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**Committee on the Peaceful
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Draft report

Addendum

Chapter II

Recommendations and decisions

E. Spin-off benefits of space technology: review of current status

1. In accordance with paragraph 44 of General Assembly resolution 58/89, the Committee resumed its consideration of the item entitled "Spin-off benefits of space technology: review of current status".
2. The publication *Spinoff 2003*, submitted by the National Aeronautics and Space Administration of the United States, was made available to the Committee.
3. The Committee agreed that spin-offs of space technology should be promoted because they stimulated the economy through the creation of new and innovative technologies. Spin-offs also contributed to raising living standards through improvements in science and technology.
4. In the field of medical research, the Committee took note of a portable, battery-powered device that collected physiological data from off-the-shelf instruments regularly used at home by patients with high blood pressure, diabetes, congestive heart failure or respiratory conditions and transmitted the data over a standard telephone line to the patient's hospital for retrieval and analysis. The process enabled a health-care team to note changes in a patient's condition immediately and make appropriate recommendations for action, leading to fewer emergency hospitalizations. The Committee also took note of a laser radar eye-tracking device that could be used to correct short-sightedness, long-sightedness and astigmatism. The device also enabled surgeons to measure and address visual distortions that had previously gone undetected.

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5. Also in the field of medical research, the Committee noted that a new portable chemistry analyser for animals was enabling veterinary surgeons to obtain a clear, comprehensive picture of an animal's physical condition in under 15 minutes. The analyser eliminated the need for follow-up calls and visits, thereby freeing staff to undertake other clinical interventions.
6. In the field of the environment and resource management, the Committee noted that a battery-free, solar-powered refrigerator had become available for use in homes and facilities that had only limited solar-lighting capabilities. The refrigerator was designed to function in arid and semi-arid regions, running on as little as 90-120 watts of rated photovoltaic power. The Committee also took note of the application of a waste-material disposal system for environmental protection.
7. The Committee took note of activities that had utilized information from remote sensing from several satellite sensors to combat coal fires in China, flooding in France and forest fires in Portugal in 2003.
8. The Committee recommended that it should continue its consideration of the item at its forty-eighth session, in 2005.

F. Space and society

9. In accordance with paragraph 45 of General Assembly resolution 58/89, the Committee continued to consider the agenda item entitled "Space and society". The Committee recalled that, in accordance with the work plan adopted by the Committee and approved by the General Assembly, the special theme for the focus of discussions for the period 2004-2006 should be "Space and education" (A/58/20, para. 239). According to the work plan, the Committee held discussions and presentations under the subject "Space in education and education in space".
10. The Committee heard the following presentations:
 - (a) "Activities of the African Regional Centre for Space Science and Technology Education—in English language", by E. Balogun of Nigeria;
 - (b) "Activities of the African Centre for Space Science and Technology—in French language", by A. Touzani of Morocco;
 - (c) "Activities of the Centre for Space Science and Technology Education in Asia and the Pacific", by V. Sundararamaiah of India;
 - (d) "Activities of the Regional Centre for Space Science and Technology Education in Latin America and the Caribbean", by T. Sausen of Brazil;
 - (e) "Global Learning and Observations to Benefit the Environment (GLOBE) programme", by L. Wigbels of the United States;
 - (f) "Education for a new age: the programmes of the Space Foundation", by E. Pulham of the United States.
11. The Committee noted with appreciation the valuable contribution made to education and capacity-building in space science and technology by the regional centres for space science and technology education, established in Africa, Asia and

the Pacific and Latin America and the Caribbean on the basis of affiliation with the United Nations.

12. The Committee noted with appreciation the significant levels of resources in infrastructure, in expert knowledge and in funding that the host Governments and institutions of the centres were providing for the operation of the centres and called on Member States within and outside the regions, space-related institutions and intergovernmental and non-governmental entities to support the operations of the centres.

13. The Committee noted with satisfaction that the Regional Centre for Space Science and Technology Education in Latin America and the Caribbean would be sending invitations to all States in the region to join the Governing Board of the Centre.

14. The Committee noted that the Space Education Programme of UNESCO aimed at enhancing space subjects and disciplines in schools and universities, particularly in developing countries, and raising awareness among the general public of the benefits of space technology for social, economic and cultural development. The Committee noted that UNESCO was the lead United Nations agency for the United Nations Decade of Education for Sustainable Development (2005-2014).

