

IAA S.G. 3.19 Study Group Status Report Commission 3 Meeting, Jerusalem, 10 October 2015

Responsible Commission: 3

Study Number and Title: 3.19

Feasibility study of astronaut standardized career dose limits in LEO and the outlook for BLEO; biological response of humans to the impingement of high energy particle radiation.

Short Study Description (Phase 1)

Differences between the values of career dose limits adopted for their astronauts by individual space agencies were investigated. Also, the biological response of humans to the impingement of high energy particle radiation under microgravity conditions were studied.

Publication 2014

S.McKenna-Lawlor and the SG 3.19 Team “Feasibility study of astronaut standardized career dose limits in LEO and the outlook for BLEO, *Acta Astronautica*, **104**, 565- 573, 2014.

Factors affecting the Second Phase of the study

On the occasion of the 2nd Space Exploration Conference, held in Strasbourg 29-31 October 2014, a way forward for ongoing cosmic studies within the Academy was formulated. In this plan the following activities were foreseen:

- Delivery of the Final Study Group Draft, for most of the Human Space Flight activities, by Mid-May 2015 to the ***Human Space Flight Co-ordinating Group*** (HSFCG) Co-Chairs. These reports should then be sent, (following a short review for completeness) by the HSFCG to the ***International Space Exploration Coordination Group*** (ISECG) chair by the end of May with the understanding that they could be distributed to ISECG Space Agency participants.
- On the occasion of the IAA Turin Conference, 7-9 July 2015, the IAA planned to organize mini-workshop sessions for selected Study Groups to offer the possibility for members of the SG teams to interact with other technical experts, including space agencies, and collect feedback on the draft reports.
- Initiation of an IAA Peer Review Process would take place by the end of 2015, with the goal of publication by early 2016

The leader of Study Group 3.19 was personally informed by the HSFCG that, since a human presence on Mars would not be technically possible for some decades, the SG 3.19 report should provide in Phase 2 an emphasis on the radiation hazard on the Moon, which is presently an eminent exploration target. This topic had not hitherto been addressed by the group.

Progress in the last six months

The study group leader (SMcKL) did not attend the meeting at Turin due to professional commitments associated with the Philae Lander (now on comet 67P/Churyumov-Gerasimenko) but she did present a report for the group entitled “Methodologies to derive radiation levels for Human Moon Missions” at the IAA Symposium “Humans in Space” at Prague, Czech Republic (28 June-3 July, 2015).

Publication 2015

S McKenna-Lawlor and the SG 3.19 team “Recommendations to mitigate against human health risks incurred due to energetic particle irradiation beyond low earth orbit/BLEO” *Acta Astronautica* **109**, 182-193, 2015.

Present Status of the Study

At the present time an existing 30 page report on the outcome of the first year of the study is being merged with new results relevant to Human Moon Missions obtained during year 2. This version will be submitted to the HSFCG for consideration in the IAA Peer Review activity planned to be mounted before the end of the year, Publication of the integrated study is foreseen in early 2016.

Signed:



Susan McKenna-Lawlor
Leader of S.G. 3.19.