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Scientific and Technical Subcommittee
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**Draft report of the Working Group on the Long-term
Sustainability of Outer Space Activities**

1. At its [...] meeting on [...] February 2011, the Scientific and Technical Subcommittee reconvened its Working Group on the Long-term Sustainability of Outer Space Activities, under the Chairmanship of Peter Martinez (South Africa). The Working Group held four meetings from [...] to [...] February 2011. The Working Group considered the draft terms of reference, scope and methods of work of the Working Group as contained in document A/AC.105/C.1/L.307.
2. The Working Group had before it the following documents:
 - (a) Working paper submitted by the Chair of the Working Group on the terms of reference and methods of work of the Working Group on the Long-term Sustainability of Outer Space Activities of the Scientific and Technical Subcommittee (A/AC.105/C.1/L.307);
 - (b) Conference room papers containing comments on the long-term sustainability of outer space activities received from member States and permanent observers of the Committee on the Peaceful Uses of Outer Space (A/AC.105/C.1/2011/CRP.9, A/AC.105/C.1/2011/CRP.17 and A/AC.105/C.1/2011/CRP.20);
 - (c) Conference room papers containing a list of points of contact communicated to the Secretariat pursuant to the note verbale dated 11 October 2010 (A/AC.105/C.1/2011/CRP.10 and Add.1).
3. At the first meeting of the Working Group, on 14 February 2011, the Chair of the Working Group recalled the following process in the development of document A/AC.105/L.307 since the fifty-third session of the Committee, in 2010:
 - (a) In accordance with the agreement of the Committee, the Secretariat had sent to all member States of the Committee, in a note verbale dated 11 October 2010,



a working paper submitted by the Chair of the Working Group containing proposed draft terms of reference and methods of work for the Working Group, intended to form the basis of A/AC.105/C.1/L.307. That working paper incorporated the comments received from member States at the fifty-third session of the Committee in response to the proposal for the terms of reference and methods of work of the Working Group contained in document A/AC.105/L.277 (see A/65/20, para. 155);

(b) Member States of the Committee were invited to submit their views and comments on the working paper submitted by the Chair, with specific emphasis on the terms of reference, thematic areas, methods of work and workplan (see A/65/20, para. 156);

(c) The Secretariat incorporated views received from member States as of 21 January 2011 to prepare document A/AC.105/C.1/L.307, for consideration by the Working Group at the forty-eighth session of the Subcommittee. All comments received as a result of that process are contained in A/AC.105/C.1/2011/CRP.9, A/AC.105/C.1/2011/CRP.17 and A/AC.105/C.1/2011/CRP.20.

4. The Chair of the Working Group conducted informal consultations on 9 and 11 February 2011, during which a number of additional comments were received.

5. At the first meeting of the Working Group, held on 14 February 2011, delegations were invited to provide further comments on the terms of reference and methods of work to be submitted in document A/AC.105/C.1/L.307.

6. At its second meeting, held on 15 February 2011, the Working Group considered a revised non-paper containing a draft version of document A/AC.105/C.1/L.307 that incorporated all comments that had been received as of 15 February 2011. Delegations were again invited to contribute additional comments to document A/AC.105/C.1/L.307. The Secretariat also informed the Working Group of the process to be followed in preparing that document, once all comments had been received.

7. At the third meeting of the Working Group, held on 16 February 2011, document A/AC.105/C.1/L.307 was again opened for comments. After taking account of comments received as of 15 February 2011, no additional comments were received, and the Working Group agreed that the revised non-paper incorporating all comments received as of 16 February could be transmitted to the Secretariat for translation into the official languages of the United Nations as an appendix to the report of the Working Group.

8. The Working Group considered a proposal contained in A/AC.105/C.1/2011/CRP.17 for the clustering of all the topics listed in section IV ("Scope") of the draft terms of reference and methods of work as contained in document A/AC.105/C.1/2011/L.307, in order to allow for a more efficient consideration of closely related items. The following clusters were proposed:

(a) Sustainable space utilization supporting sustainable development on Earth;

(b) Space debris; space operations and tools to support collaborative space situational awareness;

(c) Space weather;

(d) Regulatory regimes and guidance for actors in the space arena.

