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COMMITTEE ON THE PEACEFUL USES
OF OUTER SPACE

REPORT OF THE SCIENTIFIC AND TECHNICAL SUB-COMMITTEE
ON THE WORK OF ITS TWENTY-FOURTH SESSION

INTRODUCTION

1. The Scientific and Technical Sub-Committee of the Committee on the Peaceful Uses of Outer Space held its twenty-fourth session at United Nations Headquarters from 17 to 27 February 1987 under the chairmanship of Professor J. H. Carver (Australia).
2. Representatives of the following Member States attended the session: Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Chile, China, Colombia, Czechoslovakia, Ecuador, Egypt, France, German Democratic Republic, Germany, Federal Republic of, Greece, Hungary, India, Indonesia, Italy, Japan, Kenya, Lebanon, Mexico, Mongolia, Morocco, Netherlands, Nigeria, Pakistan, Philippines, Poland, Romania, Spain, Sweden, Syrian Arab Republic, Union of Soviet Socialist Republics, United Kingdom of Great Britain and Northern Ireland, United States of America, Uruguay, Venezuela, Viet Nam and Yugoslavia.
3. A representative of the Department of Technical Co-operation for Development of the United Nations Secretariat also attended the session.
4. Representatives of the following specialized agencies attended the session: Food and Agriculture Organization of the United Nations (FAO), International Telecommunication Union (ITU) and World Meteorological Organization (WMO).
5. Representatives of the European Space Agency (ESA), the Committee on Space Research (COSPAR) of the International Council of Scientific Unions (ICSU), the International Astronautical Federation (IAF), the International Maritime Satellite Organization (INMARSAT) and the International System and Organization of Space Communications (INTERSPUTNIK) also attended the session.

6. A list of the representatives of Member States, specialized agencies and other international organizations attending the session is contained in document A/AC.105/C.1/INF/16.

7. At the opening of the session, the Sub-Committee adopted the following agenda:

1. Adoption of the agenda.
2. Statement by the Chairman.
3. General exchange of views.
4. United Nations Programme on Space Applications and the co-ordination of space activities within the United Nations system.
5. Implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space.
6. Questions relating to remote sensing of the Earth by satellites.
7. Use of nuclear power sources in outer space.
8. Questions relating to space transportation systems and their implications for future activities in space.
9. Examination of the physical nature and technical attributes of the geostationary orbit.
10. Matters relating to life sciences, including space medicine.
11. Progress in the geosphere-biosphere (global change) programme.
12. Matters relating to planetary exploration.
13. Matters relating to astronomy.
14. The theme fixed for special attention of the 1987 session of the Scientific and Technical Sub-Committee: "Space communications for development".
15. Other matters:
 - (a) Other reports;
 - (b) Review of the future role and work of the Scientific and Technical Sub-Committee.
16. Report to the Committee on the Peaceful Uses of Outer Space.

Meetings and documentation

8. The Sub-Committee held 15 meetings.
9. A list of the documents which were before the Sub-Committee is provided in annex I.
10. At the opening meeting the Chairman made a statement outlining the work of the Sub-Committee at its current session. He also reviewed the activities of Member States in the field of space exploration, including important advances that had been achieved as a result of international co-operation during the past year.
11. At its 323rd and 325th meetings, the Chairman informed the Sub-Committee that requests had been received from the Permanent Observer of the Holy See, the Permanent Representative of Cuba and the Permanent Representative of Guatemala to attend the session. Following past practice, those delegations were invited to attend the current session of the Sub-Committee and to address it as appropriate. This was without prejudice to further requests of that nature and did not involve any decision of the Sub-Committee concerning status, but was a courtesy that the Sub-Committee extended to those delegations.
12. General statements were made by the following delegations: Australia, Austria, Brazil, Bulgaria, Canada, Chile, China, Colombia, Cuba, Czechoslovakia, German Democratic Republic, Hungary, India, Indonesia, Mexico, Mongolia, Nigeria, Pakistan, Poland, Romania, Sweden, United Kingdom, USSR, United States and Yugoslavia. Statements were also made by the representatives of FAO, ITU, COSPAR and IAF.
13. At the 327th meeting, the Expert on Space Applications made a statement outlining the activities carried out and planned under the United Nations Programme on Space Applications.
14. In accordance with paragraph 6 (b) (vii) of General Assembly resolution 41/64, a scientific symposium on the theme "Space communications for development", sponsored by COSPAR and IAF, was held in two sessions, entitled "Scientific considerations" and "Systems" respectively. During the first session of the symposium, experts from France (J. Voget, Ingénieur général, Direction générale des télécommunications) and the United States (J. V. Evans, Director, Comsat Laboratories) made presentations on Satellite communications for economic development. Representatives from INTERSPUTNIK (S. Kurilov, Director General, USSR), Telespazio (G. Quaglione, Deputy Director, Italy), INMARSAT (O. Lundberg, Director-General, Sweden), ISRO (Indian Space Research Organization), (U. R. Rao, Secretary, Department of Space, India) and AUSSAT (W. G. Gosewinckel, Managing Director, Australia) made presentations during the second session on the latest developments in space communications.
15. In accordance with paragraph 6 (b) (iv) of General Assembly resolution 41/64, Dr. Jack Eddy, University of Colorado, on behalf of COSPAR, made a presentation on progress in the geosphere-biosphere programme (global change).

16. During the session of the Sub-Committee, special technical presentations were made by Dr. Joan Hock, Director of the Assessment and Information Service Center of the National Oceanic and Atmospheric Administration of the United States, on remote sensing; by James R. Morrison, Deputy Director, International Affairs, National Aeronautics and Space Administration (NASA), United States, on progress in the geosphere-biosphere programme; by Astronaut Dr. Sally Ride, Special Assistant to the Administrator of NASA on the United States Investigation of the Challenger accident and the improvements being made in order to return the space shuttle to active status in the near future; by Dr. N. A. Semenov, Glavkosmos, USSR, on advances of the USSR in space transportation systems; by Dr. Arnauld E. Nicogossian, Director of the NASA Life Sciences programme, on Earth benefits from space biomedical research; by Academician Oleg Gazenko, Head of the Institute of Medical and Biological Problems of the USSR, on life sciences and space medicine; by Dr. O. F. Prilutsky, Academy of Sciences, USSR, on the latest results in solar system exploration and on space astronomy projects; by Dr. Tobias Owen, State University of New York, Stony Brook, on present status and future plans in planetary exploration; by Mr. Antoine de Levis Mirepoix, Mr. Pierre Bescoud and Mr. Jean-Claude Riverau on the current status and the planned improvements in the SPOT programme of France, being conducted in co-operation with Belgian and Swedish participation; and a joint presentation on the results from Infra-Red Astronomy Satellite (IRAS) by Mr. H. Gael Squibb, California Institute of Technology, United States, Dr. Charles Beichman, California Institute of Technology, United States, Dr. Peter Clegg, Queen Mary College, United Kingdom, and Professor H. J. Habing, University of Leiden, Netherlands.

Recommendations of the Scientific and Technical Sub-Committee

17. After considering the various items before it, the Sub-Committee, at its 337th meeting on 27 February 1987, adopted its report to the Committee on the Peaceful Uses of Outer Space containing its views and recommendations as set out in the paragraphs below.

- I. UNITED NATIONS PROGRAMME ON SPACE APPLICATIONS AND THE CO-ORDINATION OF SPACE ACTIVITIES WITHIN THE UNITED NATIONS SYSTEM
- II. IMPLEMENTATION OF THE RECOMMENDATIONS OF THE SECOND UNITED NATIONS CONFERENCE ON THE EXPLORATION AND PEACEFUL USES OF OUTER SPACE

18. The Sub-Committee conducted a joint consideration of the items "United Nations Programme on Space Applications and the co-ordination of space activities within the United Nations system" and "Implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space".

