May be that should be the follow on studies. Future missions. The handbook on radiation hazard on route to Mars should be a reference book for all mission designers.

Gerhard Haerendel: It is very essential for the study to be completed based on a scientific knowledge. To answer question if the human mission is possible. To give recommendations for future mission designers.

Plan of the book was distributed

Nickolay Smirnov: To make the book useful it is necessary to provide reference data on normal and critical dosage for humans.

Gerhard Haerendel: Hazard aspect is the key in the study, two items should be emphasized: 1) penetration, 2) human hazardous dosage.

Christos Zerefos: Is solar activity taken into account?

Summarizing the discussion it was decided to perform refereeing of the book in the Academy.

Action item 1: Authors should name reviewers for their chapters themselves. Responsible - *Susan McKenna-Lawlor*. Deadline: June 2009.

4. SG 1.6. Protected Antipode Circle Farside Protection

Claudio Maccone reported. He emphasized, that the point was the law issue: which body should adopt the decision for protecting the far side. Because now some companies are selling land on the Moon and give even some certificates.

Gerhard Haerendel pointed out, that it was necessary to begin scientific study, to appoint the group members, not worrying about other things, which were either illegal, or irrelevant.

5. There was a suggestion for SG 1.7. “Lunar laser reflectors for First Moon light timing...” The goal to deploy laser reflectors on the Moon to detect the first sun light (terminator) and to emit timing signals back to Earth thus providing regulations for new Moon calendar. It was emphasized, that people belonging to three religions rely on first Moon light.

Gerhard Haerendel: This is some theological problem, more close to Space and Society Commission. The proposal is not clear.

Commission 1 could not adopt the proposal.

5. Preview of Commission 1 items at 60th IAC at Daejeon/Korea

The following Symposia are relevant: A1 Space life Science. A.2 – Microgravity Science and processes. A.3 – Space exploration. A.5 – Human exploration of the Moon and Mars.

6. New Vice Chair

Gerhard Haerendel suggested to send him ideas on new Vice-Chair, who could attend the IAC and replace the Chair in case of emergency.

7. Geographical distribution of IAA members.

Stamatios Krimigis: Basic Science 1 Academy member in Ireland. Susan McKenna-Lawlor should think of nominating Corresponding members from Ireland. 1 Academy member in Armenia, Bahrain, Belarus, Burkina Faso, Denmark, Singapore, etc.

8. Next Meeting.

Next Commission 1 meeting is previewed in Daejeon. October 2009.