9. The Working Group agreed to the proposed clustering of topics as a basis for the establishment of expert groups, as envisaged in A/AC.105/C.1/2011/L.307, paragraph 23. The Working Group stressed that the work of the expert groups should be balanced to ensure that all topics set out in section IV (“Scope”) received due consideration, and that the expert groups should take advantage of work done by other entities, as envisaged in A/AC.105/C.1/2011/L.307.

10. The Working Group agreed that the expert groups should be established in the intersessional period. The Working Group therefore requested the Secretariat to invite member States of the Committee and intergovernmental organizations with permanent observer status with the Committee to identify the topics contained in section IV (“Scope”) (A/AC.105/C.1/L.307) of particular interest to them and to nominate suitable experts to participate in the expert groups, as envisaged in document A/AC.105/C.1/L.307.

11. The Working Group agreed that these expert groups should be established and their chairs or co-chairs identified by the end of April 2011, with a view to reporting on the progress made to the Committee at its fifty-fourth session, in June 2011.

12. At its [...] meeting, on [...] February 2011, the Working Group adopted the present report and the terms of reference contained in the appendix to this report.

Appendix

Terms of reference and methods of work of the Working Group on the Long-term Sustainability of Outer Space Activities of the Scientific and Technical Subcommittee

I. Introduction

1. In *The Space Millennium: Vienna Declaration on Space and Human Development*,¹ the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space recognized the importance of space science and space applications for improving our fundamental knowledge of the universe, and improving the daily lives of people worldwide through environmental monitoring, management of natural resources, early warning systems to help mitigate potential disasters and support disaster management, meteorological forecasting, climate modelling, satellite navigation and communications. Space science and technology make a major contribution to the well-being of humanity, and specifically to achieving the objectives of global conferences of the United Nations that address various aspects of economic, social and cultural development. Space activities therefore play a vital role in supporting sustainable development on Earth and the achievement of the Millennium Development Goals. Hence, the long-term sustainability of space activities is a matter of concern not only for current and aspiring space actors, but also for the international community as a whole.

2. The space environment is being used by more and more State and private sector entities. The proliferation of space debris and the increased possibilities of collisions and interference raise concerns about the long-term sustainability of space activities, particularly in the low-Earth orbit and geostationary orbit environments.

3. The Committee on the Peaceful Uses of Outer Space, through its work in the scientific, technical and legal fields, has a fundamental role to play in ensuring the sustainability of outer space activities. In 2009, at its fifty-second session, the Committee decided that the Scientific and Technical Subcommittee should include on its agenda, starting from its forty-seventh session, in 2010, an item entitled “Long-term sustainability of outer space activities”.²

4. At its forty-seventh session, the Subcommittee recalled the importance of ensuring the safe and sustainable future use of outer space and noted, in accordance with the workplan related to this item, that a working group should be established to support the preparation of a report on the long-term sustainability of outer space activities, the examination of measures that could enhance the long-term sustainability of such activities and the preparation of a set of voluntary guidelines focused on practical measures that could be implemented in a timely manner to enhance the long-term sustainability of space activities.

¹ *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

² *Official Records of the General Assembly, Sixty-fourth Session, Supplement No. 20 (A/64/20)*, para. 161.

5. At its 735th meeting, on 18 February 2010, the Subcommittee established the Working Group on the Long-term Sustainability of Outer Space Activities.
6. A meeting of the Working Group was held during the fifty-third session of the Committee on the Peaceful Uses of Outer Space with a view to further developing its terms of reference and a method of work.³
7. The working paper containing the proposal of the Chair for the terms of reference, method of work and workplan for the Working Group was before the Committee as document A/AC.105/L.277.

