

**THE 1999 UNCOPUOS "TECHNICAL REPORT ON SPACE DEBRIS"  
AND THE NEW WORK PLAN ON SPACE DEBRIS (2002-2005):  
PERSPECTIVES AND LEGAL CONSEQUENCES**

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**Abstract**

In February 1999, the Scientific and Technical Subcommittee (STSC) of the UN Committee on the Peaceful Uses of Outer Space (UNCOPUOS) adopted a "Technical Report on Space Debris". This was the result of intensive negotiations during a multi-year workplan on space debris, which had been the centerpiece of the technical work of the STSC during these years. The Report is the first document on space debris, presenting the status of space debris research and the problems resulting from space debris. It has the status of an analysis accepted by all governments. Following its adoption, the Report was presented to UNISPACE III and provided the basis for discussions in this Inter-governmental Conference as well as in the Technical Forum, which - at the same time - dealt with the technical as well as the legal aspects of the exploration and use of outer space. The adoption of the Conference Report finalized the workplan in the STSC, but the subject of space debris still remains on the agenda, where until now every year a special aspect is discussed in detail.

The Report does not suggest the establishment of an agenda item "space debris" in the UNCOPUOS Legal Subcommittee (LSC). It is very reluctant in even mentioning legal aspects of the space debris issue. The strict and full concentration on technical aspects was a precondition made by a number of Member States for their

of the Report. The parallel efforts in the LSC, led by the Czech Republic and France, to establish an agenda item on space debris there, were completely detached from that process. Those, who had expected that the adoption of the Report would inevitably lead to formal negotiations in the LSC were deceived so far. Nevertheless, the Report provides a number of starting points for drafting regulation concerning the prevention of space debris as well as debris mitigation measures which also built on work already done by the Inter-Agency Space Debris Coordination Committee (IADC) and its member agencies.

This paper describes the status of the discussion on space debris in UNCOPUOS on the background of the Debris Report, the European position and the new multi-year work plan on space debris in STSC for the years 2002 to 2005, which is based on an initiative by the United States. In addition, it takes the deorbiting of the Russian space station MIR as the starting point for discussing an adequate reaction by the UN General Assembly, which could be prepared in the June 2001 session of UNCOPUOS.

**1. Space debris in UNCOPUOS**

Following the adoption of the Technical Report on Space Debris at the 1999 session

of STSC<sup>1</sup>, expectations for a consequential establishment of a respective agenda item in the LSC did not materialize. Not even the deliberations at UNISPACE III leading to the statement that "various aspects of space debris" should be studied in the UNCOPUOS, which is contained in the Report of the Conference (para. 370) made a positive impact on the prospects for dealing with space debris in the Legal Subcommittee.

In the meantime, it was decided to continue in the STSC with single issues related to specific aspects of space debris. For 2000 this concerned the review of international application of standards of the ITU and recommendations of IADC concerning the disposal of satellites in GSO at the end of their useful lifetime and the examination of the costs and benefits of debris mitigation measures for 2001. STSC could have without any doubt continued for years following such a procedure of picking single issues for in-depth consideration. This would have certainly improved deeper understanding of the matter but would not have touched upon what becomes more and more needed: a reliable, technically sound, equitable and above all binding regulatory framework for the protection of the space environment for the benefit of space exploration and utilization.

The sets of principles for remote sensing and the use of nuclear power sources adopted by the UN General Assembly in 1986 and 1992 respectively show how positive the effect of such a measure can be. The failed attempt to provide the same for direct broadcasting satellite services of 1982 shows, on the other hand, that consensus is the cornerstone of a global regulation, which is expected to work. With this in mind, the anxiety of the main users of outer space - which would consequently carry most of the debris mitigation efforts and costs - to be forced

into actions they can not accept should be reduced to a minimum. UNCOPUOS has never been as "reasonable" as it is today (especially since the Cold War is over) and a position hostile to a well-regulated and sustainable utilization of the global commons will be more and more difficult to be maintained.

