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Draft report of the Scientific and Technical Subcommittee on its forty-first session, held in Vienna from 16 to 27 February 2004

Addendum

V. Space debris

1. In accordance with General Assembly resolution 58/89, the Scientific and Technical Subcommittee continued its consideration of item 8, relating to space debris, in accordance with the work plan adopted at its thirty-eighth session (A/AC.105/761, para. 130).

2. The representatives of the Czech Republic, France, Germany, India, Indonesia, Italy, Japan, the Republic of Korea, the Russian Federation, the United Kingdom and the United States made statements on the item.

3. The Subcommittee heard the following scientific and technical presentations on the subject of space debris:

(a) "Example of space debris mitigation in France: the SPOT-1 de-orbiting operations", by the representative of France;

(b) "DLR study: Space debris end-to-end service", by the representative of Germany;

(c) "Re-orbiting of INSAT-2B and 2C satellites", by the representative of India;

(d) "Russian Federation activity in the field of the space debris problem", by the representative of the Russian Federation;



(e) “United States of America space debris environment and policy updates in 2003”, by the representative of the United States;

(f) “Space debris”, by the representative of the European Space Agency;

(g) “Status report on the International Academy of Astronautics space debris mitigation study”, by the observer of the International Academy of Astronautics;

(h) “Report of the IADC activities on space debris mitigation measures”, by the Inter-Agency Space Debris Coordination Committee (IADC).

4. The Subcommittee had before it a note by the Secretariat 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.105/817). The Subcommittee invited member States and regional space agencies to continue to provide reports on the issue in future years.

5. The Subcommittee noted with appreciation that the Inter-Agency Space Debris Coordination Committee (IADC) had continued its efforts to achieve further progress in technical understanding of various aspects connected with space debris.

6. The Subcommittee agreed that member States, in particular space-faring countries, should pay more attention to the problem of collision of space objects, including those with nuclear power sources on board, with space debris and to other aspects of space debris, as well as its re-entry into the atmosphere. It noted that the General Assembly, in its resolution 58/89, had called for the continuation of national research on the question, the development of improved technology for monitoring space debris and the compilation and dissemination of data on space debris. The Subcommittee agreed that national research on space debris should continue and that member States 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.

7. The Subcommittee noted that United States domestic agencies were using debris mitigation practices consistent with the IADC space debris mitigation guidelines. The Subcommittee was also informed that the IADC guidelines and the draft version of the European space debris safety and mitigation standard had already been applied to the German national satellite project, Terra SAR.

8. The Subcommittee noted that France and India had re-orbited their satellites SPOT and INSAT-2C, respectively, as a voluntary measure, which demonstrated their commitment to debris mitigation measures.

9. Pursuant to General Assembly resolution 58/89, the Subcommittee, at its 611th meeting, on 24 February, established a Working Group to consider comments from States members of the Committee on the Peaceful Uses of Outer Space on the proposals on debris mitigation presented by IADC to the Subcommittee at its fortieth session.

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

11. The view was expressed that the fastest way to limit the growth of orbital debris would be for space-faring countries to implement the measures specified in the IADC space debris mitigation guidelines.
12. Some delegations supported the endorsement of the IADC guidelines by the Subcommittee. Other delegations were of the view that, instead of endorsing the guidelines, it would be expedient to initiate work on a new document, which should be based on the IADC guidelines but developed in the framework of the Subcommittee and approved by the Committee on the Peaceful Uses of Outer Space and the General Assembly. In that connection, the view was expressed that adoption of such a document would have far-reaching consequences for the development of space activities in the world.
13. Another view was that, with suitable but minimal redrafting, the IADC guidelines could be amended to allow the Subcommittee to recommend to the Committee the endorsement of the guidelines by the General Assembly.
14. A further view was that the IADC guidelines were not drafted as a standard and should not be considered as such. They could be considered as a set of measures that would assist in keeping space open for use by future generations.
15. It was observed that space debris mitigation measures should be implemented earlier in the process of space-system design.
16. The view was expressed that the subject of space debris was extremely important to the preservation of the outer space environment, so that all developing countries would be able to explore outer space in the future with no constraints.
17. It was stated that only a few developed countries had the technological prerequisites for the mitigation of space debris. Proper compliance with the IADC guidelines was in reality not feasible for most of the less developed countries. That delegation expressed its hope that the technological and financial means for the mitigation of space debris would be provided, so as to enable less developed countries to step up their own efforts to reduce space debris within their own space capability.
18. The view was expressed that it could be anticipated that mitigation measures would be implemented in the design of future spacecraft and that these would significantly contribute to the reduction of the risks posed by space debris.
19. It was stated that a recommendation for a launching State to provide information on the functional status of its space objects should be included in the IADC guidelines.
20. The view was expressed that a network of specialized focal points should be established in all countries that might be involved in re-entry risks and that an international database of such focal points would be highly recommended.
21. Another view was that compliance with all space debris mitigation measures would involve additional costs for all commercial operators and it would therefore be desirable to explore ways and means to provide technical and economic support.

