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## Committee on the Peaceful Uses of Outer Space

Scientific and Technical Subcommittee  
Thirty-sixth session  
Vienna, 22-26 February 1999

### **Draft report of the Scientific and Technical Subcommittee on the work of its thirty-sixth session**

#### **Addendum**

## **II. Space debris**

### **A. General matters**

1. In accordance with General Assembly resolution 53/45, the Subcommittee continued its consideration, on a priority basis, of the agenda item on space debris.
2. The Subcommittee agreed that consideration of space debris was important and that international cooperation was needed to expand appropriate and affordable strategies to minimize the potential impact of space debris on future space missions.
3. The Subcommittee agreed that Member States should pay more attention to the problem of collisions of space objects, including those with nuclear power sources on board, with space debris and other aspects of space debris. It noted that the General Assembly, in its resolution 53/45, had called for the continuation of national research on that question, for the development of improved technology for the monitoring of space debris and for the compilation and dissemination of data on space debris. The Subcommittee recalled the request of the Assembly that information on those issues should be submitted to the Subcommittee, and it took note of the replies from Member States (A/AC.105/708 and Add.1 and 2) submitted to it in accordance with that request. The Subcommittee agreed that national research on space debris should continue and that Member States and international organizations should make available to all interested parties the results of that research, including information on practices adopted that had proved effective in minimizing the creation of space debris.
4. The Subcommittee heard scientific and technical presentations on the subject of space debris by representatives of France, IADC and ESA, as mentioned in paragraph [...] of the present report.

5. The Subcommittee took note of the working paper on space debris submitted by the Russian Federation (A/AC.105/C.1/1999/CRP.4).
6. The Subcommittee noted that cooperation had continued through IADC, with the participation of Japan, the National Aeronautics and Space Administration (NASA) of the United States, ESA, the Russian Space Agency, the China National Space Administration, the British National Space Centre, CNES, the Indian Space Research Organization and the German Aerospace Center (DLR), to enable its members to exchange information on space debris activities, facilitate opportunities for cooperation in space debris research, review the progress of ongoing activities and identify debris mitigation options. The Subcommittee also noted that the Italian Space Agency (ASI) had been admitted into IADC in 1998.
7. The Subcommittee noted with satisfaction that, following its invitation, a representative of IADC had made a technical presentation on its work with regard to the space debris issue, as mentioned in paragraph [...] of the present report. The Subcommittee agreed that IADC should be invited to make a technical presentation on its work at the thirty-seventh session of the Subcommittee.
8. The Subcommittee recalled that, in order to further its consideration of the agenda item on space debris, it had adopted at its thirty-second session a multi-year plan for the consideration of space debris. The Subcommittee also recalled that at each session it should review the current operational debris mitigation practices and consider future mitigation methods with regard to cost-efficiency (A/AC.105/637 and Corr.1, para. 92).
9. The Subcommittee agreed that adoption of the technical report at its current session was an important achievement. The Subcommittee noted that, owing to the complexity of the space debris issue, its discussion of that issue should continue in order to ensure further progress in developing an understanding of the issue. The Subcommittee agreed that IADC, as the international expert organization on space debris, should continue to brief the Subcommittee on the issue on an annual basis, that the Subcommittee should assess the effectiveness of existing mitigation practices and the extent to which they were being implemented and that efforts to model and characterize the debris environment should continue.

## **B. Technical report on space debris**

10. Concerned about the influence of space debris on the space environment and on the operation of spacecraft, the Subcommittee had included an item on space debris on the agenda for its thirty-first session, in 1994. It had been agreed that it was important to have a firm scientific and technical basis for future action on the complex attributes of space debris.
11. The Subcommittee had agreed to focus on understanding research related to space debris, including debris measurement techniques; mathematical modelling of the debris environment; characterizing the space debris environment; and measures to mitigate the risks of space debris, including spacecraft design measures to protect against space debris. Accordingly, a multi-year work plan had been adopted in 1995 for specific topics to be covered during the period 1996-1998. It had also been agreed that the work plan should be implemented with flexibility, so that all relevant issues on space debris could be addressed.
12. The Subcommittee had agreed, at its thirty-third session, to prepare a technical report on space debris that would be structured according to the specific topics addressed by the work plan during the period 1996-1998. The report would be carried forward and updated

each year, leading to an accumulation of advice and guidance, in order to establish a common understanding that could serve as the basis for further deliberations of the Committee on that important matter (A/AC.105/637 and Corr.1, para. 96).