II. Terms of reference

8. The Working Group will examine the long-term sustainability of outer space activities in the wider context of sustainable development, including the contribution to the achievement of the Millennium Development Goals, taking into account the concerns and interests of all countries, in particular those of developing countries, and consistent with the peaceful uses of outer space.
9. The work will take into consideration current practices, operating procedures, technical standards and policies associated with the safe conduct of space activities throughout all the phases of the mission life cycle.
10. The Working Group will take as its legal framework the existing United Nations treaties and principles governing the activities of States in the exploration and use of outer space, in particular article VI of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty).⁴

III. Objective and outputs

11. The objective of the Working Group will be to examine and propose measures to ensure the safe and sustainable use of outer space for peaceful purposes, for the benefit of all countries.
12. The Working Group will prepare a report on the long-term sustainability of outer space activities containing a consolidated set of current practices and operating procedures, technical standards and policies associated with the safe conduct of space activities. On the basis of all the information collected, the Working Group will produce a set of guidelines that could be applied on a voluntary basis by international organizations, non-governmental entities, individual States and States acting jointly to reduce collectively the risk to space activities for all space actors and to ensure that all countries are able to have equitable access to the limited natural resources of outer space.

³ A/AC.105/958, paras. 181 and 183.

⁴ United Nations, *Treaty Series*, vol. 610, No. 8843.

13. Any guidelines for safe space activities should:

- (a) Maintain or improve the safety of spaceflight operations and protect the space environment without imposing unacceptable or unreasonable obligations and costs, and taking into account the needs and interests of developing countries;
- (b) Be consistent with existing international legal frameworks for outer space activities and should be voluntary and not be legally binding;
- (c) Be consistent with the relevant activities and recommendations of other working groups of the Committee and its Subcommittees, the Inter-Agency Space Debris Coordination Committee and other relevant international organizations.

IV. Scope

14. Topics for examination by the Working Group under this agenda item could include:

- (a) Sustainable space utilization supporting sustainable development on Earth:
 - (i) The contribution of space science and technology to sustainable development on Earth, early warning of potential disasters and support for management of disaster-related activities;
 - (ii) The concept of sustainable development extended to the domain of outer space, including the avoidance of harmful contamination of celestial bodies;
 - (iii) Equitable access to the limited resources of outer space and to the benefits of outer space activities for human development;
- (b) Space debris:
 - (i) Measures to reduce the creation and proliferation of space debris;
 - (ii) Collection, sharing and dissemination of data on functional and non-functional space objects;
 - (iii) Re-entry notifications regarding substantial space objects, and also on the re-entry of space objects with hazardous substances on board;
 - (iv) Technical developments and possibilities regarding space debris removal;
- (c) Space weather:
 - (i) Collection, sharing and dissemination of data, models and forecasts;
 - (ii) Capabilities to provide a comprehensive and sustainable network of key data in order to observe and measure space weather phenomena adequately in real or near-real time;
 - (iii) Open sharing of established practices and guidelines to mitigate the impact of space weather phenomena on operational space systems;
 - (iv) Coordination among States on ground-based and space-based space weather observations in order to safeguard space activities;

- (d) Space operations:
 - (i) Collision avoidance processes and procedures;
 - (ii) Pre-launch and manoeuvre notifications;
 - (iii) Common standards, practices and guidelines;
- (e) Tools to support collaborative space situational awareness:
 - (i) Registries of operators and contact information;
 - (ii) Data centres for the storage and exchange of information on space objects and operational information;
 - (iii) Information-sharing procedures;
- (f) Regulatory regimes:
 - (i) Adherence to existing treaties and principles on the peaceful uses of outer space;
 - (ii) National regulatory frameworks for space activities;
- (g) Guidance for actors in the space arena:
 - (i) Technical standards, established practices and lessons learned for the successful development and operation of space systems throughout all the phases of the mission life cycle for all classes of space objects, including microsatellites and smaller satellites;
 - (ii) Technical and legal capacity-building for developing countries.

15. The above topics could be clustered to allow more efficient consideration of related matters. Topics could also be prioritized in terms of the need for action in the near term (less than 3 years), medium term (3-5 years) and long term (more than 5 years). One way to consider the topics could be to determine the risk factors posed to the sustainability of outer space activities under each topic and then perform a risk assessment of those risk factors.

V. Method of work

16. The Working Group will invite contributions from Member States, from relevant intergovernmental organizations, such as the European Space Agency, the European Organization for the Exploitation of Meteorological Satellites, the Asia-Pacific Space Cooperation Organization and the Group on Earth Observations, and from United Nations intergovernmental bodies, such as the Conference on Disarmament, the Commission on Sustainable Development, the International Civil Aviation Organization, the International Telecommunication Union and the World Meteorological Organization.