As to the specific legal aspects of the space debris issue, the authors of this paper have already submitted an analysis during the past two European space debris conferences.<sup>2</sup> They dealt with questions relating to the definition of space debris, State responsibility and liability. A debate in the Legal Subcommittee of UNCOPUOS has previously been promoted by the delegation of the Czech Republic.<sup>3</sup> During the 1999 session of COPUOS, it has been complemented and put on a broader basis by a proposal submitted by France and supported by twelve other countries, primarily European but also including Canada and India.<sup>4</sup> This initiative calls for

"4.(...)(b) A request to the Committee on the Peaceful Uses of Outer Space to instruct the Legal Subcommittee:

(i) To review the applicability of the space treaties to space debris issues in the light of the report

<sup>1</sup> Technical Report on Space Debris, UN Doc. A/AC.105/720, 1999. Space debris has become a formal agenda item in the STSC in 1994 and the work-plan constituting the basis for the Report was

<sup>2</sup> See Marietta Benkö, Kai-Uwe Schrogl and Gerhard Gruber: Space Debris – Legal Problems to be Solved Within the United Nations, in: Proceedings of the First European Conference on Space Debris, Darmstadt, Germany, 5-7 April 1993 (ESA SD-01), 679-688 and Marietta Benkö and Kai-Uwe Schrogl: Space Debris in the United Nations – Aspects of Law and Policy, in: Proceedings of the Second European Conference on Space Debris, ESOC, Darmstadt, Germany, 17-19 March 1997 (ESA SP-393), 749-757. During the past years a great number of papers on various legal aspects with regard to space debris have been presented at the Colloquia of the International Institute of Space Law (IISL) and workshops of the European Centre for Space Law (ECSL), thus demonstrating a comprehensive international effort in this field.

<sup>3</sup> The respective agenda item was intended to read "Review of existing norms of international law applicable to space debris", Report of the LSC on the work of its thirty-sixth session (1-8 April 1997), UN Doc. A/AC.105/674 of 14 April 1997, para.39(d).

<sup>4</sup> Proposed actions to follow the technical study on space debris by the STSC UN Doc. A/AC.105/L.221

adopted by the Scientific and Technical Subcommittee in 1999 and to assess whether the Subcommittee should consider additional matters with regard to its work;

(ii) To report to those matters to the Committee at its forty-third session, in 2001;"

The initiative failed as it has been the result for all other initiatives before even though it was a very modest approach with extremely limited scope, taking also into consideration the new agenda structure of UNCOPUOS, which allows for "single issues" for exploratory debates at only one session of the Subcommittees. Therefore, no Member State can be "dragged" into an issue with mechanistic dynamism. To the contrary, this system also works for those, who already have in place regulation on the national level and expect to transfer them into global standards, because they have the possibility to shape the discussion and to contribute constructively. Waiting for too long, can be detrimental in such a case. IADC is currently on a rather well-balanced way and close to US approaches (political scientists call this a "benevolent hegemony"), but this could change and the fear of a dominating standard setting for the benefit of only one actor or a group of actors (the "malevolent hegemony") could develop.

Therefore a faster setting of a global framework through UNCOPUOS could benefit all actors, including those who primarily aim at preserving their current technical approach as well as those who intend to set a signal for maintaining outer space also for late-comers.

## **2. The European position**

The ESA Member States have recently adopted a Resolution containing a coherent strategy vis-a-vis the space debris problem. This "Resolution for a European Policy on

Debris" was approved by the ESA Council in December 2000<sup>5</sup>. It had been prepared in the International Relations Committee of this organization. The fact that not a primarily "technical", but a rather "political" body of ESA was on the forefront of promoting this issue shows the significant attention Europe is attaching to space debris as a policy matter requiring international cooperative action.<sup>6</sup> The Resolution does not only set the internal framework for the funding of space debris research inside the Agency and the actions to be prepared for debris mitigation measures particularly in collaboration with partners inside IADC. It also contains an important provision on the "non-technical" aspects:

"ESA Council...

7. INVITES the Member States to take measures in order that legal and economic aspects connected to space debris be studied in the most efficient ways, in particular within the UNCOPUOS and to present/support initiatives; INVITES the Director General to arrange for studies, in liaison with the ECSL and IISL in particular, of the legal and economic questions raised in this connection by the advent of privatisation in the conduct of the use and exploitation of outer space and to introduce appropriate provisions in international Agreements and in contracts."

This is not only a confirmation of the above described French proposal in UNCOPUOS. It is also a firm commitment to face the responsibility for the regulation of this problem on the basis of a sound and farsighted analysis. Of course this Resolution,

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<sup>5</sup> Resolution for a European Policy on Protection of the Space Environment from Debris, adopted on 20 December 2000, ESA/C/CXLIX/Res.6.