VI. Use of nuclear power sources in outer space

22. In accordance with General Assembly resolution 58/89, the Scientific and Technical Subcommittee continued its consideration of agenda item 9, on the use of nuclear power sources in outer space, under the work plan adopted at its fortieth session (A/AC.105/804, annex III).

23. The Subcommittee had before it the following documents:

(a) Note by the Secretariat 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 (A/AC.105/817);

(b) Note by the Secretariat on possible organizational plans for potential co-sponsorship of an effort to develop an international space nuclear power source technical safety standard and potential advice of the International Atomic Energy Agency to the Scientific and Technical Subcommittee in the preparation of such a standard (A/AC.105/C.1/L.268);

(c) A working paper submitted by Argentina, France, Pakistan and the United Kingdom of Great Britain and Northern Ireland on potential implementation options for establishing an international technically based framework of goals and recommendations for the safety of planned and currently foreseeable nuclear power source applications (A/AC.105/C.1/L.271 and Corr.1).

24. The representatives of Germany, India, the Republic of Korea, the United Kingdom and the United States of America made statements under the item.

25. The following technical presentations on the subject of the use of nuclear power sources (NPS) in outer space were made to the Subcommittee:

(a) "The main lines of development and uses of space nuclear power sources in Russia", by the representative of the Russian Federation;

(b) "Applications enabled or enhanced by space nuclear power sources", by the representative of the United States;

(c) "Future exploration and nuclear power systems", by the representative of the United States;

(d) "Space nuclear power sources: concepts and European Space Agency applications for scientific exploration", by the observer for the European Space Agency.

26. The view was expressed that the Principles Relevant to the Use of Nuclear Power Sources in Outer Space of 1992 (General Assembly resolution 47/68) had provided a solid international framework for the use of nuclear power sources in outer space over the past decade. That delegation was of the view that the internationally accepted radiation protection standard as established by the Principles should be kept the same and that further information should be sought with the purpose of understanding the reason for proposing a revision of the existing principles.

27. Some delegations were of the view that a workshop to be organized by the Office for Outer Space Affairs jointly with IAEA, proposed under option 2 in

document A/AC.105/C.1/L.271/Rev.1, should be held to discuss the scope and general attributes of a potential technical safety standard for NPS in outer space.

28. In accordance with General Assembly resolution 58/89, the Subcommittee, at its 606th meeting, on 19 February, reconvened its Working Group on the Use of Nuclear Power Sources in Outer Space under the chairmanship of Sam A. Harbison (United Kingdom). The Working Group held [...] meetings.

29. The Subcommittee noted with satisfaction that, in accordance with the work plan, the Working Group had made progress during the intersessional period on the development of potential implementation options for establishing an international technically based framework of goals and recommendations for the safety of planned and currently foreseeable space NPS applications.

30. The Subcommittee noted that the Working Group had discussed potential options for establishing possible cooperation between the Committee and the International Atomic Energy Agency (IAEA) as contained in document A/AC.105/C.1/L.271/Rev.1.

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

32. The Scientific and Technical Subcommittee endorsed the recommendation of the Working Group that it continue intersessional work on the topics described in the multi-year work plan for the period 2003-2006 (A/AC.105/804, annex III). To facilitate those discussions among interested members of the Working Group, consultations of the Working Group should be held in Vienna on 7 and 8 June 2004 (and possibly extended up to 9 to 11 June 2004), during the forty-seventh session of the Committee on the Peaceful Uses of Outer Space.

VII. Space-system-based telemedicine

33. In accordance with General Assembly resolution 58/89, the Scientific and Technical Subcommittee considered the item on space-system-based telemedicine under the three-year work plan adopted at its fortieth session. Pursuant to the work plan, starting in 2004 member States of the Committee were invited to make presentations on the status in their countries of telemedicine applications in general and space-system-based telemedicine in particular and on commercially available telemedicine systems and their capacity to use space systems.

34. The representatives of Austria, Canada, Colombia, France, India, Japan, Mexico, Nigeria, Romania and the United States of America made statements on the item.

35. The Subcommittee heard the following scientific and technical presentations on the item:

- (a) "Tele-health and satellites", by the representative of France;
- (b) "Constellation of small telecommunication satellites for telemedicine in Russia", by the representative of the Russian Federation;
- (c) "Tactical and commercial telemedicine in an interactive world: the NASA perspective", by the representative of the United States;

(d) “Battlefield medical information systems: telemedicine”, by the representative of the United States;

(e) “Tele-operated robotic arm through satellite networks for echographic diagnostics in an emergency in isolated places”, by the representative of the European Space Agency (ESA);

(f) “Overview of current activities in telemedicine at the European Space Agency”, by the representative of ESA.