19. The Sub-Committee noted that the General Assembly, in paragraph 11 of resolution 41/64, had once again emphasized the urgency and importance of implementing fully the recommendations of the Second United Nations Conference on

the Exploration and Peaceful Uses of Outer Space (UNISPACE 82) as early as possible. The Sub-Committee noted that, in paragraph 7 of the same resolution, the General Assembly stated that, in the context of the Sub-Committee's consideration of this item, it was particularly urgent to implement the following recommendations:

"(a) All countries should have the opportunity to use the techniques resulting from medical studies in space;

"(b) Data banks at the national and regional levels should be strengthened and expanded and an international space information service should be established to function as a centre of co-ordination;

"(c) The United Nations should support the creation of adequate training centres at the regional level, linked, whenever possible, to institutions implementing space programmes; necessary funding for the development of such centres should be made available through financial institutions;

"(d) The United Nations should organize a fellowship programme through which selected graduates or post-graduates from developing countries should get in-depth, long-term exposure to space technology or applications; it is also desirable to encourage the availability of opportunities for such exposures on other bilateral and multilateral bases outside the United Nations system."

20. During the discussion of these items by the Sub-Committee, some delegations expressed the view that in order to promote international co-operation in the peaceful use of outer space, efforts should be focused on the elaboration and realization of major projects involving the application of space technology for the purposes of communications, navigation, rescue operations, remote sensing, use of natural resources, study and preservation of the biosphere, global weather forecasting and natural disaster warning system, and development of new sources of energy, materials and technology. They also spoke in favour of convening a new international conference or other forums to consider all the aspects of the use of outer space, which could, *inter alia*, adopt a programme of action for the future and establish the world space organization. Other delegations noted that considerable international co-operative activity was under way in most, if not in all, of these areas at the present time. They also expressed the view that there was no need for another international conference since the goals of the last conference, UNISPACE 82, had hardly been considered. It was their view that the considerable resources needed to convene a new conference would be better applied to supporting existing mechanisms for international co-operation.

21. In accordance with paragraph 8 of resolution 41/64, the Sub-Committee established a Working Group of the Whole to evaluate the implementation of the recommendations of UNISPACE 82 with a view to improving the execution of activities relating to international co-operation, particularly those included in the United Nations Programme on Space Applications, and to propose concrete steps to increase such co-operation as well as to make it more efficient. The Working Group was chaired by Mr. Gastón Lasarte (Uruguay); it held four meetings between 19 and 26 February 1987 and adopted its report (A/AC.105/C.1/WG.6/L.1)

on 26 February 1987. Having considered the report of the Working Group, the Sub-Committee decided at its 336th meeting to adopt that report, as contained in annex II. The recommendations which follow should be read in conjunction with the recommendations contained in the above report of the Working Group.

A. United Nations Programme on Space Applications

22. Regarding the expanded United Nations Programme on Space Applications, the Sub-Committee had before it the report of the United Nations Expert on Space Applications (A/AC.105/380). The report was supplemented by the statement by the Expert. The Sub-Committee noted that the United Nations Programme on Space Applications for 1986 had been carried out satisfactorily and commended the work accomplished by the Expert in carrying out his work programme as endorsed by the Sub-Committee. The Sub-Committee noted the appeal of the Expert to Member States and international organizations either to provide support for the Programme as a whole or to identify the specific activities of the Programme they would like to support and inform the Secretariat of the United Nations accordingly at the earliest opportunity.

23. The Sub-Committee noted with appreciation that since its last session, additional contributions had been offered by various Member States and organizations and that they had been acknowledged with appreciation in paragraph 29 of the Expert's report (A/AC.105/380) as well as under appropriate sections of the current report. The Sub-Committee further noted with appreciation that during its current session, the Government of Pakistan had announced a new contribution in the amount of \$12,000 in support of the Space Applications Programme.

1. 1986-1987

(a) Long-range fellowships for in-depth training

24. The Sub-Committee expressed its appreciation to the Governments of Austria, Brazil, the German Democratic Republic and the USSR as well as to ESA for having offered training fellowships for the 1986-1987 period, as shown in the annex to the Expert's report. The Sub-Committee noted with appreciation that the offers of fellowships had been renewed for 1987-1988 by these Governments and organization as described in paragraph 3 of the report.

(b) Technical advisory services

25. The Sub-Committee noted that, in response to requests received from Member States, technical advisory service missions had been carried out during 1986 in Ethiopia and Ghana as well as in connection with the expert meeting to discuss co-operation among Arab States in the field of remote sensing, as described in paragraph 4 (a) to (d) of the Expert's report. The Sub-Committee noted that technical advice had also been provided, from Headquarters, to Iraq.

26. The Sub-Committee noted that in 1987 the Space Applications Programme of the United Nations would continue to focus attention on the needs and requests of Member States in space science and technology and its related applications that had already been and were being submitted to the United Nations. The Sub-Committee noted that in 1987 technical assistance would continue to be offered in collaboration with other United Nations bodies; in this connection, consultations are in progress with the United Nations Development Programme to develop appropriate remote sensing programmes relevant to food production and resource management in the African region as described in paragraph 4 (b) of the Expert's report. In addition, the Space Applications Programme will be collaborating with the Government of China in developing a satellite communications and television education programme for China as described in paragraph 4 (c) of the report.

27. The Sub-Committee noted with satisfaction that, when it had become necessary to recruit personnel to provide technical advisory services in the field of space in response to requests from developing countries, due consideration was given to the importance of recruiting such personnel in accordance with established procedures and in a way that ensured the widest possible geographic distribution.

(c) United Nations workshops/training courses/seminars/meetings of experts

28. With regard to the activities of the Programme carried out in 1986, the Sub-Committee expressed its appreciation to: (a) the Governments of France and Italy as well as FAO for co-sponsoring the Eleventh United Nations/FAO International Training Course on Remote Sensing Applications in Agricultural Statistics, at FAO Headquarters in Rome and at Montpellier, France, from 5 to 30 May 1986 (A/AC.105/376); (b) the Government of Colombia for hosting and co-sponsoring, through its Empresa Nacional de Telecomunicaciones, the United Nations/ECLAC Meeting of Experts on Regional Co-operation in Space Science and Technology and its Applications, held at Cartagena, Colombia, from 16 to 20 June 1986 (A/AC.105/375); (c) the Government of Sri Lanka for co-sponsoring and hosting the United Nations Regional Meeting of Experts on Space Technology Applications in the Indian Ocean Region held at Colombo from 15 to 19 September 1986 (A/AC.105/374); (d) the Governments of France and Spain as well as ESA and FAO for co-sponsoring the United Nations/ESA Training Course on Drought Assessment and Vegetation Monitoring with Weather-Satellite and Other Space Data held at Maspalomas, Spain, from 22 September to 3 October 1986 (A/AC.105/377); (e) the Government of Mexico for hosting and co-sponsoring, through its Secretaría de Comunicaciones y Transportes, the United Nations Meeting of Experts on Space Science and Technology and its Applications within the Framework of Educational Systems, at Mexico, D.F., from 13 to 17 October 1986 (A/AC.105/378); and (f) the Government of Ecuador for hosting and co-sponsoring through its Centro de Levantamientos Integrados de Recursos Naturales por Sensores Remotos (CLIRSEN), the Third United Nations/WMO/FAO/ESA International Training Course on Remote Sensing Applications to Operational Agrometeorology and Hydrology, held at Quito, from 21 October to 7 November 1986 (A/AC.105/379).

