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Committee on the Peaceful Uses of Outer Space
Scientific and Technical Subcommittee
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Draft report

Addendum

V. Space debris

1. In accordance with General Assembly resolution 63/90, the Scientific and Technical Subcommittee continued its consideration of agenda item 7, "Space debris".

2. The representatives of Brazil, Canada, China, the Czech Republic, France, Germany, Greece, India, Indonesia, Italy, Japan, the Russian Federation, the United States of America and Venezuela (Bolivarian Republic of) made statements on the item.

3. The Subcommittee heard the following scientific and technical presentations:

(a) "United States space debris environment and operational updates", by the representative of the United States;

(b) "2008 space debris activities in France", by the representative of France;

(c) "Estimation of current status of geostationary orbit based on results of research in the framework of the ISON international project", by the representative of the Russian Federation;

(d) "Activities carried out by the Russian Federation on the space debris problem", by the representative of the Russian Federation;

(e) "International civil space situation awareness", by the observer for the Secure World Foundation;

(f) "Space Security Index", by the observer for the Security World Foundation;

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(g) "ESA activities on space debris mitigation", by the observer for the European Space Agency (ESA);

(h) "IADC re-entry prediction campaigns", by the observer for ESA.

4. The Subcommittee had before it a note by the Secretariat and a conference room paper on national research on space debris, safety of space objects with nuclear power sources on board and problems relating to their collision with space debris, containing replies received from Member States on the issue (A/AC.105/931 and Add.1 and A/AC.105/C.1/2009/CRP.11).

5. The Subcommittee agreed that the implementation of voluntary guidelines for the mitigation of space debris at the national level would increase mutual understanding on acceptable activities in space, thus enhancing stability in space and decreasing the likelihood of friction and conflict.

6. The Subcommittee noted with satisfaction that some States were implementing space debris mitigation measures consistent with the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space and/or the Inter-Agency Space Debris Coordination Committee (IADC) Space Debris Mitigation Guidelines and that other States had developed their own space debris mitigation standards based on those guidelines. The Subcommittee also noted that other States were using the IADC Guidelines and the European Code of Conduct for Space Debris Mitigation as references in the regulatory framework established for national space activities.

7. The Subcommittee welcomed the information provided by the Chairman of IADC on re-entry prediction campaigns and agreed that IADC should continue, on a periodical basis, to inform the Subcommittee of any revisions made to the IADC Space Debris Mitigation Guidelines in the light of evolving technologies and debris mitigation practices. The Subcommittee also noted that the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space might have to be amended in accordance with such revisions.

8. The Subcommittee noted with appreciation that States had adopted a number of approaches and concrete actions to mitigate space debris, including the reorbiting of satellites, passivation, end-of-life operations and the development of specific software and models for space debris mitigation. The Subcommittee also noted that research was being conducted in the areas of technology for space debris observation, space debris environmental modelling and technologies to protect space systems from space debris and to limit the creation of additional space debris.

9. The Subcommittee agreed that Member States, in particular space-faring countries, should pay greater attention to the problem of collisions of space objects, including those with nuclear power sources (NPS) on board, with space debris and to other aspects of space debris, including its re-entry into the atmosphere. It noted that the General Assembly, in its resolution 63/90, had called for the continuation of national research on that question, for the development of improved technology for the monitoring of space debris and for the compilation and dissemination of data on space debris and had agreed that international cooperation was needed to expand appropriate and affordable strategies to minimize the impact of space debris on future space missions. The Subcommittee agreed that research on space debris should continue and that Member Sates should make available to all interested

parties the results of that research, including information on practices that had proved effective in minimizing the creation of space debris.

10. The Subcommittee agreed that Member States and space agencies should once again be invited to provide reports on research on space debris, the safety of space objects with NPS on board and problems relating to the collision of such space objects with space debris.

11. The Subcommittee noted that a collision involving an active commercial Iridium 33 satellite and an inactive Cosmos-2251 satellite had occurred in low-Earth orbit (LEO) on 10 February 2009. In that regard, the Subcommittee was informed that the Space Surveillance Network of the United States was tracking about 700 pieces of space debris, in two separate clouds, that had resulted from that collision. The Subcommittee was also informed that additional information on the possible creation of further debris by the collision would be posted on the Internet (http://www.space-track.org).

12. Some delegations expressed the view that the collision, which was the first of its kind, demonstrated the need for collective efforts to implement space debris mitigation measures.

13. The view was expressed that there was a need to increase international coordination to promote a voluntary early warning system by creating an international database. That delegation was of the view that the Working Group on Space Debris should be re-established with the task to study the establishment of such a voluntary system.

14. Some delegations expressed the view that the States most responsible for the creation of space debris and the States having capability to take action on space debris mitigation should make a greater contribution to space debris mitigation efforts than other States.

