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## Committee on the Peaceful

### Uses of Outer Space

Scientific and Technical Subcommittee

Forty-second session

Vienna, 21 February-4 March 2005

Item 7 of the provisional agenda\*

### Space debris

## **Consideration by the Inter-Agency Space Debris Coordination Committee of the comments received from member States of the Committee on the Peaceful Uses of Outer Space on the proposals on space debris mitigation and results of the consultative meeting of the Inter-Agency Space Debris Coordination Committee and the Committee on the Peaceful Uses of Outer Space held in Vancouver, Canada, on 4 October 2004**

### **Note by the Secretariat**

1. At its forty-first session, in February 2004, the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space considered an agenda item on space debris, in accordance with the multi-year work plan adopted at its thirty-eighth session (A/AC.105/761, para. 130).
2. At its forty-first session, the Subcommittee also established a Working Group on Space Debris to consider comments received from member States of the Committee on the proposals on space debris mitigation, presented by the Inter-Agency Space Debris Coordination Committee (IADC) to the Subcommittee at its fortieth session, in 2003 (A/AC.105/C.1/L.260). Comments were received from the Czech Republic, India, the Republic of Korea, the Russian Federation, Turkey and the United States of America.
3. The Working Group agreed to request IADC to revise its proposals in view of the comments received from member States and to produce a new draft proposal.

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\* A/AC.105/C.1/L.277.



The Working Group also agreed that the revised IADC proposals on space debris mitigation should be reviewed by member States and observers prior to their submission to the Subcommittee at its forty-second session, in 2005. The Working Group also urged interested member States, observers to the Scientific and Technical Subcommittee and members of IADC to participate in updating the IADC proposals on space debris mitigation for consideration by the Working Group at the forty-second session of the Subcommittee (A/AC.105/823, annex III, paras. 5-7). The Subcommittee endorsed the recommendations of the Working Group.

4. At its forty-seventh session, in June 2004, the Committee on the Peaceful Uses of Outer Space noted with satisfaction that IADC would invite interested member States of the Committee to participate in an IADC meeting to be held in Vancouver, Canada, in October 2004.<sup>1</sup> The Committee noted that the meeting would provide an opportunity to make progress towards achieving the objectives set by the Working Group on Space Debris of the Scientific and Technical Subcommittee.

5. On 17 January 2005, the Secretariat received two letters, one from the Chairman of IADC and other from both that Chairman and the Chairman of the Working Group on Space Debris, in which they provided information on the status of the work of IADC and the results of the joint IADC/Committee on the Peaceful Uses of Outer Space consultative meeting held in Vancouver, Canada, on 4 October 2004.

6. Annexes I and II to the present document contain the information provided in the letters.

*Note*

<sup>1</sup> *Official Records of the General Assembly, Fifty-ninth Session, Supplement No. 20 and corrigenda (A/59/20 and Corr. 1 and 2), para. 105.*

## Annex I

### **Consideration by the Inter-Agency Space Debris Coordination Committee of the comments received from member States of the Committee on the Peaceful Uses of Outer Space on the proposals on space debris mitigation**

#### **Letter dated 17 January 2005 sent by the secretariat of the Inter-Agency Space Debris Coordination Committee, on behalf of its Chairman, to the Director of the Office for Outer Space Affairs of the Secretariat**

The Inter-Agency Space Debris Coordination Committee (IADC) has considered the comments received from member States of the Committee on the Peaceful Uses of Outer Space, how these would be taken into account and good progress was made.

During the IADC discussions, it became clear that the key to further progress would be a better understanding of the process by which the Committee would deal with the IADC space debris mitigation guidelines and the updates that would occur from time to time. IADC continues to work on technical issues that will lead to changes in the guidelines, in addition to considering the issues raised by member States of the Committee. The guidelines will need to attain a certain technical- and policy-level balance and consistency before they can be formally agreed and released. It is not planned to produce such an update before the end of 2005.

A separate letter has been sent to the Office for Outer Space Affairs, reflecting the outcome of the IADC meeting with interested member States of the Committee, held in Vancouver, Canada, on 4 October 2004. The letter contains the comments received and the IADC response to those comments.