15. The Committee also noted the invitation from UNESCO to develop, within its Space and Education Programme, a few small education pilot projects on a regional basis. Such projects should be pedagogically sound and easy to disseminate and might include, for example the development of thematic brochures. The Committee welcomed the invitation and agreed that the United Nations Programme on Space Applications should establish contact with UNESCO with a view to launching those projects within the framework of the United Nations Decade of Education for Sustainable Development.

16. The Committee noted that data derived from outer space and services such as remote sensing and telecommunications were improving the lives of people throughout the world. The Committee also noted important applications of space technology in many fields, such as distance education, water resource management, disaster management, weather forecasting, transport, public safety, oceanography and fisheries, archaeology, mapping and many others.

17. The Committee noted that a number of national initiatives provided qualitative education by means of tele-education programmes aimed at educators and students at all levels, as well as remote areas with the latest teaching resources, vocational and teacher-training and adult education in fields such as women's empowerment, family planning and skills for local artisans.

18. The Committee noted with satisfaction that, at the global level, a large number of education and outreach activities and programmes for children, young people and the general public currently being established by space agencies and international organizations aimed at promoting awareness of the benefits of space science and technology and encouraging children to consider careers in the fields of mathematics and science.

19. The Committee noted that there were a number of national educational initiatives aimed at using content, materials and applications unique to space activities for training students and teachers, including the NASA Educator Astronaut

Programme, Explorer Schools Programme and Explorer Institutes and the Science and Technology Scholarship Program; “space camps” in Malaysia and the Republic of Korea, space science quizzes, rocket-launching and model rocket competitions, the Japan Aerospace Exploration Agency space education centre, the international space education board, the German Aerospace Centre “School Lab”, the Canadian space programme and the Canadian programme for the professional development of educators.

20. The Committee also noted a number of national education initiatives aimed at educating the general public on matters relating to outer space, including the astronaut costume design contest of Malaysia and general seminars, workshops, symposiums and lectures.

21. The Committee noted the utilization of the Internet for purposes of disseminating information on outer space and providing a resource for educators, students and the general public.

22. The Committee noted that World Space Week, observed each year from 4 to 10 October pursuant to General Assembly resolution 54/68 of 6 December 1999, contributed to the development of education and raised awareness about outer space, particularly among young people and the general public. The Committee noted that over 40 countries had participated in World Space Week in 2003 and that the theme and focus of the activities for 2004 would be “Space for sustainable development”.

23. The view was expressed that capacity-building in the use of space science and technology and their applications was fundamental to ensuring that space activities supported the global development agenda. Sound knowledge of the opportunities that space activities could offer was necessary to address critical issues such as the reduction of poverty, hunger, disease and the sustainable use of natural resources.

24. The view was expressed that improvements to education were essential for capacity-building in developing countries to enable the assimilation of the higher technologies required for space application programmes and that the increasing demand for quality education in professional colleges required a massive infusion of new infrastructure that would be difficult to accomplish by using conventional approaches. The need to enhance knowledge at all levels of education and the shortage of qualified educators and infrastructure could only be addressed by using satellite-based instruction and education.

25. The view was expressed that an Internet portal for capacity-building and space-related training resources should be established by the Office for Outer Space Affairs and workshops and symposiums should be organized by the Office on a regular basis to enable the exchange of experiences and information among youth.

26. The view was expressed that the use of space applications in relation to health was important for the development of States.

27. The view was expressed that education in space science and technology should be considered a primary goal of global space programmes to avoid future shortages of scientists and engineers. In addition, the migration of space professionals to a few developed countries could have the side effect of reducing the global space market. That delegation expressed the opinion that the Committee should consider making appropriate recommendations to member States on that issue. For instance, the participation of countries with lower space technology potential in international

space missions and projects could be recommended as a way of building global capacity.

G. Space and water

28. In accordance with paragraph 46 of General Assembly resolution 58/89, the Committee considered a new agenda item entitled "Space and water".

29. The Committee noted with satisfaction the addition of this item to its agenda. The Committee also noted that the General Assembly, in its resolution 58/217 of 23 December 2003, had proclaimed the period from 2005 to 2015 the International Decade for Action, "Water for Life".

30. The Committee heard a presentation entitled "Application of space-based technology in water resources and management in Nigeria: experiences and expectations", by C. Maduabuchi of Nigeria.