15. The view was expressed that some States used concepts like “to the extent possible” to take advantage of technological resources without control, while requiring aspiring space-faring States to report on controls and restrictions implemented within their programmes.

16. Some delegations expressed the view that an agenda item on “Long-term sustainability of space activities”, proposed by France, would provide an important opportunity for the Subcommittee to consider the safety of future space traffic, which included the issue of space debris mitigation.

17. The view was expressed that since space was becoming an increasingly congested environment, heightened space situational awareness and closer international cooperation between Governments and industry would be critical in the future.

18. The Subcommittee noted the project of the European Union to adopt a code of conduct for outer space activities that would cover, inter alia: aspects concerning the preservation of the security and integrity of space objects in orbit; and measures on space debris control and mitigation. The Subcommittee also noted that the draft text of the code of conduct had been approved by the Council of the European Union in December 2008 and that consultations with space-faring countries were under way with a view to reaching consensus on a text that would be acceptable to as many

States as possible. The Subcommittee further noted that, following the conclusion of those consultations, an ad hoc conference would be organized for States to subscribe to the code.

VIII. Use of nuclear power sources in outer space

19. In accordance with General Assembly resolution 63/90, the Scientific and Technical Subcommittee continued its consideration of agenda item 10, "Use of nuclear power sources in outer space", under the multi-year workplan for the period 2007-2010, adopted at its forty-fourth session (A/AC.105/890, paras. 112-113 and annex II).

20. The representatives of Nigeria, South Africa, the United States and Venezuela (Bolivarian Republic of) made statements under the agenda item.

21. The Subcommittee noted with satisfaction the progress made by the Joint Expert Group of the Scientific and Technical Subcommittee and the International Atomic Energy Agency, established at the forty-fourth session of the Subcommittee, in the development of an international technically based framework of goals and recommendations for the safety of planned and currently foreseeable nuclear power source (NPS) applications in outer space.

22. The view was expressed that the progress achieved by the Joint Expert Group demonstrated the value of combining the expertise of the Subcommittee in the use of NPS in outer space with that of IAEA in designing a nuclear safety framework.

23. The view was expressed that it was exclusively States, irrespective of their level of social, economic, scientific or technical development, that had an obligation to engage in regulatory activity associated with the use of NPS in outer space and that the matter concerned all of humanity. That delegation was of the view that Governments bore international responsibility for national activities involving the use of NPS in outer space conducted by governmental or non-governmental organizations and that such activities must be beneficial and not detrimental to humanity.

24. The view was expressed that the application of NPS to space missions was important because it could help States to further the objectives of space exploration.

25. Some delegations were of the view that the possibility of spacecraft equipped with nuclear reactors being damaged as a result of collisions with orbital debris was cause for concern, as Earth's orbital environment could become contaminated with radioactive debris, which could be a threat to Earth's biosphere.

26. The view was expressed that no justification existed for contemplating the use of NPS in Earth orbits when other sources of energy were available that were much safer and that had proved to be efficient.

27. The Subcommittee noted the continuation by Member States of the NPS-based space missions Cassini-Huygens and New Horizons and the Opportunity and Spirit Mars rovers. It also noted the plans to use NPS on the Mars Science Laboratory mission to Mars in 2011.

28. Pursuant to General Assembly resolution 63/90, the Subcommittee, at its 704th meeting, on 12 February, 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). The Working Group held […] meetings.

29. The Subcommittee noted that, at its current session, the Working Group had finalized and approved the safety framework.

30. At its […] meeting, on […] February, the Subcommittee adopted the Safety Framework for Nuclear Power Source Applications in Outer Space (A/AC.105/C.1/L.292/Rev.4).

31. The Subcommittee noted the reservations expressed by the representative of the Bolivarian Republic of Venezuela with regard to the draft Safety Framework. The specific reservations of that representative's Government were expressed as follows:

(a) The inadmissibility of the use of NPS in Earth orbits, based on the premise that any activity conducted in outer space should be governed by the principles of preservation of life and maintenance of peace;

(b) The responsibility of States for national activities carried out by Government agencies or non-governmental organizations that use NPS in outer space; States should ensure the regulation, authorization and monitoring of such activities and that authority may not be delegated in any way.

32. The view was expressed that adoption of the Safety Framework by the Subcommittee should be followed by detailed and technical guidelines that might help to alleviate the concerns of many developing countries about the effectiveness of the Safety Framework.

33. Some delegations were of the view that, in future, it would be necessary to develop a binding instrument based on the Safety Framework in order to prevent irresponsible and indiscriminate use of NPS in outer space.

34. Some delegations were of the view that the Safety Framework represented a significant advance in the development of safe NPS applications and that implementation of the Safety Framework by Member States and international intergovernmental organizations would provide assurance to the global public that space NPS applications would be launched and used in a safe manner.