In addition to the guidelines, IADC produced and agreed upon a document entitled "Support to the IADC space debris mitigation guidelines". It was proposed that IADC, represented by Claudio Portelli (a former Chairman of IADC), would make a presentation on this subject to the Scientific and Technical Subcommittee at its forty-second session. It is the intention of IADC to produce updates of that document, which will be in line with new versions of the guidelines.

IADC believes that the proposed approach would help ensure that progress with the production of the guidelines is maintained at the technical level in parallel with the policy and procedural discussions necessary to achieve overall progress towards the broadest understanding and adoption of the IADC space debris mitigation guidelines.

## Annex II

### **Results of the consultative meeting among representatives of member States of the Committee on the Peaceful Uses of Outer Space and representatives of members of the Inter-Agency Space Debris Coordination Committee held in Vancouver, Canada, on 4 October 2004**

#### **Letter dated 17 January 2005 sent by the secretariat of the Inter-Agency Space Debris Coordination Committee, on behalf of its Chairman, and by the Chairman of the Working Group on Space Debris during the forty-first session of the Scientific and Technical Subcommittee addressed to the Director of the Office for Outer Space Affairs of the Secretariat**

The Steering Group of the Inter-Agency Space Debris Coordination Committee (IADC) discussed the issues raised by the member States of the Committee on the Peaceful Uses of Outer Space at its annual meeting held in Abano Terme, Italy, in April 2004 and again at a meeting held during the fifty-fifth International Astronautical Congress in Vancouver, Canada, in October 2004, following the consultative meeting with interested member States of the Committee.

The majority of the technical comments raised were addressed and IADC decided that further internal technical study and consultation were required. The majority of the comments received from India and the Russian Federation were discussed (see appendix).

With regard to the comments received from India, the Russian Federation and Turkey relating to the use of nuclear power sources in space, IADC believed that that subject required further investigation.

IADC also believed that the issues raised by the Czech Republic had been considered and resolved to the satisfaction of that delegation.

IADC wishes to convey to the Committee on the Peaceful Uses of Outer Space, and in particular its Scientific and Technical Subcommittee, that the comments made that were of a non-technical nature were considered beyond the terms of reference of IADC.

All the member States that had raised specific technical comments on the IADC space debris mitigation guidelines were represented at the consultative meeting except for the Republic of Korea and Turkey. Brazil, Canada and Mexico also attended the meeting.

## Appendix

### Status of consultations on the space debris mitigation guidelines held by the Inter-Agency Space Debris Coordination Committee Steering Group from 19 to 22 April 2004 and on 5 October 2004

Section in A/AC.105/C.1/L.260	Comments received from member States (new and replacement text is indicated by italics)	Negotiated outcome
2	The first paragraph should read: “The IADC space debris mitigation guidelines are applicable to mission planning and the design and operation of <i>newly designed</i> spacecraft and orbital stages (defined here as space <i>vehicles</i> ) that will be injected into Earth orbit.”	Consensus to reject. The inserted text would lessen the implied recommendations vis-à-vis existing spacecraft. See comment below regarding the term “vehicles”.
2	In the third paragraph, the words “to the greatest extent possible” should be excluded because they are in contradiction with the recommendatory character of the document as a whole.	Consensus to accept.
3.2	The term “space systems” is different from the definition provided in recommendation S.1003 of the International Telecommunication Union (ITU), entitled “Environmental protection of the geostationary orbit”. The term “space systems” determines only spacecraft and orbital stages. Contradiction takes place when considering items 3.2.2 and 3.2.3: the term “space systems” does not spread to the launch vehicles but they include orbital stages as a component. Therefore, the term “space systems” should be changed to the term “space <i>vehicles</i> ” throughout the text.	No consensus could be reached.
3.2.1	The term “spacecraft” is different from the definition provided in recommendation S.1003 of ITU, entitled “Environmental protection of the geostationary orbit”.	Consensus to reject.
3.3.2	The Russian Federation proposes to define a new region, “Ao”, as “ <i>the region of re-entry trajectories and of orbits of manned flights—the spherical region that extends from the Earth’s surface up to an altitude (Z) of 500 km</i> ”.	No consensus could be reached.

