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**Committee on the Peaceful  
Uses of Outer Space**  
**Scientific and Technical Subcommittee**  
**Fiftieth session**  
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## **Draft report of the Working Group on the Use of Nuclear Power Sources in Outer Space**

1. At its 777th meeting, on 11 February 2013, the Scientific and Technical Subcommittee reconvened its Working Group on the Use of Nuclear Power Sources in Outer Space, under the chairmanship of Sam A. Harbison (United Kingdom of Great Britain and Northern Ireland).

2. The Working Group recalled the objectives of its multi-year workplan for the period 2010-2015, adopted by the Subcommittee at its forty-seventh session, in 2010 (A/AC.105/958, annex II, para. 7):

(a) To promote and facilitate the implementation of the Safety Framework for Nuclear Power Source Applications in Outer Space by providing information pertinent to challenges faced by member States and international intergovernmental organizations, in particular those considering or initiating involvement in applications of nuclear power sources (NPS) in outer space;

(b) To identify any technical topics for, and establish the objectives, scope and attributes of, any potential additional work by the Working Group to further enhance safety in the development and use of space NPS applications. Any such additional work would require the approval of the Subcommittee and would be developed with due consideration for relevant principles and treaties.

3. The Working Group had before it a conference room paper on the exploration of certain safety issues during the terrestrial trials of the power sources of space nuclear reactors (A/AC.105/C.1/2013/CRP.20), presented by the delegation of China, and a non-paper by the delegation of France on the proposal to initiate a discussion on updating the Principles Relevant to the Use of Nuclear Power Sources in Outer Space.

4. The Working Group reviewed its workplan, noting that no workshop was held during the current session, since no member State or international intergovernmental



organization had confirmed its participation in response to the note verbale from the Secretariat. However, the Working Group noted that several member States had indicated their plans to make a presentation in 2014 on their progress in implementing the Safety Framework. The Working Group agreed that the current workplan did not need to be changed and, as a result, decided to proceed as originally agreed by the Subcommittee.

5. The view was expressed that the Working Group was now at a crossroads, having not yet produced any work related to objective (b) of its workplan. In that respect, recalling that safety should be a prime goal for designers and operators of space NPS missions and that such a goal needed guidance in terms of standards and criteria, which did not sufficiently exist in section 5 of the Safety Framework, it was proposed, in that spirit, that a guide should be drafted by the Working Group.

6. Some delegations expressed the view that the technical guidance in the Safety Framework, as stated in its introduction, "...provides an international consensus on measures needed to achieve safety and applies to all space NPS applications without prejudice". Moreover, sections 5.1 and 5.2 of the Safety Framework provided technical guidance and criteria for satisfying the fundamental safety objective to "protect people and the environment in Earth's biosphere from potential hazards associated with relevant launch, operation, and end-of-service phases of space nuclear power source applications".

7. The Working Group noted that two years remained in the workplan to identify technical topics for potential additional work of the Working Group to further enhance safety in the development and use of space NPS applications.

8. The Working Group noted the interest of some member States and international intergovernmental organizations in making further presentations relevant to the implementation of the Safety Framework. In that connection, the Working Group requested the Secretariat to invite, in March 2013, member States and international intergovernmental organizations with experience in space NPS applications, as well as those considering or initiating involvement in space NPS applications, to provide technical presentations on those issues to the Subcommittee at its fifty-first session, in 2014.

9. The Working Group also requested the Secretariat to schedule all presentations to be given under the invitation referred to above during one or, if necessary, two meetings held on the same day during the first week of the fifty-first session of the Subcommittee, in 2014.

10. The Working Group agreed to hold a teleconference during the summer of 2013 in order to review the replies received to the invitation referred to in paragraph 8 above and to plan its activities for the rest of 2013.

11. At its [...] meeting, on [...] February 2013, the Working Group adopted the present report.

## Appendix

### **Summary of information from the workshops organized by the Working Group during the forty-eighth and forty-ninth sessions of the Subcommittee, in 2011 and 2012**

1. At its forty-eighth session, in 2010, the Subcommittee endorsed the Working Group's workplan for the period 2010-2015 (see A/AC.105/958, para. 134). The workplan had the following elements:

(a) To promote and facilitate the implementation of the Safety Framework for Nuclear Power Source Applications in Outer Space (made available by the Secretariat in document A/AC.105/934 and by the secretariat of the International Atomic Energy Agency (IAEA) as a joint publication of the Subcommittee and IAEA) by providing information pertinent to challenges faced by member States and international intergovernmental organizations, in particular those considering or initiating involvement in applications of nuclear power sources (NPS) in outer space;

(b) To identify any technical topics for, and establish the objectives, scope and attributes of, any potential additional work by the Working Group to further enhance safety in the development and use of space NPS applications. Any such additional work would require the approval of the Subcommittee and would be developed with due consideration for relevant principles and treaties (see A/AC.105/958, annex II, para. 7).

2. The Working Group agreed that it would advance these objectives by conducting workshops during the period 2011-2013. The workshops would consist of two types of presentations: (a) presentations by member States and international intergovernmental organizations considering or initiating involvement in applications of NPS in outer space, summarizing their plans, progress to date and any challenges faced or foreseen in implementing the Safety Framework or specific elements thereof; and (b) presentations by member States with experience in space NPS applications, providing information pertinent to addressing the challenges in implementing the Safety Framework.

3. A total of nine workshop presentations were made by Argentina, China, the Russian Federation and the United States of America, as well as by the European Space Agency.

4. Four of those workshop presentations were made in response to the Subcommittee's invitation to member States and international intergovernmental organizations with experience in space NPS applications to provide information on their implementation of the Safety Framework (see A/AC.105/958, annex II, para. 8). The presentations addressed four specific aspects of the Safety Framework: (a) safety in design and development; (b) risk assessments; (c) emergency preparedness and response; and (d) accident consequence mitigation.

5. The other five workshop presentations were made by member States and international intergovernmental organizations, summarizing their plans, progress to date and any challenges faced or foreseen in implementing the Safety Framework or specific elements thereof. Those specific challenges were as follows:

(a) The mission launch authorization process for countries with NPS applications but without the capacity to launch the applications;

(b) The coordination of emergency preparedness and response with other countries over which the space mission would fly;

(c) The implementation of the prime responsibility of the organization conducting the space NPS mission and establishment of formal arrangements between it and all other relevant participants in the space mission;

(d) The allocation of responsibilities between any international intergovernmental organization and its member States in implementing the "Guidance for Governments" section of the Safety Framework;

(e) The organization of launch safety and emergency preparedness and response for different launch phases and accident scenarios.

6. The Working Group concluded that the workshops had fulfilled the objective of promoting and facilitating the implementation of the Safety Framework by providing information pertinent to challenges faced by member States and international intergovernmental organizations. Those member States and international intergovernmental organizations which made presentations at the workshops emphasized that the Safety Framework had provided a valuable foundation for the development of national and international intergovernmental safety frameworks for space NPS applications.

7. The Working Group also concluded that the five challenges referred to in paragraph 5 above were essentially related to policy, management and coordination of space NPS activities (as contained in sections 3 and 4 of the Safety Framework). Such activities were highly specific to the Government or Governments involved in authorizing and/or approving space NPS missions, and the Working Group was of the view that it would be difficult to develop generic guidance for any of those five areas at this time.

8. The Working Group noted that more challenges might be identified in the future, as member States and international intergovernmental organizations continued to implement the Safety Framework.