13. The Subcommittee noted that, at its thirty-third session, in accordance with the multi-year plan, it had focused its attention on measurements of space debris, understanding of data and effects of that environment on space systems, as reflected in its technical report for 1996 (A/AC.105/637 and Corr.1, paras. 94-138). At its thirty-fourth session, the Subcommittee had focused its attention on the modelling of the space debris environment and risk assessment, as reflected in its technical report for 1997 (A/AC.105/672, paras. 102-104). At its thirty-fifth session, the Subcommittee had focused its attention on space debris mitigation measures, as reflected in its technical report for 1998 (A/AC.105/697 and Corr.1, paras. 97-99).

14. The Subcommittee had agreed, at its thirty-fifth session, that the draft technical report of the Subcommittee on space debris, which would include the part on mitigation measures drafted during that session, should be adopted at its thirty-sixth session, in 1999, after final editing during the inter-sessional period and consideration by relevant organizations, such as IADC and IAA (A/AC.105/697 and Corr.1, para. 95).

15. The Subcommittee noted with satisfaction the draft of the complete technical report on space debris (A/AC.105/707), which also contained the technical changes and amendments that had been proposed by Canada, France, Germany and the United Kingdom and by IADC during the inter-sessional period. The Subcommittee also noted that an introduction and an annex containing a list of documents relevant to the subject of space debris had been prepared by the Secretariat.

16. The Subcommittee took note of the comments prepared during the session by the drafting group (A/AC.105/C.1/1999/CRP.3) on the draft technical report on space debris.

17. The Subcommittee adopted the draft technical report on space debris (A/AC.105/707), together with the changes proposed by the drafting group. The Subcommittee noted that the technical report on space debris would be submitted to the Committee on the Peaceful Uses of Outer Space at its forty-second session. The Subcommittee agreed to have the technical report widely distributed, including by making it available to UNISPACE III, the Legal Subcommittee at its thirty-ninth session, in 2000, international organizations such as COSPAR, IAA, IAF and IADC and other scientific meetings such as the annual IAF Congress.

18. The Subcommittee also agreed that the technical report on space debris should be reviewed as appropriate and should be updated as new technological developments occurred and as the technical understanding of the space debris environment improved.

19. The Scientific and Technical Subcommittee expressed its appreciation to the Chairman, Dietrich Rex (Germany), whose invaluable expertise in space debris matters had greatly facilitated the work of the Subcommittee on the technical report.

## **C. General views**

20. The view was expressed that there was a need to develop a common database for space debris that could serve as a clearing house of information for the international community for research and further advancement of knowledge in that field.

21. Some delegations expressed the view that issues relating to the cost implications of space debris mitigation measures needed further analysis and warranted the full attention of the Scientific and Technical Subcommittee in the future.

22. Some delegations expressed the view that there should be follow-up activity by the Legal Subcommittee on the technical report on space debris. Those delegations were of the view that the Committee on the Peaceful Uses of Outer Space should consider submitting the technical report to the Legal Subcommittee so that it could decide what implications the report might have regarding its work programme. Other delegations expressed the view that it was still premature for the Legal Subcommittee to discuss the issue of space debris, and that the discussion of the issue by the Legal Subcommittee should be postponed at least until the technical report had been thoroughly analysed by Member States and relevant space-related organizations and industry.

23. Some delegations expressed the view that, in the light of the completion by the Scientific and Technical Subcommittee of the multi-year work plan and the technical report on space debris, the Committee on the Peaceful Uses of Outer Space might wish to have the Legal Subcommittee consider presenting its views on the applicability of the existing outer space treaties in relation to space debris.

24. The Scientific and Technical Subcommittee recommended that the item entitled "Space debris" be retained as a priority item on the agenda for its thirty-seventh session.