36. The Subcommittee noted the broader applications of telemedicine in health care and their benefits for epidemiology, tele-surgery, offsite radiology services, cardiac monitoring, medical consultations and specialist referrals, correctional care and tele-education in medicine, as well as therapeutic education.

37. The Subcommittee noted a number of initiatives to enhance, among other things, tele-robotic surgery, surveillance and control of Guinea worm, dengue, Rift Valley fever, cholera, meningitis and other diseases, and telemedical diagnosis and psychological support for manned long-duration space missions.

38. The Subcommittee noted the significant benefits of space-based telemedicine in providing medical expertise to remote mobile and static locations that were not connected to the terrestrial telecommunication network, in particular for emergency response following a disaster.

39. The Subcommittee noted that several projects had already been initiated at the national level, including one where customized medical software and medical diagnostic instruments had been connected to commercial very small aperture terminals (VSATs) at several locations, to bring the benefits of space-based telemedicine to the grass-roots level.

40. The Subcommittee noted that the cost of equipment used for space-system-based telemedicine was a matter of concern for developing countries. The Subcommittee noted that the trend towards lower prices for such equipment could contribute to bringing the benefits of space-system-based telemedicine to a greater number of developing countries, which would significantly enhance health care and medical services.

41. The Subcommittee agreed that broader international cooperation in the area of space-system-based telemedicine should be further encouraged, to ensure that its benefits reached all countries, in particular developing countries, in various areas of health and medical services.

VIII. Examination of the physical nature and technical attributes of the geostationary orbit and of its utilization and applications, including, inter alia, in the field of space communications, as well as other questions relating to developments in space communications, taking particular account of the needs and interests of developing countries

42. In accordance with General Assembly resolution 58/89, the Scientific and Technical Subcommittee considered agenda item 11 relating to the geostationary orbit and space communications as a single issue/item for discussion.

43. The representatives of Colombia, Ecuador and Indonesia made statements on the item.

44. Some delegations expressed the view that, as the capacity of the geostationary orbit was not unlimited, there was a risk that it might become saturated. Those delegations considered that its exploitation should be rationalized and made accessible to all countries, in particular those that did not currently possess the technical and scientific capabilities to have access to the geostationary orbit under equitable conditions. The needs and interests of developing countries, the geographical position of certain countries and the process followed by the International Telecommunication Union (ITU) should also be borne in mind. Those delegations considered that countries in tropical zones should, in fact, be given preference in the assignment of spectrum within the geostationary orbit. They therefore considered that the item on the geostationary orbit should remain on the agenda of the Subcommittee.

45. The view was expressed that the geostationary orbit was an integral part of outer space and could only be addressed in the context 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 (General Assembly resolution 2222 (XXI), annex) and the ITU regulations.

46. The Subcommittee noted with satisfaction that the Office for Outer Space Affairs had organized a meeting of a panel of experts on the contribution of space communication technology to bridging the digital divide during the first phase of the World Summit on the Information Society, held in Geneva from 10 to 12 December 2003, which had contributed to increasing awareness of the role that space technology could play in achieving the objectives of the Summit.

IX. Implementation of an integrated, space-based global natural disaster management system

47. In accordance with General Assembly resolution 58/89, the Scientific and Technical Subcommittee considered the implementation of an integrated, space-based global natural disaster management system as a single issue/item for discussion.

48. The representatives of China, Cuba, France, Germany, India, Japan, Morocco, Nigeria and the United States made statements under the item.

49. The observer for the secretariat for the International Strategy for Disaster Reduction made a presentation to the Subcommittee entitled “Towards the World Conference on Disaster Reduction”.

50. In the course of the discussion, delegations reviewed national and cooperative efforts in the use of space-based technologies to support disaster preparedness and response activities. Examples were given of national initiatives and bilateral, regional and international cooperation.

51. The Subcommittee noted with satisfaction the progress made by the Charter on Cooperation to Achieve the Coordinated Use of Space Facilities in the Event of Natural or Technological Disasters (the International Charter “Space and Major Disasters”). In 2003, the National Commission on Space Activities of Argentina and the Japan Aerospace Exploration Agency had joined the Charter, increasing to seven the number of space agencies that had made their space assets available to civil protection authorities responding to a major disaster.

