

Measurements and Modeling of Radiation Exposure Due to Solar Particle Events

P. Beck (1), D.T. Bartlett (2), P. Bilski (3), C. Dyer (4), E. Flückinger (5), N. Fuller (6), P. Lantos (6), G. Reitz (7), S. Rollet (1), W. Rühm (8), F. Spurny (9), G. Taylor (10), F. Trompier (11), F. Wissmann (12)

(1) ARC Seibersdorf research, Austria (peter.beck@arcs.ac.at / Fax: +43 50550 2480 / Phone: +43 50550 2502), (2) Health Protection Agency, United Kingdom (david.bartlett@hpa-rp.org.uk / Fax: +44 1235 82 2656 / Phone: +44 1235 82 2728), (3) Institute of Nuclear Physics, Poland, (4) QinetiQ, United Kingdom (csdyer@space.qinetiq.com / Fax: +44 1252 396330 / Phone: +44 1252 393774), (5) University of Berne, Switzerland (erwin.flueckiger@phim.unibe.ch / Phone: +41 31 6314056), (6) Paris-Meudon Observatoire, France, (7) Radiation Biology Dept., German Aerospace Centre, Germany (guenther.reitz@dlr.de / Fax: +49 2203 61970 / Phone: +49 2203 601 3137), (8) GSF, Munich, Germany (werner.ruehm@gsf.de / Fax: +49 89 3187 3323 / Phone: +49 89 3187 3359), (9) Academy of Sciences of the Czech Republic, Czech Republic (spurny@ujf.cas.cz / Fax: +420 2 83842788 / Phone: +420 2 83841772), (10) National Physical Laboratory, United Kingdom (graeme.taylor@npl.co.uk / Fax: +44 208 943 7037 / Phone: +44 208 943 7087), (11) Institut de Radioprotection et de Sureté Nucléaire, France (francois.trompier@irsn.fr / Fax: +33 1.47.46.97.77 / Phone: +33 (0)1.58.35.72.41), (12) Physikalisch-Technische Bundesanstalt, Germany (Frank.Wissmann@ptb.de / Fax: +49 531 592 6015 / Phone: +49 531 592 6330)

Dose assessment procedures of cosmic radiation to aircraft crew are introduced in most of the European countries according the corresponding European directive and national regulations (96/29/Euratom). However the radiation exposure due to solar particle events is still a matter of scientific research. Several in-flight measurements were performed during solar storm conditions. First models to estimate the exposure due to solar particle events were discussed previously. Recently EURADOS (European Radiation Dosimetry Group, <http://www.eurados.org/>) started to coordinate research activities in model improvements for dose assessment of solar particle events. The coordinated research is a work package of the European research project CONRAD (Coordinated Network for Radiation Dosimetry) on complex mixed radiation fields at workplaces. Major aim of sub group B of that work package is the validation of models for dose assessment of solar particle events, using data from neutron ground level monitors, in-flight measurement results obtained during a solar particle event and proton satellite data. The paper describes the current status of obtainable solar storm measurements and gives an overview of the existing models for dose assessment of solar particle events in flight altitudes.