29. The Sub-Committee took note of the status of the 1987 programme of United Nations workshops/training courses/seminars/meetings of experts, which included the

following activities as described in paragraphs 33 to 37 of the Expert's report (A/AC.105/380):

(a) The United Nations Meeting of Experts on Space Science and Technology and its Applications within the Framework of Educational Systems, to be held, in co-operation with the Government of the Federal Republic of Nigeria, at Lagos, from 27 April to 1 May 1987;

(b) The Twelfth United Nations/FAO International Training Course, which will focus on remote-sensing applications to marine fisheries to be held, in co-operation with the Government of Italy, at FAO Headquarters in Rome, from 11 to 30 May 1987;

(c) The Fourth United Nations/WMO/FAO/ESA International Training Course on Remote Sensing Applications to Operational Agrometeorology and Hydrology, to be held, in co-operation with the Government of Indonesia, at Jakarta, from 13 to 30 October 1987, for the benefit of Member States in the ESCAP region;

(d) The United Nations International Seminar on Space Communications, to be held in co-operation with the USSR, in Moscow, from 3 to 15 June 1987;

(e) The United Nations International Training Course on Remote Sensing Applications to Geological Sciences, to be held, in co-operation with the Government of the German Democratic Republic, at the Central Institute for Physics of the Earth of the Academy of Sciences of the German Democratic Republic at Potsdam and the Technical University at Dresden, from 5 to 24 October 1987.

(d) Promotion of greater co-operation in space science and technology

30. The Sub-Committee noted that the United Nations had co-operated with COSPAR in publishing the proceedings of a workshop on "Promotion of space research in developing countries" (Twenty-fifth Plenary Meeting of COSPAR, Graz, Austria, June-July 1984). It further noted that the United Nations collaborated with COSPAR and other international organizations in co-sponsoring a workshop on "Remote sensing of interest to developing countries" (Twenty-sixth Plenary Meeting of COSPAR, Toulouse, France, June-July 1986) and sponsored four participants to participate in the Plenary Meeting as well as in the workshop.

31. The Sub-Committee noted that the Space Applications Programme of the United Nations and COSPAR were currently undertaking negotiations on strengthening the participation of the developing countries in ongoing and future activities such as the International Geosphere-Biosphere Programme. It further noted that the Programme will be collaborating with COSPAR to organize a workshop on atmospheric sciences as a necessary basic discipline at the university level, for the Twenty-seventh Plenary Meeting of COSPAR in 1988.

2. 1988(a) United Nations workshops/training courses/seminars/meetings of experts

32. With regard to the workshops/training courses/seminars/meetings of experts proposed for 1988, the Sub-Committee recommended the approval of the programme of activities as outlined by the Expert in paragraph 42 (c) of his report (A/AC.105/380).

33. The Sub-Committee noted that the workshops/training courses/seminars/meetings of experts had been formulated with due attention to the recommendations of UNISPACE 82 and would include the following:

(a) United Nations Workshop on Telecommunications Technology for the benefit of Member States in the Caribbean subregion (one week);

(b) United Nations/ESA Workshop on Microwave Remote Sensing Technology to be held in the ESCAP region (one week);

(c) Thirteenth United Nations/FAO International Training Course on Remote Sensing Applications to Applied Hydrology and Water Resources, to be held at Rome, in co-operation with the Government of Italy (three weeks);

(d) United Nations/ESA Training Course on Drought Assessment and Vegetation Monitoring using Meteorological Satellite and other Space-Related Data, for the benefit of drought-stricken States of Africa and conducted in English (three weeks);

(e) A United Nations international symposium on space applications for communications and television education through satellite technology, to be held at Beijing, in co-operation with the Government of China (one week);

(f) United Nations meeting of experts on marine resources and coastal environment management for the Gulf of Guinea and the Atlantic shores of West Africa (one week).

34. In taking note of the above programme of activities for 1988, the Sub-Committee welcomed the offers from the Governments of China and Italy as well as from FAO and ESA to host/co-sponsor the workshops/training courses/seminars/meetings of experts described above.

(b) Other activities proposed for 1988

35. The Sub-Committee noted the proposed activities for 1988, described by the Expert in paragraphs 41 and 42 of his report (A/AC.105/380) - other than workshops and training courses (para. 42 (c)) - and in his statement, and it expressed the hope that sufficient voluntary contributions would be offered so that the Expert could implement the programme activities for 1988 as proposed.

B. International space information service

36. With regard to the publication Education, Training, Research and Fellowship Opportunities in Space Science and Technology and its Applications: A Directory, the Sub-Committee noted that an addendum to that Directory (A/AC.105/366/Add.1) had been issued. The Sub-Committee noted that further addenda would be issued as additional information was received and that the Directory would be updated approximately every three years.

37. The Sub-Committee also noted that in 1987 plans were in progress to issue at a future date a directory on publications and literature, with particular emphasis on remote sensing and photogrammetry, in collaboration with the International Society for Photogrammetry and Remote Sensing (ISPRS).

C. Studies

38. The Sub-Committee took note of the report (A/AC.105/C.1/L.152/Add.1-5) which the Secretariat had prepared as requested by the Committee on the Peaceful Uses of Outer Space at its 1986 session. 1/ The report contained the views of Member States on how far the five studies had benefited them in putting to practice the findings of these studies.

39. The Sub-Committee noted that the preparation of certain studies and reports on subjects of relevance to the recommendations of UNISPACE 82 would be undertaken pursuant to the recommendations of the Working Group (see annex II).

D. Co-ordination of space activities within the United Nations system and inter-agency co-operation

40. The Sub-Committee noted that the General Assembly, at its forty-first session, had reaffirmed its request that all organs, organizations and bodies of the United Nations system and other intergovernmental organizations working in the field of outer space or on space-related matters should co-operate in the implementation of the recommendations of UNISPACE 82.

41. In that connection, the Sub-Committee noted with satisfaction that the eighth Inter-Agency Meeting on Outer Space Activities had been convened by the Administrative Committee on Co-ordination at Vienna and hosted by UNIDO from 1 to 3 October 1986, and that its report (ACC/1986/PG/14) was before the Sub-Committee. The Sub-Committee noted the information provided on the progress achieved in the co-ordination of space activities among organizations within the United Nations system and expressed its appreciation for the report of the Secretary-General entitled "Co-ordination of outer space activities within the United Nations system: programmes of work for 1987 and 1988 and future years" (A/AC.105/373).

42. The Sub-Committee continued to stress the necessity of ensuring continuous and effective consultations and co-ordination in the field of outer space activities

among organizations within the United Nations system and the avoidance of duplication of activities. In that connection, it noted with satisfaction that the next Inter-Agency Meeting was being planned in the latter part of 1987 to consider, in particular, the participation of the specialized agencies and other organizations within the United Nations system in the implementation of the recommendations of UNISPACE 82.

43. Regarding resources, the Sub-Committee reaffirmed its view that the United Nations, in implementing the recommendations of UNISPACE 82, should continue to seek the support of UNDP and other international funding institutions. The Sub-Committee noted that UNDP had taken note of General Assembly resolution 37/90 and the mandated and expanded activities of the United Nations Programme on Space Applications contained in that resolution, and that it had communicated those to its field offices. Developing countries, acting on their own behalf or together on a regional basis, can also request funding from the national or regional allocations of UNDP to support national or regional activities. In furtherance of the implementation of UNISPACE 82 recommendations, the Sub-Committee reiterated its request to the Secretariat to take note of, and operate within, the above UNDP funding procedures. In this connection, the Sub-Committee noted that attempts were being made by the Expert to seek UNDP support for the Programme.