17. The Working Group will invite contributions of information from international organizations, such as the Consultative Committee for Space Data Systems, the Inter-Agency Space Debris Coordination Committee, the International Space Environment Service, the International Organization for Standardization, private sector space operators with considerable experience of space activities and other

relevant non-governmental organizations. The modality for receiving such inputs could include intersessional activities, such as workshops, reports on which would be transmitted to the Working Group by the Chair or his designated rapporteur for the Working Group's consideration. The Working Group will decide on the inputs to be incorporated into its work.

18. The Working Group should avoid duplicating the work being done within these international entities and should instead consolidate their work and identify areas of concern relating to the long-term sustainability of outer space activities that are not being covered by them.

19. The Working Group will take into account the informal preliminary reflections on the long-term sustainability of space activities, as well as progress made by the other working groups of the Subcommittees. Efforts should take into account, but not duplicate or reopen, the activities and recommendations being undertaken in the Working Group on the Use of Nuclear Power Sources in Outer Space and the work of the Subcommittee and the Inter-Agency Space Debris Coordination Committee on orbital debris mitigation.

20. If, during the examination of topics within the scope of the Working Group, there are new issues raised that were not previously addressed by the Subcommittee or its related working groups, the Working Group may decide to raise such issues to the Subcommittee for further consideration.

21. The Working Group will meet during the annual sessions of the Scientific and Technical Subcommittee. The Working Group will also take advantage of intersessional activities, such as meetings, teleconferences, electronic meetings and workshops, either in isolation or in conjunction with planned conferences of intergovernmental and international organizations that provide an opportunity for members of the Working Group to meet informally and discuss progress.

22. The Working Group may decide to establish expert groups to focus on one or more of each of the agreed areas of work in order to expedite the work of the Working Group as a whole. The expert groups would work intersessionally and would meet on the margins of the sessions of the Scientific and Technical Subcommittee and the Committee, and at one other agreed time. Member States and intergovernmental organizations with permanent observer status with the Committee would be invited to nominate experts to participate in the activities of the expert groups. Each expert group would select its own Chair (from among the participating member States) to lead its work. The expert groups would provide information to support the deliberations of the Working Group, which would consider inputs received and make any necessary decisions regarding those inputs.

VI. Proposed multi-year workplan

23. The proposed workplan under the item "Long-term sustainability of outer space activities" for the period 2011-2014 would be as follows:

- 2011 Develop terms of reference, method of work and workplan. Identify a point of contact for each member State represented in the Working Group. Review the work done to date on this issue and prioritize future tasks. Invite member States and organizations having permanent

observer status with the Committee and experience in space activities to provide information in 2012 on their experiences and established practices in the conduct of sustainable space activities. Begin to engage with other entities in the commercial sector and non-profit sector on this issue.

- 2012 Hold a general exchange of views among States members of the Committee and intergovernmental and non-governmental organizations having permanent observer status with the Committee on the topics encompassed within the scope of work. Hold a workshop at which States members of the Committee and intergovernmental and non-governmental organizations having permanent observer status with the Committee provide information on their experiences and practices in the conduct of sustainable space activities (presentations and discussions to be conducted in the official languages of the United Nations). Hold consultations with member States and with intergovernmental and international organizations having experience in space activities and those considering or initiating involvement in space activities to provide information on established practices and proposed measures to enhance the long-term sustainability of space activities. Commence consolidation of information gathered. Develop a draft outline of the report to be produced by the Working Group.
- 2013 Invite representatives of private sector entities having experience in space activities and relevant non-governmental organizations to provide information on their experiences and practices in the conduct of sustainable space activities at a workshop to be held in conjunction with the fiftieth session of the Subcommittee (presentations and discussions to be conducted in the official languages of the United Nations). Develop a draft report and draft set of best-practice guidelines for submission to the Subcommittee in 2014. Circulate the draft report and draft guidelines to the Working Group for comment and review. Update drafts.
- 2014 Consider the draft report and guidelines at the Subcommittee's fifty-first session. Finalize the report and the set of best-practice guidelines for presentation to and review by the Committee. Determine whether the workplan should be extended to cover potential future work. If the workplan is not extended, discontinue the Working Group.
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