35. At its […] meeting, on […] February, the Subcommittee endorsed the report of the Working Group (see annex […]).

IX. Near-Earth objects

36. In accordance with General Assembly resolution 63/90, the Scientific and Technical Subcommittee considered agenda item 11, "Near-Earth objects", under the amended multi-year workplan adopted by the Subcommittee at its forty-fifth session (A/AC.105/911, annex III). Pursuant to the workplan, in 2008, international organizations, regional bodies and others active in the field of near-Earth object research were invited to report to the Subcommittee on their activities.

37. The representatives of Canada, France, Mexico, Poland, Romania, the Russian Federation and the United States made statements on the item.

38. The Subcommittee heard the following scientific and technical presentations:

(a) "Asteroid-comet impact hazard problem: recent developments in Russia", by the representative of the Russian Federation;

(b) "Near-Earth object observation program", by the representative of the United States;

(c) "NEOSSat: the near-Earth objects surveillance satellite", by the representative of Canada;

(d) "French activities related to Apophis", by the representative of France;

(e) "The Large Millimeter Telescope", by the representative of Mexico;

(f) "Dealing with the threat to Earth from asteroids and comets", by the observer for the International Academy of Astronautics (IAA);

(g) "Asteroid threats: a call for a global response", by the observer for the Association of Space Explorers (ASE);

(h) "Assessment of the proposal, by the Association of Space Explorers International Panel on Asteroid Threat Mitigation, on the theme 'Asteroid threats: a call for a global response'", by the observer for the International Astronautical Federation (IAF).

39. The Subcommittee had before it the following documents:

(a) Note by the Secretariat on information on research in the field of near-Earth objects carried out by Member States, international organizations and other entities (A/AC.105/926);

(b) Interim report of the Action Team on Near-Earth Objects (2008-2009) (A/AC.105/C.1/L.298).

40. The Subcommittee noted that near-Earth objects were asteroids and comets with orbits that could cross the orbit of planet Earth. The Subcommittee also noted that the interest in asteroids was largely fuelled by their scientific value as remnant debris from the inner solar system formation process, the potentially devastating consequences of such objects colliding with Earth and the possession of a wide range of natural resources.

41. The Subcommittee noted that early detection and precision tracking were the most effective tools for the management of threats posed by near-Earth objects. In that regard, the Subcommittee noted with satisfaction that a number of international teams in various countries were currently searching for, investigating and cataloguing near-Earth objects and that new partnerships were emerging among national space agencies and research institutions to enhance those efforts.

42. The Subcommittee noted with satisfaction that a number of institutions were investigating possibilities for mitigating the threats posed by near-Earth objects. The Subcommittee also noted that any measures to mitigate such threats would require coordinated international efforts, as well as increased knowledge of the properties of near-Earth objects.

43. The Subcommittee noted with satisfaction that the ASE International Panel on Asteroid Threat Mitigation had prepared a report on the theme “Asteroid threats: a call for a global response”.

44. The Subcommittee noted that some member States had implemented or were planning to implement fly-by and exploration missions to near-Earth objects. The Subcommittee also noted past and upcoming missions investigating near-Earth objects, including: the Dawn, the Deep Impact and the Stardust spacecraft of the United States; the Near Earth Object Surveillance Satellite of Canada; and the Marco Polo near-Earth object sample return mission of ESA; and the Hayabusa near-Earth object sample return mission of Japan. The Subcommittee also noted that a number of international projects and initiatives, such as the Panoramic Survey Telescope and Rapid Response System (Pan-STARRS), the Large Millimeter Telescope, the Large Synoptic Survey Telescope and the Pulkovskaya Observatory, took advantage of potential dual-use facilities to advance detection and characterization capabilities.

45. The Subcommittee noted the significant progress achieved by the United States in reaching its target of detecting 90 per cent of all near-Earth objects greater than one kilometre in diameter. The Subcommittee noted that the United States had determined that fewer than 150 of the 825 near-Earth objects with a diameter greater than one kilometre could pose a collision hazard with Earth. The Subcommittee further noted that the United States was seeking to achieve, by 2020, its target of detecting, tracking, cataloguing and characterizing 90 per cent of objects with a diameter greater than 140 metres.

46. The Subcommittee agreed that efforts to detect, track and characterize near-Earth objects should be continued and expanded at the national and international levels.

47. Pursuant to paragraph 15 of General Assembly resolution 63/90, the Subcommittee, at its 709th meeting, on 16 February, reconvened its Working Group on Near-Earth Objects under the chairmanship of Richard Crowther (United Kingdom). The Working Group on Near-Earth Objects held […] meetings.

48. At its […] meeting, on […] February, the Subcommittee endorsed the report of the Working Group on Near-Earth Objects (see annex […]).