E. Regional and interregional mechanisms of co-operation

44. The Sub-Committee noted that the General Assembly, in its resolution 41/64, had reaffirmed its approval of the recommendation of UNISPACE 82 regarding the establishment and strengthening of regional mechanisms of co-operation and their promotion and creation through the United Nations system. The Sub-Committee noted with satisfaction that, in carrying out various activities in the implementation of recommendations of UNISPACE 82, the Secretariat had sought to strengthen those mechanisms. In particular, the Sub-Committee noted with satisfaction that the activities described in paragraphs 9 to 16 of the Expert's report (A/AC.105/380) referring to the United Nations/ECLAC Meeting of Experts on Regional Co-operation in Space Science and Technology and its Applications, held at Cartagena, Colombia, in June 1986, and to the United Nations Regional Meeting of Experts on Space Technology Applications in the Indian Ocean Region, held at Colombo, Sri Lanka, in September 1986, had important implications for regional mechanisms of co-operation.

III. QUESTIONS RELATING TO REMOTE SENSING OF THE EARTH BY SATELLITES

45. In accordance with General Assembly resolution 41/64, the Sub-Committee continued its consideration of questions relating to remote sensing of the Earth by satellites.

46. The Sub-Committee welcomed the successful completion of the Legal Sub-Committee's work on the legal principles to govern remote sensing of the Earth by satellites which had been adopted by the General Assembly in resolution 41/65.

47. In the course of the debate, delegations reviewed the national and co-operative programmes in remote sensing. Examples were given of national programmes in developing and developed countries and of international programmes based on bilateral, regional and international co-operation, including programmes of technical co-operation between developing countries. Countries with advanced capabilities in this field, including some developing countries, described programmes to provide assistance to other developing countries.

48. The Sub-Committee reiterated its view that remote sensing from outer space should be carried out, taking into account the fundamental urgent need to provide appropriate and non-discriminatory assistance to meet the needs of the developing countries. Some delegations gave particular emphasis to the fact that remote sensing activities should be conducted on the basis of respect for the principle of full and permanent sovereignty of all States and peoples over their own wealth and natural resources, with due regard to the rights and interests, in accordance with international law, of other States and entities under their jurisdiction and such activities should not be conducted in a manner detrimental to the legitimate rights and interests of the sensed State.

49. The Sub-Committee emphasized the importance of the availability of remote sensing data and analysed data at reasonable cost and in a timely manner. It noted the continuing programmes of France, the USSR and the United States for remote sensing satellites and planned remote sensing satellite systems of Brazil, Canada, China, India, Japan and the European Space Agency. In this connection, the Sub-Committee noted that special presentations were given on remote sensing by the United States and French experts as mentioned in paragraph 16 of the present report.

50. The Sub-Committee recommended that this item should be retained on its agenda as a priority item for the next session and that sufficient time should be allocated for its consideration.

IV. USE OF NUCLEAR POWER SOURCES IN OUTER SPACE

51. In accordance with General Assembly resolution 41/64, the Sub-Committee continued its consideration of the use of nuclear power sources in outer space.

52. The Sub-Committee welcomed the endorsement by the General Assembly in resolution 41/64, paragraph 9, of the recommendation and the agreements reached at its last session with respect to the use of nuclear power sources in outer space.

53. A working paper (A/AC.105/C.1/1987/WP.1) was submitted by Canada for discussion on safety assessments and notifications and on guidelines and criteria for safe use.

54. The Sub-Committee noted with satisfaction the progress achieved at the twenty-fifth session of the Legal Sub-Committee with regard to the elaboration of draft principles relevant to the use of nuclear power sources in outer space. It also welcomed the conclusion of the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in case of a Nuclear Accident or

Radiological Emergency, which could cover consequences on the Earth of accidents with space objects carrying nuclear power sources. The Sub-Committee stressed the need for the widest possible adherence to these Conventions.

55. In this context, the Sub-Committee underlined the need to elaborate the criteria for the safe use of nuclear power sources in outer space.

56. The Sub-Committee agreed that the efforts to formulate safety criteria for the use of nuclear power sources should be based on, but not limited to, texts agreed upon by the Sub-Committee or its Working Group on the Use of Nuclear Power Sources in Outer Space as reflected in their reports, in particular, document A/AC.105/287, annex II.

57. The Sub-Committee was of the opinion that reactors should not be activated until the space objects carrying them had reached their planned operating orbit.

58. The Sub-Committee felt that the question should be considered further of whether nuclear reactors in space should only use highly enriched uranium as the fissionable material, in order to avoid significant problems arising from breeding or utilizing plutonium.

59. The Sub-Committee noted that nuclear safety should be ensured in all phases of a mission of a space object with nuclear power sources on board, and identified the need to consider possible additional safety criteria that might be necessary to prevent, or cope with, events other than unplanned re-entry into the atmosphere alone.

60. The Sub-Committee noted that in all phases of a mission of a space object with nuclear power sources on board, the recommendations of the International Commission on Radiological Protection (ICRP) should be applied where relevant.

61. The Sub-Committee recommended that guidelines and criteria for the safe use of nuclear power sources should be reviewed, e.g. 10 years after adoption.

62. The Sub-Committee agreed that most developing countries were in a peculiar situation with regard to their inability to monitor the re-entry of a malfunctioning space object with a nuclear power source on board, and to institute necessary mitigation measures and to assess the extent of damage to the atmosphere immediately above them. The Sub-Committee, therefore, felt that it should further examine the modalities for assistance to developing countries to improve their ability to cope with problems of radiation caused by any emergency relating to the unplanned re-entry of a space object with a nuclear power source on board. In this context, the Sub-Committee took note of article 2 (6) of the Convention on Assistance in case of a Nuclear Accident or Radiological Emergency, which provided for specific responses by the International Atomic Energy Agency (IAEA) upon request.

63. The Sub-Committee reconfirmed the need for guidance to States as regards pre-planning of area monitoring and countermeasures for protection of the

population and the environment in case of radioactive contamination of their territory from a nuclear power source carried by a space object.

64. Some delegations expressed the view that, in addition to the ongoing work in the Sub-Committee, the Committee on the Peaceful Uses of Outer Space should invite IAEA to consider the possibility of preparing, within the mandate of the Agency, a document containing advice to States on pre-planning of area monitoring and countermeasures for protection of the population and the environment in case of an accident involving dispersal of radioactive material from a nuclear power source after re-entry. They suggested that the elaboration of such a document be based on the results so far of the work of the Sub-Committee and material presented to it on the subject-matter. Other delegations did not express the same view and stressed the need for further consideration of this subject.

65. The view was expressed that the Sub-Committee should be cautious about appearing to define the scope of agreements negotiated in other international organizations.

66. Regarding the future of the Working Group on the Use of Nuclear Power Sources in Outer Space, some delegations expressed the view that the Working Group should be reconvened at the next session of the Sub-Committee and sufficient time should be allocated to it since, in their view, that was the most appropriate forum to achieve progress on outstanding questions and not IAEA, whatever the relevance of the recently concluded work of that agency might have been. Some delegations were of the view that the reconvening of the Working Group was essential to take advantage of the expertise available with regard to outer space matters and that its work was required as a basis for continued progress in the Legal Sub-Committee. The same delegations noted with satisfaction that the adoption by the Legal Sub-Committee, at its twenty-fifth session, of two principles on notification and assistance to States, was greatly facilitated by the technical support provided by the Scientific and Technical Sub-Committee. Other delegations were of the view that there was no need to reconvene the Working Group as the findings of that Working Group so far were entirely adequate for a successful conclusion of the Sub-Committee's work. These delegations considered the question of the safe use of nuclear power sources in outer space as an important aspect of the task of establishing the general régime of the safe development of nuclear energy. In their view, IAEA was the most appropriate forum to consider and elaborate various aspects of such a régime, including the criteria for the safe use of nuclear power sources in outer space.