31. The Committee noted with satisfaction that several space- and water-related events had been held, such as the international workshop entitled "Earth Observation for Integrated Water Resources Management in Africa", held in Rabat in October 2003; the International Conference on Space and Water: Towards Sustainable Development and Human Security, held in the context of the International Air and Space Fair in Santiago in April 2004; and the upcoming Symposium on Water for the World: Space Solutions for Water Management, to be held in Graz, Austria, in September 2004.

32. The Committee noted that important initiatives had been undertaken since the issue had been raised during the forty-sixth session of the Committee. Among them was the "TIGER" initiative on Earth observation for integrated water resources management in Africa, developed in cooperation with the Office for Outer Space Affairs, UNESCO and CEOS in response to the World Summit on Sustainable Development.

33. The Committee noted that, in response to the deepening water crisis, space technology could offer the basis for a leap from a competitive to a cooperative approach to water management and for the joint integrated development and use of that increasingly scarce resource by providing data and information on the availability of water resources and water use. In that regard, the Committee also noted that space-based data were an important element in the promotion of international cooperation in water resource development and use, since such data could contribute to confidence-building among countries sharing the same water resources.

34. The Committee took note of the importance of up-to-date and accurate information on levels of sea and river water, approaching storms, rainfall and the state of water-related structures in preventing and mitigating the consequences of floods.

35. The Committee noted that the issue of water resources had been considered by United Nations bodies and at the national level for several decades and that the shortage of water resources was most acute in Africa and in Central, South and West Asia.

36. The Committee noted that groundwater was an important source of water for a number of countries and that remote sensing was useful in the search for groundwater prospect zones, as it provided basic information on geology, landforms, soils, land use and land cover, surface-water bodies and other variables promptly and reliably at less cost and with less manpower than conventional techniques.

37. The Committee further noted that space technology could be used to assess, among other things, precipitation activity, soil moisture, changes in underground water storage, flood areas, surface temperature, levels of radiation, and vegetation type and health, as well as to forecast growth of poisonous algae, in seas, lakes and rivers.

38. The Committee noted the ongoing use of satellites to protect water resources and identify and assess water-related problems, including various hydrological extremes such as El Niño and La Niña and monsoons, that could result in floods and droughts. Those satellites included the Synthetic Aperture Radar Satellite (RADARSAT)-1 of Canada, a series of remote sensing satellites of China, the China-Brazil Earth Resources Satellite (CBERS), Japan's missions on board national and foreign satellites, NigeriaSat-1 of Nigeria and operational and research satellites of the United States.

39. The Committee noted that remote sensing could provide local, regional and transboundary monitoring of water quality, including the impact of pollutants and erosion as indicated by changes in water colour, turbidity and/or biological activity. Remote sensing could also measure wetland boundaries and map surface vegetation and water, thereby helping to monitor the overall health of a region. The Committee also noted the need for the global water cycle to be observed by satellite, in order to reduce the uncertainty of local assessments and forecasts.

40. The Committee agreed that the scientific data on water resources provided by satellites, once converted into practical information, should be used to formulate policy and implement programmes, including those of the World Bank and other entities in the United Nations system.

41. The Committee agreed that it was essential to assess possible contributions by space technology to improving the management of water resources. In that regard, the Committee noted that States members and observers of the Committee and entities in the United Nations system should be invited to share their best practices in water resource management. The Committee invited the United Nations Development Programme (UNDP) and the World Bank to report on the potential for the implementation of space technology in national and international water resource management at the forty-eighth session of the Committee, in 2005.

42. The Committee appealed to national and international space agencies to share their knowledge and provide assistance to water management institutions. The Committee also invited its members to formulate and implement pilot projects in water resource management with the use of space technology.

43. The Committee agreed that more seminars and regional conferences should be held on the use of space-based applications in water resource management.

44. The Committee agreed to continue the consideration of this item at its forty-eighth session, in 2005.

45. The view was expressed that water resources management should become a priority issue for the United Nations Programme on Space Applications.

46. The Committee noted that, with global issues such as climate change, disease-monitoring, and human safety, which increasingly affected day-to-day life, the future role of satellite technology was likely to extend beyond the applications currently known. The Committee also noted that improved capabilities of future technologies would assist in providing near-real-time information products and render them increasingly user-friendly and more compatible with other data sources.