Section in A/AC.105/C.1/L.260	Comments received from member States (new and replacement text is indicated by italics)	Negotiated outcome
3.3.3	The term “geostationary Earth orbit” should be replaced with “geostationary <i>satellite</i> orbit”, as used by ITU.	Consensus to reject.
3.5.1	The Czech Republic recommends adding a phase called “ <i>space debris phase</i> ”.	Consensus to reject.
4	Item 5 should be deleted because any mitigation measure demands justifications of choice and selection.	No consensus could be reached.
5.1	In the first paragraph, the words “normal operations” should be amended to read “ <i>regular operations</i> ”.	Consensus to accept.
	An additional paragraph should be added between the second and third paragraphs, as follows: “ <i>Any programme, project or experiment that will release objects in orbit should not be planned unless an adequate assessment can verify the possibility to determine the trajectories of these objects by using available observational means.</i> ”	No consensus could be reached.
5.2	Item 2 should be amended to read as follows: “All space <i>vehicles</i> should be designed and operated so as to prevent accidental explosions and ruptures <i>till the end of mission.</i> ”	Consensus to accept rewording.
	An additional item should be added as follows: “ <i>In the case of space vehicles carrying nuclear power units the regular fragmentation procedures are acceptable not to cause radioactive contamination of the atmosphere and the surface of the Earth.</i> ”	All delegations opposed to this recommendation indicated willingness to address nuclear power sources (NPS) in the space debris mitigation guidelines; however, all felt that the proposed wording was inappropriate and that the subject should be addressed in a different section.
5.3.1	India requested that an eccentricity limit on geostationary Earth orbit (GEO) disposal orbits be specified to ensure that future interference with GEO did not occur due to perturbation effects.	The Steering Group referred the issue to Working Group 4 on Mitigation for analysis and recommendation. Working Group 4 has preliminarily

Section in A/AC.105/C.1/L.260	Comments received from member States (new and replacement text is indicated by italics)	Negotiated outcome
5.3.1	India requested that an eccentricity limit on geostationary Earth orbit (GEO) disposal orbits be specified to ensure that future interference with GEO did not occur due to perturbation effects.	The Steering Group referred the issue to Working Group 4 on Mitigation for analysis and recommendation. Working Group 4 has preliminarily concluded that eccentricities of less than 0.005 would ensure compliance with the intent of the guideline.
	India raised questions about the disposal of stages in the GEO region.	The Steering Group referred the issue to Working Group 4 for analysis and recommendation. Working Group 4 will address the issue at the IADC meeting in April 2005. Some delegations expressed a strong desire for there to be no time limit.
	India recommended that the IADC GEO disposal guideline be changed to the old ITU recommendation of simply 300 km above GEO.	Comment withdrawn by the Indian Space Research Organization on behalf of India.
5.3.2	India, the Russian Federation and Turkey raised similar questions about the disposal of nuclear power sources (NPS) in low-Earth orbit (LEO). They were all concerned that section 5.3.2 required placing NPS into disposal orbits which would entail re-entry within 25 years.	All delegations recognized that the issue of NPS should be addressed in the space debris mitigation guidelines. Agencies will engage with their domestic NPS communities to develop an approach.
	The Russian Federation recommended extending the 25-year rule for the disposal of LEO objects to a non-specific 25-50 year limit and to relax the rule entirely for objects with altitudes of more than 1,000-1,300 km.	No consensus could be reached.
	<i>“Space vehicle designs that do not include the capability to be de-orbited or manoeuvred should be planned to be launched into orbits with lifetime consistent with the stated disposal lifetime.”</i>	Consensus to accept, if “space vehicle” changed to “space system”.
General	An owner of an object should provide	Consensus reached that the

<i>Section in A/AC.105/C.1/L.260</i>	<i>Comments received from member States (new and replacement text is indicated by italics)</i>	<i>Negotiated outcome</i>
General	An owner of an object should provide notification when the object becomes debris (i.e. changes its operational/functional status). The notification should be considered by the Legal Subcommittee in the framework of its new agenda item entitled “Practice of States and international organizations in registering space objects”.	Consensus reached that the comment was beyond the scope of IADC.
General	All the member States of the Scientific and Technical Subcommittee are aware that the burdens of implementing these guidelines are not the same for all countries technically and financially and that some measures and mechanisms will have to be devised in the near future so that the developed countries will relieve or mitigate technical difficulties and financial burdens that developing countries may encounter while implementing these guidelines.	Consensus believed that the comment was beyond the scope of IADC.

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