67. The Sub-Committee recommended that this item should be retained on its agenda as a priority item.

V. QUESTIONS RELATING TO SPACE TRANSPORTATION SYSTEMS AND
THEIR IMPLICATIONS FOR FUTURE ACTIVITIES IN SPACE

68. In accordance with General Assembly resolution 41/64, the Sub-Committee continued its consideration of this item.

69. In the course of discussion, delegations reviewed the national and co-operative programmes in space transportation systems. In particular, the Sub-Committee noted that:

(a) In 1986, China had launched a Scientific Exploration and Technical Experimentation Satellite using CZ-2 vehicle, and an operational communications and broadcasting satellite was put into the geostationary orbit using CZ-3 vehicle. In 1990, China would implement an improved CZ vehicle capable of placing a 2.5-3 tons payload into the geostationary transfer orbit. In future, China would launch application satellites using CZ launch vehicle series, including meteorological satellite, Earth resources satellite, large-capability communications and broadcasting satellite, etc.;

(b) India continued to develop the ASLV launch vehicle capable of launching a 150 kg satellite, scheduled for its first launching in March 1987. It also continued to develop the polar satellite launch vehicle which will be capable of placing a 1,000 kg satellite in a 900 km polar sunsynchronous orbit;

(c) Japan successfully conducted the first test flight of H-I launch vehicle in 1986, proving its cryogenic engine technology. The last flight of N-II launch vehicle placed Japan's first Earth observation satellite, MOS-1, into orbit in February 1987. N-II was phased out and operation of H-I will be started. Japan continued its full-scale development of H-II launch vehicle capable of launching 2,000 kg-class payload into geostationary orbit, the first test flight of which was targeted in 1992;

(d) The USSR launched 114 various space objects in 1986, including Cosmos, Molnya, Raduga, Meteor, Horizon, and Ekran series satellites, manned and un-manned spaceships Soyuz T-15 and Soyuz TM, cargo spaceships Progress 25, 26 and orbital space station Mir. Multiplied launches of several Cosmos series satellites were carried out using one launch vehicle. Multipurpose programme of Halley's Comet exploration by means of interplanetary probes Vega 1, 2 was successfully fulfilled. The implementation of the programme of manned flights using orbital space stations Salyut 7 and Mir and transport vehicles Soyuz T, Progress and Cosmos series were continued, and for the first time in world practice the flight of manned ship from the space station to another was carried out. At the present time, there were in orbit two concurrent space stations: Salyut 7 and Mir;

(e) The United Kingdom continued its studies of a single-stage-to-orbit, horizontal-take-off-and-landing reusable space vehicle which might be operational at the turn of the century;

(f) The space shuttle Challenger accident that took place in January 1986, along with the subsequent investigation and recovery activities, were the dominant events in civil space for the United States over the past year. The structural failure that caused the accident had been identified and was being corrected. The next flight was being planned for February 1988. Additionally, the United States was moving away from a philosophy of almost total reliance on the shuttle towards a mixed-fleet concept. Renewed energy was being placed behind the commercial launch vehicle service industry and NASA was reshaping the management of the Space Transportation System to improve direction and control of the programme;

(g) ESA continued to develop the Ariane launcher family. It also continued its preparatory programmes for a spaceplane Hermes and the ESA project to develop concepts for modules of a space station system under the name Columbus;

(h) France presented a progress report on its continuing activities in the area of space transportation systems.

70. The Sub-Committee also noted the presentations made on progress in space transportation systems by the experts of the United States and the Soviet Union as mentioned in paragraph 16 of the present report.

71. The Sub-Committee noted the developments in various programmes related to space transportation and stressed the importance of international co-operation in this field in providing all countries with access to the benefits of space science and technology.

72. The Sub-Committee recommended that this item be retained on its agenda for the next session.

VI. EXAMINATION OF THE PHYSICAL NATURE AND TECHNICAL ATTRIBUTES OF THE GEOSTATIONARY ORBIT

73. In accordance with General Assembly resolution 41/64, the Sub-Committee continued its consideration of this item.

74. During the course of the discussion of this agenda item, delegations reiterated and elaborated on the views which had been expressed at earlier sessions and which have been reflected in earlier reports of the Committee and its two Sub-Committees. 2/

75. Some delegations expressed the view, with respect to the efficient utilization of the geostationary orbit, that the technological options which some had proposed to establish for the purpose of increasing the capacity of the orbit/spectrum resource were more sophisticated, complex and costly, thereby reducing the possibilities for the developing countries to have access to appropriate orbital positions practically and economically.

76. The Sub-Committee recommended that its consideration of this item be continued at its next session and reiterated its request that the study of the physical nature and technical aspects of the geostationary orbit continue to be updated as required (A/AC.105/203 and Add.1-4).

VII. MATTERS RELATING TO LIFE SCIENCES, INCLUDING SPACE MEDICINE

77. In accordance with General Assembly resolution 41/64, the Sub-Committee considered matters relating to life sciences, including space medicine. The Sub-Committee heard special presentations on this question by Soviet and United States experts, as mentioned in paragraph 16 of the present report.

78. The Sub-Committee noted that studies of human physiology under conditions of manned space flight had led to important advances in medical knowledge. The technology that had been developed for monitoring the conditions of crews in space had resulted in equipment that could be useful in conventional medicine for both therapeutic and preventive purposes, such as measuring blood circulation, monitoring and regulating heart function and delivering precise dosages of therapeutic drugs. Studies of nutrition and metabolism relating to space flight had provided important new knowledge of human nutrition and metabolism, indicating in particular how human requirements might vary under different environmental circumstances.

79. The Sub-Committee noted that space studies in life sciences and medicine had important potential benefits for all countries and that efforts should be made to promote international co-operation to enable all countries to benefit from those advances.

80. The Sub-Committee recommended that its consideration of the item be continued at its next session.

VIII. PROGRESS IN THE GEOSPHERE-BIOSPHERE (GLOBAL CHANGE) PROGRAMME

81. In accordance with General Assembly resolution 41/64, the Sub-Committee considered progress in the geosphere-biosphere (global change) programme.

82. The Sub-Committee noted with satisfaction that following its recommendation and that of the parent Committee, which were endorsed by the General Assembly, COSPAR, at the invitation of the Sub-Committee, had made a special presentation to the Sub-Committee on progress in the International Geosphere-Biosphere Programme. The Sub-Committee expressed appreciation to COSPAR for the very informative presentation. The Sub-Committee also noted another special presentation given on progress in the geosphere-biosphere programme as mentioned in paragraph 16 of the present report.

83. The Sub-Committee noted the Global Geospace Science Programme, which was part of the International Solar-Terrestrial Physics Programme and was a combined effort of Japan, the United States and ESA, which in turn was closely co-ordinated with a similar and complementary programme conducted by the USSR called "Interbol" on solar-terrestrial relationship. The Sub-Committee also took note of the International Geosphere-Biosphere Programme, in which space science and technology played a crucial role.

84. The Sub-Committee noted that those global researches of the geosphere-biosphere had great significance for mankind and agreed that it should remain informed so as to be able to facilitate international co-operation in that important area.

85. The Sub-Committee recommended that its consideration of the item be continued at its next session.

IX. MATTERS RELATING TO PLANETARY EXPLORATION

86. In accordance with General Assembly resolution 41/64, the Sub-Committee considered matters relating to planetary exploration. The Sub-Committee heard special presentations on this question by Soviet and United States experts, as mentioned in paragraph 16 of the present report.