52. The Subcommittee noted that the Office for Outer Space Affairs had entered into an agreement in 2003 to become a cooperating body to the Charter, thus making it possible, through that agreement, for any United Nations entity to request imagery from the Charter to facilitate relief efforts immediately following a natural or technological disaster. Effective 1 July 2003, the Office had set up a hotline available round the clock, through which United Nations entities could use the Charter to receive satellite imagery in support of emergency response efforts. Since that date, the Charter had been used five times: in response to floods in Nepal, to floods in the Dominican Republic, to landslides in the Philippines, to an earthquake in Indonesia and, most recently, to the earthquake in Morocco that had struck during the Subcommittee’s session.

53. The Subcommittee recognized the important contributions that the Action Team on Disaster Management had made towards defining concrete steps that would contribute to the implementation of an integrated, space-based global natural disaster management system and agreed that further study should be carried out on the implementation of the recommendation to establish a disaster management international space coordination organization within the framework of the United Nations.

54. The Subcommittee noted the need for space-based communication systems to be considered, to a greater extent, as solutions in the response phase of disasters. Terrestrial communication infrastructures were often disrupted during natural disasters. Transportable satellite terminals could be flown in relatively easily and set up within a short period of time, thus establishing indispensable communication links to the outside world. The Subcommittee was of the view that every organization involved in disaster response should possess readily deployable mobile communication terminals, compatible with different communication satellite systems.

55. The view was expressed that the Office for Outer Space Affairs should coordinate with communication satellite operators to reserve part of the transponder and bandwidth capacities in order to support disaster management activities.

56. The Subcommittee noted that the number of countries participating in the International Satellite System for Search and Rescue (COSPAS-SARSAT) had

increased to 35 and that such a system could serve as a model for how a global operational system for disaster support might work. The Subcommittee also noted that Nigeria, through its National Emergency Management Agency, had in 2003 fully installed a COSPAS-SARSAT mission control centre and local user terminal, which would contribute to supporting search and rescue operations in Western Africa.

57. The Subcommittee noted with satisfaction the progress made by several member States in the creation of regional and global integrated solutions based on the establishment of constellations of small satellites to be used not only for disaster management activities, but also for environmental protection. Those constellations included the Disaster Monitoring Constellation (in which three additional satellites had joined Alsat-1 of Algeria in 2003, namely NigeriaSat-1 of Nigeria, BILSAT-1 of Turkey and UK-DMC of the United Kingdom of Great Britain and Northern Ireland) and the environmental and disaster monitoring constellation of small satellites (the “2+1” constellation) being set up by China (which was scheduled to be concluded by 2006, with plans to expand by 2008 to the “4+4” constellation, and which would primarily benefit Asia and the Pacific).

58. The Subcommittee noted the work being carried out by CEOS, specifically with regard to module 3 of the CEOS programme to follow up on the World Summit on Sustainable Development, which would address disaster management and conflicts. The module, which would be initiated in 2004, would focus on working towards increasing awareness in the applications for and utilization of Earth observation data in developing countries and would assist in the establishment of infrastructure and communications related to disaster management and conflicts.

59. The Subcommittee noted that the Earth Observation Summit, held in Washington, D.C., on 31 July 2003, and the activities of the ad hoc Group on Earth Observation (GEO) established as a result of the Summit, were intended to bring a new dimension to global disaster management efforts. The GEO action plan that was being developed could, when implemented, help to provide new capabilities and resources for countries, especially developing countries, to address critical societal issues better.

60. The view was expressed that there was a need for international coordination of various research and development activities within the area of earthquake prediction using space-based systems and information.

61. The Subcommittee noted that the National Commission on Space Activities of Argentina, the Office for Outer Space Affairs and ESA had organized a meeting of experts on the use of space technology in flood management in Cordova, Argentina, from 24 to 26 November 2003. The meeting, which was hosted by the Instituto Mario Gulich, served to prepare profiles for pilot project proposals.

62. The Subcommittee noted that the United Nations International Workshop on the Use of Space Technology for Disaster Management was being organized by the German Aerospace Centre and the Office for Outer Space Affairs, with the support of the European Space Agency. The workshop, which was scheduled to be held in October 2004 in Germany, would provide an opportunity to propose ideas and strategies for the implementation of a global system based on space technology solutions to support disaster management activities, within a framework of international cooperation.

63. The Subcommittee noted the opportunity provided by the World Conference on Disaster Reduction, which would be held from 18 to 22 January 2005 in Kobe, Japan, and would focus on a review of progress over the past decade, based on the Yokohama Strategy for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation, containing the Principles, the Strategy and the Plan of Action, and the definition of a set of specific goals, activities and policy measures for implementation in the period 2005-2015. The Subcommittee further noted that space technology could play a central role in disaster reduction and that both the Scientific and Technical Subcommittee and the Committee could contribute to the World Conference and its follow-up, ensuring that space technologies would be an integral part of the solutions put forward in the Conference's plan of implementation.
