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English only

**Committee on the Peaceful Uses
of Outer Space**
Scientific and Technical Subcommittee
Sixty-first session
Vienna, 29 January–9 February 2024
Item 14 of the provisional agenda¹

**Draft Questionnaire containing a preliminary set of
questions to collect information under the objectives of the
workplan of the Working Group on the Use of Nuclear
Power Sources in Outer Space**

**Working paper, prepared by the Chair of the Working Group on
the Use of Nuclear Power Sources in Outer Space**

1. In accordance with its five-year work plan 2024-2028,² the Working Group on the use of Nuclear Power Sources in Outer Space has been discussing the use of a questionnaire to achieve the objectives of its work plan. This document intends to facilitate the discussion.

I. Context

2. Space nuclear power source (NPS) applications have been used in the exploration of space since the dawn of the space age, enabling missions of scientific discovery to destinations across the solar system. NPS applications have opened the solar system to exploration, allowing the observation and understanding of dark, distant planetary bodies that would otherwise be unreachable. Nuclear reactor power sources, for habitation purposes and in-space propulsion and power supply of spacecraft, may enable faster and more robust crew and cargo missions to the Moon, Mars and beyond, and scientific missions to the outer solar system. The experience gained during many decades of NPS applications has led to a good understanding of the risks involved and the lessons learned, which provide context for evolving safety practices.

3. The Committee on the Peaceful Uses of Outer Space, at its sixty-sixth session, endorsed the recommendations of the Subcommittee and the Working Group for a new five-year workplan* for the Working Group (A/78/20, para. 150), with the following objectives:

¹ A/AC.105/C.1/L.412.

² A/AC.105/1279, Annex III, paras. 8 and 9 and A/78/20, para.150.



Objective 1. Promote and facilitate the implementation of the Safety Framework for Nuclear Power Source Applications in Outer Space by:

(a) Providing an opportunity for member States and international intergovernmental organizations considering or initiating involvement in space NPS applications to summarize and discuss their plans, progress to date and any challenges faced or foreseen in implementing the Safety Framework;

(b) Providing an opportunity for member States and international intergovernmental organizations with experience in space NPS applications to make presentations on challenges identified under subparagraph (a) above, and on their mission-specific experiences in implementing the guidance contained in the Safety Framework.

Objective 2. Collect and analyse relevant technical information about potential future uses of NPS in outer space, particularly those involving nuclear reactors, by:

(a) Inviting more member States and international intergovernmental organizations, in particular IAEA, to join the Working Group and share their views, plans and experiences;

(b) Agreeing on appropriate activities to collect information about potential future uses of NPS in outer space;

(c) Producing a critical analysis of the safety implications of the information shared under subparagraphs (a) and (b) above and presenting this analysis to the Subcommittee.

Objective 3. Discuss within the Working Group the implications of the analysis described in objective 2 with respect to further work of the Working Group and recommend suitable actions to the Subcommittee.

4. Therefore, in order to achieve these objectives, member States and international intergovernmental organizations are kindly requested to consider answering a set of questions listed in the subsequent section.

5. For the purpose of this questionnaire, the definition of the terms space nuclear power source and space nuclear power source application are those as defined in the Safety Framework.³

6. Similarly, following section 3.1 of the Safety Framework, the questions are intended to include space missions involving NPS authorized or approved by governments and relevant international intergovernmental organizations, independently whether such missions are conducted by governmental agencies or by non-governmental entities.

II. Questionnaire

Would you consider your Country/International Intergovernmental Organization as:

(a) A Country/International Intergovernmental Organization with experience and expertise in the development and use of space NPS applications?

(b) A Country/International Intergovernmental Organization with plans to develop and/or use space NPS applications in the next 10 years?

(c) A Country/International Intergovernmental Organization with no current plans to develop and/or use space NPS applications in the next 10 years?

³ *Space nuclear power source*: a device that uses radioisotopes or a nuclear reactor for electrical power generation, heating or propulsion in a space application. *Space nuclear power source application*: the overall system (space nuclear power source, spacecraft, launch system, mission design, flight rules etc.) involved in conducting a space mission involving a space nuclear power source.

In case of (a):

1. Have you encountered any difficulties or challenges in implementing the guidance provided in the Safety Framework?
2. Could you please share information e.g. in form of presentations at meetings of the NPS Working Group, on your mission-specific experiences in implementing the guidance contained in the Safety Framework?
3. Could you please share information, e.g. in form of presentations at meetings of the NPS Working Group, on future uses of NPS in outer space, particularly those involving nuclear reactors, specifically addressing any challenges you might foresee in the application of the guidance of the Safety Framework?
4. Have you identified the need for further guidance?

In case of (b):

1. Are you aware that the Safety Framework provides high-level guidance in the form of a model safety framework to achieve 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?
2. Are you using or intending to use the guidance provided in the Safety Framework for your safety framework? In this case, are you encountering any difficulties or challenges in implementing the guidance provided in the Safety Framework? Could you please share such information e.g. in form of presentations at meetings of the NPS Working Group?
3. Could you please share information, e.g. in form of presentations at meetings of the NPS Working Group, on future uses of NPS in outer space, particularly those involving nuclear reactors, including any challenges you might foresee in the application of the guidance of the safety framework?
4. Have you identified the need for further guidance?

In case of (c):

1. Are you aware that the Safety Framework provides high-level guidance in the form of a model safety framework to achieve 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?
2. Are you aware that the Safety Framework provides a foundation for the development of national and international intergovernmental safety frameworks while allowing for flexibility in adapting such frameworks to specific space NPS applications and organizational structures?
3. Are you aware that the implementation of the guidance provided by the Safety Framework in national frameworks intends to provide assurance to the global public that space NPS applications would be launched and used in a safe manner and could also facilitate bilateral and multilateral cooperation on space missions using NPS?
4. Are you aware that the Safety Framework provides safety guidance for both the programmatic and technical aspects, including the design and application of space NPS, and the relevant launch, operation and end-of-service phases of space NPS applications?