87. The Sub-Committee noted the great advances that had been made in recent years in the acquisition of knowledge of the nature and evolution of the planets, asteroids and comets. Spacecraft from a number of countries had made observations of Venus, Mars, Jupiter, Saturn, Uranus and Halley's Comet that had revealed many new and surprising features of those bodies, and a number of missions were being planned for the future for further studies of the planets and studies of asteroids and other comets. The Sub-Committee noted the importance of international co-operation in those missions and the interest that they held for all countries.

88. The Sub-Committee recommended that its consideration of the item be continued at its next session.

X. MATTERS RELATING TO ASTRONOMY

89. In accordance with General Assembly resolution 41/64, the Sub-Committee considered matters relating to astronomy. The Sub-Committee heard special presentations on this question by experts from the Netherlands, the USSR, the United Kingdom and the United States, as mentioned in paragraph 16 of the present report.

90. The Sub-Committee noted that the use of astronomical spacecraft for making observations from above the atmosphere had greatly advanced knowledge of the universe by allowing observations in all regions of the electromagnetic spectrum. Studies at infrared, visible, ultraviolet, X-ray and gamma-ray wavelengths had provided new information concerning the evolution of stars, galaxies and the universe as a whole, and further satellites were being developed to gather new information. Astronomical observations from the ground and aircraft had also made important contributions to that field. The Sub-Committee noted that international co-operation had allowed a large number of countries to participate in the interpretation of the data from those satellites.

91. The Sub-Committee recommended that its consideration of the item be continued at its next session.

XI. THEME FOR THE SPECIAL ATTENTION OF THE 1987 SESSION: "SPACE COMMUNICATIONS FOR DEVELOPMENT"

92. During the current session, the Sub-Committee paid special attention to the theme "Space communications for development". In this connection, the Sub-Committee noted with satisfaction that, following its recommendation and that of the Committee and in accordance with General Assembly resolution 41/64, COSPAR

and IAF had, at the invitation of the Sub-Committee, conducted a symposium in two sessions: session I on "scientific considerations" on 17 February and session II on "Systems" on 17 and 18 February. The Sub-Committee expressed appreciation to COSPAR and IAF for the very instructive symposium.

93. The Sub-Committee also noted that a meeting was held at Columbia University, New York, on 16 February 1987, on the same theme of "Space communications for development", at which experts from Brazil, China, Indonesia, Mexico and the United States spoke. An information report on this meeting was circulated as document A/AC.105/C.1/L.154.

* * *

94. The Sub-Committee noted that the discussion of the items "Matters relating to life sciences, including space medicine", "Progress in the geosphere-biosphere (global change) programme", "Matters relating to planetary exploration", and "Matters relating to astronomy" was beneficial, and attracted great interest. To promote international co-operation in those fields, it was suggested that it would be desirable to announce the possibilities for participation in the projects outlined under the items mentioned above through the United Nations International Space Information Service in addition to others existing channels.

XII. OTHER MATTERS

(a) Other reports

95. The Sub-Committee welcomed the report of WMO on its tropical cyclone programme (A/AC.105/381). The Sub-Committee noted that the report highlighted developments up to June 1986 and requested WMO to continue to report on its work in this field.

96. The Sub-Committee expressed its appreciation to COSPAR for its report on the progress of space research 1985-1986 (A/AC.105/C.1/L.149) and to IAF for its report on highlights of space technology 1986 (A/AC.105/C.1/L.150).

97. The Sub-Committee noted with appreciation the participation in its session of representatives from United Nations bodies, specialized agencies and permanent observers, and found the reports/statements they had made helpful in enabling the Sub-Committee to fulfil its role as "focal point" for international co-operation.

(b) Review of the future role and work of the Scientific and Technical Sub-Committee

98. The Sub-Committee felt that it had already taken steps to improve its methods of work, enhance the technical content of its discussions, and promote opportunities for developing countries. It noted that these improvements had been made to keep abreast of the latest advances in space activities and potential avenues for international co-operation and were no more evident than in the agenda of the twenty-fourth session of the Sub-Committee.

99. The Sub-Committee, however, felt that the agenda could be further improved with respect to items relating to remote sensing and space communications. It expressed the view that an important step in adding greater scientific and technical content to the Sub-Committee's deliberations had been the selection of special themes for the 1986 and 1987 sessions with the assistance of IAF and COSPAR and that this practice had been an outstanding success and should be continued. It noted that the special seminars on "Remote Sensing for Developing Countries" and "Space Communications for Development" had offered valuable insights as to the potential of these technologies for making significant contributions to developing countries. The Sub-Committee is in a position to explore these possibilities.

100. The Sub-Committee agreed that for its next session the agenda item on remote sensing should continue as a priority item and be revised and entitled "Matters relating to remote sensing of the Earth by satellites including, inter alia, applications for developing countries". The Sub-Committee could consider advances in the use of remote sensing data for applications relevant to the needs of developing countries; for example, the use of remote sensing for drought early warning and monitoring, for agricultural and fisheries management, and for monitoring short and long term climate change. The Sub-Committee agreed that Member States, as well as international organizations, such as IAF, COSPAR, WMO and FAO, should be invited to provide information on national and international programmes. The Sub-Committee felt that special attention could be given to many of the international programmes which contribute to our understanding of the global environment, including the World Climate Research Program, the International Satellite Land Climatology Program, and the International Satellite Cloud Climatology Program. Opportunities for international co-operation in experimental and operational data applications could also be explored.

101. The Sub-Committee felt that the practical applications of space communications technology could be considered in detail by the Sub-Committee. It noted that today, almost every country utilizes the services of national and international satellite communications systems, and several developing countries now operate their own communications spacecraft. The Sub-Committee felt that Member States and international organizations, such as INTELSAT, INMARSAT and INTERSPUTNIK could provide information on current and planned programmes as well as examine new advances of particular interest to developing countries. In this regard, it was agreed that the Sub-Committee, at its next session, should augment the agenda item on the geostationary orbit with an item entitled "Examination of the physical nature and technical attributes of the geostationary orbit. Examination of its utilization and applications, including, inter alia, in the field of space communications, as well as other questions relating to space communications developments, taking particular account of the needs and interests of developing countries".

102. In light of the general financial crisis in the United Nations, as well as its own heavy workload, the Sub-Committee felt that it was important that the allotted time be used in the most efficient, effective, and flexible manner in order to give adequate consideration to the substantive agenda items and to the special theme.

103. The Sub-Committee recommended that the agenda of its twenty-fifth session include the following priority items:

(a) Consideration of the United Nations Programme on Space Applications and the co-ordination of space activities within the United Nations system;

(b) Implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE 82);

(c) Matters relating to remote sensing of the Earth by satellites including, inter alia, applications for developing countries;

(d) The use of nuclear power sources in outer space.

104. The Sub-Committee also recommended that the agenda of the twenty-fifth session include the following items:

(a) Question relating to space transportation systems and their implications for future activities in space;

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

(c) Matters relating to life sciences, including space medicine;

(d) Progress in the geosphere-biosphere (global change) programme;

(e) Matters relating to planetary exploration;

(f) Matters relating to astronomy;

(g) The theme fixed for special attention of the 1988 session of the Scientific and Technical Sub-Committee: "Microgravity Experiments in Space and Their Applications".

