

# ***Topical Group Report on Spacecraft, Aircraft and Launcher Environments (June, 2012)***

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# ***Members***



## **Topical Group Chair/spokesperson**

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## **Topical Group Co-Chairs**

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**Guenther Reitz (DLR)**

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**There are ~30 general members in the group**

# ***Mission Statement***



**The Group was formed to act as a conduit between the space weather community and ESA, providing in particular inputs on matters relevant to Space Situational Awareness (SSA).**

**The Chairperson (SMcKL) as a member of ESA's Space Weather Working Team can potentially raise SAA related issues with the Agency on behalf of Topical Group members.**

# Activities



- ☐ An annual meeting of the Topical Group takes place during Space Weather Week. These occasions provide an opportunity for all our Members to meet and for new members to join the Group
- ☐ Bi-annual reports are provided to the SSWT by the Chairperson
- ☐ The Executive Members communicate via telecon and e-mail.
- ☐ Members communicate with the Chair by email and have access to the Topical Group website (S.W. Portal)

# ***Reports 2011-2012***



**Report to the SWWT on 29 June, 2011 on behalf of the Topical Group Spacecraft, Aircraft and Launcher Environments (SMcKenna-Lawlor).**

**Report to the SWWT on 25 November, 2011 on behalf of the Topical Group Spacecraft, Aircraft and Launcher Environments (SMcKenna-Lawlor).**

**Report as TGG Spokesperson on the *Effects of Space Weather on Space Systems* provided during SWW (28 November, 2011).**

**Report to the SWWT on 13 June, 2012.**

# ***Topical Group Meeting in Namur, 1 December, 2011***



## **Agenda:**

- ☐ **Overview of Group activities (SMcKL)**
- ☐ **Progress with regard to Spacecraft and Launchers (FdiM)**
- ☐ **Status of Radiation Dosimetry on the ISS (G. Reitz)**
- ☐ **Overview of ESA activities in the area of SSA (A. Hilgers)**
- ☐ **ESA News (Hugh Evans)**
- ☐ **General invitation to Members to provide inputs (SMcKL)**
- ☐ **AOB**

**An account of this program is mounted on the TG website.**

# ***TG-SALE Website***



**This contains updating sections that include:**

- ☐ **Relevant ESA News**
- ☐ **Relevant EU News**

**Also, the website invites applications for membership as well as inputs from existing members. Unfortunately we receive bogus applications for membership on a fairly regular basis. S. Calders and the Chairperson together check out all applications and reject those that are bogus.**

# ***Paper for ESA Bulletin***



**A technical paper is being prepared by the Executive members (S. McKLawlor, G.Reitz. and FDi Marco) for the ESA Bulletin which will provide a state of the art overview of:**

***Space Weather user requirements for Launch Service, Trans-Polar Flight and Human Space Flight Providers and for Spacecraft Operators***

**Members were invited during the Namur meeting to suggest topics they would especially like to see covered by this paper and/or to contribute to the paper itself.**



# ***Input from Aerospace Division of QiantiQ***



**An input to the paper was offered by Hands Alexander, Clive Dyer and Keith Ryden of QinetiQ under the following headings**

- ❑ Threat to avionics from the enhanced atmospheric radiation environment during major solar particle events.**
- ❑ Use of in-flight monitors to characterise the radiation environment during SPEs and follow their development**
- ❑ Impact of solar particle events on dose levels to passengers and crew on trans-polar (and other high-latitude) flights.**
- ❑ Enablement of the development of informed mitigation protocols.**

## ***Input from QientiQ contd.***



**The aim of their text is to stress the value of mitigation relative to forecasting through the use of in-flight monitoring.**

**Also, to highlight the inadequate nature of some existing mitigation procedures, such as the practice of some airlines to use GOES satellite proton alerts to guide their response.**

# ***Specifications of an SSA precursor service (SEISOP)***

**In anticipation of his input to the ESA Bull, paper, F. di Marco provided a text extracted from the Software Requirement Specifications of an SSA precursor service (SEISOP) defined by ESA in 2010.**

**This constitutes a space weather services survey for spacecraft operations performed across the ESA in response to which users (flight operations teams and science operations teams) identified additional needs/functions to be implemented by the service (see the TG SALE website).**

# ***Request for Tutorial Time at SWW***



**The Chairperson requested the organizers of SWW to consider allocating to our Topical Group a special session during which tutorials would be provided by experts on topics of interest to our members (e.g.: Space Situational Awareness; Radiation Hazards aboard Aircraft and in Space; Acceptable Launch Conditions; Planetary Protection etc. etc.). These tutorials would be aimed at providing state of the art information to scientists/engineers/space program managers etc. at a professional level. The SWW organizers will now be requested to provide to our TG during SWW-2013 an extra two hour session to accommodate this activity.**

# ***TG Splinter***



**Our splinter session this year will feature several invited speakers who will individually address the topic of the radiation hazards experienced aboard aircraft.**

# ***Human Space Flight***



**The TG spokesperson (SMcKL) has recently been appointed by the International Academy of Astronautics/IAA to be part of a Group that will provide a focal point in coordinating topics relevant to Human Spaceflight activities that will be presented at the next Heads of Space Agencies Summit in November 2013.**

**The starting point will be topics already selected by the IAA, as priorities for the Summit.**

# ***Priorities for the Summit***



- ☐ **Support Human Space Exploration in Low Earth orbit and consider how to extend it in a stepwise approach to those destinations where humans may one day live and work.**
- ☐ **Develop Enabling Technologies to support space exploration challenges.**
- ☐ **Strengthen Cooperation between New and Emerging Space Faring Nations.**

# ***Future activities within TG-SALE***



**In view of the benefits involved in the Human Space Flight program for industry/science and in order to promote what Europe can offer to support this endeavor, an effort will be made within TG SALE during SWW to:**

**□ Seek to find means to engage agency, industry and academic SALE members in cooperatively building structures that will support international robotic and, ultimately, human exploration, of outer space.**



# *Go raibh maith agaibh go léir*