105. The Sub-Committee recommended that regarding agenda item (d) in paragraph 104 above, COSPAR and IAF should be invited to present reports and arrange a special presentation on progress in geosphere-biosphere (global change) programme. The Sub-Committee further recommended that regarding agenda item (g) in paragraph 104 above, COSPAR and IAF should be invited to arrange a symposium with as wide a participation as possible, on the theme "Microgravity Experiments in Space and Their Applications", to be held during the first week of the Sub-Committee's session after the adjournment of its meetings to complement discussions within the Sub-Committee.

106. With regard to the dates for the twenty-fifth session, the Sub-Committee recommended that its meetings be scheduled from 15 to 26 February 1988.

XIII. TRIBUTE

107. The Sub-Committee noted that Dr. John A. Howard, Chief of the Remote Sensing Centre of FAO, was going to retire this year after representing FAO at the Sub-Committee for 14 years. The Sub-Committee expressed appreciation for his co-operation and wished him well in his retirement.

Notes

1/ Official Records of the General Assembly, Forty-first Session, Supplement No. 20 (A/41/20 and Corr.1), para. 34.

2/ A/AC.105/267, para. 69; A/AC.105/271, para. 41; A/AC.105/369, paras. 87 and 88; Official Records of the General Assembly, Thirty-fifth Session, Supplement No. 20 (A/35/20), para. 43; and ibid., Thirty-sixth Session, Supplement No. 20 (A/36/20), para. 46.

Annex I

DOCUMENTS BEFORE THE SCIENTIFIC AND TECHNICAL SUB-COMMITTEE
AT ITS TWENTY-FOURTH SESSION

Item 1 - Adoption of the agenda

A/AC.105/C.1/L.151 and Corr.1 Provisional agenda, with annotations, for the
twenty-fourth session

Item 4 - United Nations Programme on Space Applications and the co-ordination of
space activities within the United Nations system

Item 5 - Implementation of the recommendations of the Second United Nations
Conference on the Exploration and Peaceful Uses of Outer Space

A/AC.105/366/Add.1 Education, Training, Research and Fellowship
Opportunities in Space Science and Technology
and its Applications: Directory (Addendum 1)

A/AC.105/373 Co-ordination of outer space activities within
the United Nations system: programmes of work
for 1987 and 1988 and future years

A/AC.105/374 Report on the United Nations Regional Meeting of
Experts on Space Technology Applications in the
Indian Ocean Region, held at Colombo, 1986

A/AC.105/375 Report on the United Nations/ECLAC Meeting of
Experts on Regional Co-operation in Space
Science and Technology and its Applications,
held at Cartagena, Colombia, 1986

A/AC.105/376 Report on the Eleventh United Nations/FAO
International Training Course on Remote Sensing
Applications in Agricultural Statistics held in
Rome and at Montpellier, France, 1986

A/AC.105/377 Report on the United Nations/ESA Training Course
on Drought Assessment and Vegetation Monitoring
with Weather-Satellite and Other Space Data,
held at Maspalomas, Spain, 1986

A/AC.105/378 Report of the United Nations Meeting of Experts
on Space Science and Technology and its
Applications within the Framework of Educational
Systems, held at Mexico City, 1986

- A/AC.105/379 Report on the Third UN/WMO/FAO/ESA International Training Course on Remote Sensing Applications to Operational Agrometeorology and Hydrology, held at Quito, 1986
- A/AC.105/380 Report of the United Nations Expert on Space Applications to the Scientific and Technical Sub-Committee
- ACC/1986/PG/14 Report of the Inter-Agency Meeting on Outer Space Activities held at UNIDO Headquarters, Vienna, 1-3 October 1986

Item 7 - Use of nuclear power sources in outer space

- A/AC.105/C.1/1987/WP.1 Use of nuclear power sources in outer space: working paper submitted by Canada

Item 14 - The theme fixed for special attention of the 1987 session of the Scientific and Technical Sub-Committee: "Space communications for development"

- A/AC.105/C.1/L.154 Space communications for development: letter dated 20 February 1987 from the Representative of the United States of America to the Scientific and Technical Sub-Committee of the Committee on the Peaceful Uses of Outer Space

Item 15 - Other matters:

- (a) Other reports
- (b) Review of the future role and work of the Scientific and Technical Sub-Committee

- A/AC.105/381 WMO Tropical Cyclone Programme: report by the World Meteorological Organization
- A/AC.105/C.1/L.149 Progress of space research 1985-1986: report submitted by the Committee on Space Research (COSPAR) of the International Council of Scientific Unions (ICSU)
- A/AC.105/C.1/L.150 Highlights in space technology and applications 1986: report submitted by the International Astronautical Federation (IAF)

Working Group of the Whole to Evaluate the Implementation of the Recommendations of UNISPACE 82

- A/41/560 and Corr.1 Implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE 82): report of the Secretary-General
- A/AC.105/C.1/L.152 and Add.1-5 Views of Member States on how far the five studies benefited the Member States in putting into practice the findings of these studies
- A/CONF.101/11 and Corr.1 List of conclusions and recommendations of UNISPACE 82: note by the Secretary-General of the Conference
- A/AC.105/C.1/1987/WP.2 Implementation of the recommendations of UNISPACE 82: working paper submitted by the States members of the Group of Latin American States

Annex II

REPORT OF THE WORKING GROUP OF THE WHOLE TO EVALUATE THE
IMPLEMENTATION OF THE RECOMMENDATIONS OF UNISPACE 82

1. The Working Group of the Whole to Evaluate the Implementation of the Recommendations of UNISPACE 82, established by the Scientific and Technical Sub-Committee in accordance with General Assembly resolution 41/64 of 3 December 1986 (para. 8), with a view to improving the execution of activities relating to international co-operation, particularly those included in the United Nations Programme on Space Applications, and to propose concrete steps to increase such co-operation as well as to make it more efficient, held a series of meetings at United Nations Headquarters between 19 and 26 February 1987.
2. Mr. Gastón Lasarte (Uruguay) was elected Chairman of the Working Group. The Chairman, in his opening statement, examined the mandate of the Working Group, the implementation of the recommendations of UNISPACE 82 a/ concerning space activities within the United Nations system and the financial situation of the United Nations Programme on Space Applications.
3. In considering this item, the Working Group had before it: (a) a report of the Secretary-General on international co-operation in the peaceful uses of outer space (A/41/560 and Corr.1); (b) a list of conclusions and recommendations of UNISPACE 82 (A/CONF.101/11 and Corr.1); and (c) a report on the views of Member States on how far the five studies benefited the Member States in putting to practice the findings of these studies (A/AC.105/C.1/L.152 and Add.1-5), as well as a working paper submitted by the States members of the Group of Latin American States (A/AC.105/C.1/1987/WP.2). The Working Group also had before it two informal documents prepared by the Secretariat, a comparative table of UNISPACE 82 recommendations and activities conducted by the United Nations Space Applications Programme, and a summary of panels, seminars, training courses, workshops and expert meetings organized from 1971 through 1986 under the auspices of that Programme.
4. During the course of the debate, a number of questions were raised relating to the programme as well as to budgetary aspects of the Outer Space Affairs Division, particularly with regard to the possibility of rearranging its priorities, to which the Chief of the Division responded with detailed information. Statements were also made by some representatives of specialized agencies and other international organizations noting that they had been closely co-operating in the implementation of the recommendations of UNISPACE 82 and in particular referring to their extensive co-operation with the Space Applications Programme. Some delegations felt that a comprehensive assessment of the implementation of the recommendations of the UNISPACE Conference should be undertaken to evaluate which recommendations had been implemented so far.
5. Based on the documents mentioned in paragraph 3 above, the Working Group reviewed the progress of the implementation of the recommendations of UNISPACE 82. The Working Group noted that for the biennium 1986-1987, the budget for the Space

Applications Programme had been reduced to less than half of its original appropriation of \$US 216,600. Accordingly, the Working Group expressed concern as to how the proposed and approved activities of the Space Applications Programme could be implemented with such inadequate financial resources.

6. As for the means of redressing the situation, some delegations stressed the need for greater voluntary contributions from Member States and/or international organizations. Other delegations, noting the guidance provided by General Assembly resolution 37/90, emphasized the need for rearranging priorities within the Outer Space Affairs Division in order to make the Space Applications Programme more efficient by focusing its emphasis more sharply as well as the need for improving efficiency through the streamlining of the working methods of the Committee and its two sub-committees. They also felt that the co-operation of other international organizations should be sought with a view to achieving the objectives of the UNISPACE 82 recommendations. Still other delegations believed that the Outer Space Affairs Division worked efficiently and consequently saw no need for rearranging priorities within the Division and, in any event, felt that any such rearrangements would not release any funds to the programme but would disrupt the work of the Division. Those delegations recalled that the same resolution 37/90 had requested the Secretary-General to strengthen the Outer Space Affairs Division with the appropriate augmentation of technical personnel. In their view, the inadequate availability of funds for the Space Applications Programme was a result of the overall financial situation of the United Nations. Some of these delegations felt that under the present circumstances, there was a need for new mechanisms for wide co-operation in the peaceful uses of outer space, particularly for the benefit of the developing countries. Other delegations felt that it was a matter of making existing mechanisms work better rather than a question of establishing new international mechanisms.

7. Some delegations stressed the importance of the recommendations of UNISPACE 82 concerning the establishment and strengthening of regional mechanisms of co-operation and the promotion of such co-operation through the activities of the United Nations. In this context, those delegations examined the various operational advantages offered by such mechanisms. In this respect, the Working Group recognized the need to continue holding regional meetings of experts in the applications of space science and technology, such as those held in 1986 at Colombo, Sri Lanka (A/AC.105/374), at Cartagena, Colombia (A/AC.105/375) and the one to take place at Lagos, Nigeria, in April 1987 as outlined in the report of the Expert (A/AC.105/380).

8. Some delegations expressed the view that implementation of the recommendations of UNISPACE 82 should be considered in the light of real requirements of States in the application of space technology, taking into account present capabilities and future perspectives.

9. Some delegations proposed that efforts should be made, both by the developed as well as developing countries which are in a position to do so, to provide increased resources in order to facilitate the implementation of the recommendations of UNISPACE 82.

10. The Working Group recalled preambular paragraph 2 of General Assembly resolution 41/64 regarding the common interest of mankind in promoting the exploration and use of outer space for peaceful purposes and in continuing efforts to extend to all States the benefits derived therefrom, and of the importance of international co-operation in this field, for which the United Nations should continue to provide a focal point, as envisaged by UNISPACE 82.

11. Since many of the recommendations contained in the report of UNISPACE 82 have not been fully implemented, the Working Group proposed that the following should be undertaken:

(a) The emphasis of the United Nations Space Applications Programme should be on long-term (minimum 6-12 months) project-oriented on-the-job training in specific application areas in remote sensing and space communications, such as agricultural inventory, drought monitoring, ground water exploration, forest inventory, mineral exploration, disaster communication, rural communication, ground stations operation and maintenance, etc. The number of trainees from each country concurrently undergoing such training should be sufficient so as to create a core group of expertise in that country that would serve to accelerate the operational use of remote sensing and space communications;

(b) The Committee on the Peaceful Uses of Outer Space should request all States, particularly those with major space capabilities, to inform the Secretary-General concerning those space activities which could be the subject of greater international co-operation. The replies received would permit a better assessment of the future of such international co-operation by the Working Group at its next session;

(c) It is desirable to establish a programme of higher education on space-related subjects. This programme should take advantage of the existing high level of university studies, so that, with the collaboration of the United Nations and its specialized agencies and governmental and non-governmental organizations, it would be possible to promote better access to and training in the study of common problems and experiences;

(d) The Committee on the Peaceful Uses of Outer Space should request all States in a position to do so to consider what additional resources they can make available for peaceful uses of outer space activities, when appropriate, under the auspices of the United Nations, particularly to the benefit of developing countries;

(e) The adoption of short-term emergency measures as recommended to implement the United Nations Programme on Space Applications by requesting States contributing in kind to increase the training programmes and fellowships they offered in order to include participants from those Member States which have not yet availed themselves of such training/fellowships opportunities;

(f) Financial institutions and resource-development bodies should be alerted to the importance of programmes of space communications, remote sensing and meteorology in terms of their contributions to countries' socio-economic development and emergency warning systems;

(g) In formulating co-operative programmes and projects, account should be taken of the possible participation of international financial institutions in such activities. In particular the Working Group encouraged the Secretariat to continue to seek arrangements with other parts of the United Nations system in order to utilize fully the available resources and to secure support for the continued implementation of the Space Applications Programme;

(h) United Nations auspices should be used to develop multilateral programmes among countries in each region with a view to promoting regional activities, whenever and wherever appropriate, in the field of space science and technology, including joint experimental and operational space programmes. In this context, interested countries should provide in an appropriate form updated reports of their resources and technological capabilities in the field of space activities for purposes of promoting co-operation in the peaceful uses of outer space;

(i) In order to promote and co-ordinate the exchange of information on results and of scientific discoveries, greater interaction should be encouraged among experimental and theoretical scientists with a view to promoting wider application of the results of scientific research;

(j) Encouragement should be given to non-governmental organizations which, by means of conferences, publications and other activities, could help to integrate regional and interregional efforts in order to facilitate and co-ordinate the space activities of scientific organizations, including the holding of symposia and meetings devoted to special topics.

12. With regard to the priorities established in paragraph 7 of General Assembly resolution 41/64, the Committee on the Peaceful Uses of Outer Space should, within existing resources:

(a) Invite Member States to report annually on techniques resulting from medical studies carried out in outer space;

(b) Request the Outer Space Affairs Division, with the assistance of United Nations specialized agencies and other international organizations, to carry out a survey of existing space information services at the national and international level, with a view to establishing an international information system;

(c) Request the Outer Space Affairs Division to update the report, in co-operation with United Nations specialized agencies and other international organizations, on existing training centres at the regional level.

13. In addition, the Committee should, within existing resources:

(a) Request the Outer Space Affairs Division to prepare a report, in co-operation with United Nations specialized agencies and other international organizations, on measures necessary for improving educational systems in developing countries with respect to the use of space technology, including through the execution of projects;

(b) Request the Outer Space Affairs Division, in co-operation with international organizations that have observer status in the Committee, to examine measures which should be taken by the Committee for enhancing the use of remote sensing, space communications and meteorology for development, particularly for developing countries;

(c) Invite IAF and COSPAR to study various approaches that the United Nations might take in providing assistance to developing countries in realizing the benefits of space technology, including opportunities for the exchange of information, contacts between scientists, development of infrastructure and improvement of the level of education for graduates and post-graduates;

(d) Taking into account the study on environmental effects of space activities, prepared by COSPAR (A/AC.105/334), invite COSPAR and IAF to undertake a follow-up study on the environmental effects of space activities, with particular emphasis on space debris.

14. The Working Group stressed the usefulness of an assessment of the activities of the Outer Space Affairs Division and the future plan of work. The Committee on the Peaceful Uses of Outer Space should therefore request the Outer Space Affairs Division to submit in time relevant detailed and comprehensive reformulation for consideration by the Sub-Committee on an annual basis.

15. The Working Group recommended that it should be reconvened next year to continue its work.

Notes

a/ See Report of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 9-21 August 1982 (A/CONF.101/10 and Corr.1 and 2).