<sup>6</sup> Other European institutions like the European Commission or the European Parliament as well as the European Council have also taken note of space debris on various instances. The Working Group on "Ethics of Outer Space" of the UNESCO World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) which is supported by ESA also

while providing the common European approach, can only send a signal to other Member States of UNCOPUOS and cannot effect an immediate change in the position of States like the US and Russia, which until now have opposed the proposal to deal with the legal issues of space debris.

### **3. The new work plan in STSC (2002-2005)**

Forced by permanent pressure to agree to a discussion on the legal aspects of space debris, the US made a compromise proposal in late 2000 which would allow to deal with the regulatory problems of space debris on a global level but not (yet) within the UNCOPUOS Legal Subcommittee. Alongside the meeting of the Signatories of the Intergovernmental Agreement for the establishment of the International Space Station, which took place in December 2000 in Berlin, the US delegation brought forward the idea to focus the deliberations on the elaboration of international standards in the STSC with the final objective of endorsing IADC Standard Practices for the international community in this framework. This idea in itself has been received as a very interesting and promising proposal, in line with the approach to give IADC the status of even more than a "technical adviser" to the STSC. The IADC would not only be involved in the deliberations of all technical aspects but also would prepare any possible guidelines or standardizations.

This idea has formally been presented to STSC in a broad alliance of Member States at its session in 2001. It was received with the same positive attitude as it has been received in Berlin and the Subcommittee adopted the following approach in consensus:

"The Subcommittee considered the proposal submitted by Canada, China, France, Germany, India, the Russian Federation, the United Kingdom and the United States of America

according to which the Subcommittee would undertake a multi-year work plan on the subject of space debris. In addition, the Subcommittee at its thirty-ninth session would address space debris impact hazards and shielding. The Subcommittee agreed that an item reflecting the proposal should be included in the draft provisional agenda for its thirty-ninth session.

The Subcommittee agreed, that starting with its thirty-ninth session, in 2002, it should consider space debris according to the following multi-year work plan:

2002 The Subcommittee invites IADC to present its proposals on debris mitigation at the fortieth session of the Subcommittee in 2003.

The Subcommittee discusses space debris impact hazards and shielding.

2003 IADC presents to the Subcommittee proposals on debris mitigation, based on consensus among the IADC members.

Member States review the IADC proposals on debris mitigation and discuss the means of endorsing their utilization.

2004 IADC continues its presentation on its proposals on debris mitigation (as required), based on consensus among its members.

Member States continue to review the IADC proposals on debris mitigation.

The Subcommittee may wish to endorse the utilization of the IADC proposals on debris mitigation as guidelines to be implemented on a voluntary basis through national mechanisms [Footnote: This

- timing of the endorsement is dependent upon how much time member States require to review and approve the proposed standards.].
- 2005 Member States begin annual reporting on a voluntary basis of national activities to implement the guidelines."<sup>7</sup>

This is an important step forward in the direction of establishing globally accepted and binding standards and regulations for space debris. It still falls short of a full-fledged approach, including the preparation of a legal text in the Legal Subcommittee of UNCOPUOS. It also is very much depended on rapid progress in IADC. It is, however, a visible and promising sign that international expectations are converging.

#### **4. Consequences of deorbiting MIR**

The dramatic deorbiting of the MIR space station is by far not the only case, where debris of considerable size and weight (the original structure weighed approx. 140 tons) re-entered the Earth's atmosphere. While such an incident is definitively an exceptional event, recently Japan and South Africa informed the UN Secretary General about space debris which had been found on their territories. The fragment in Japan was 6m in length and 1,25m in diameter<sup>8</sup>. The two pieces which were found in South Africa were smaller but still weighed 260 kg and 33 kg respectively.<sup>9</sup>

Of the approximately 20000 objects, which have re-entered the Earth's atmosphere only a very small number has reached the Earth's

surface. Examples were the Saljut and the Skylab space laboratories, the Compton Gamma Ray Observatory or the Einstein Roentgen Observatory. Expected re-entries of larger satellites will concern Coronas (Russia), ASTRO-D (Japan), Rosat (Germany) or EUVE (US).

The deorbiting of the MIR space station - not yet completed when this paper was finalized - caused considerable public attention. Of a particular devastating effect was the coverage by the yellow press aiming at creating panic and public hysteria.<sup>10</sup> Such coverage does not only discredit space activities as a whole but also might lessen politician's readiness to support space activities.

#### **5. Proposal for an immediate still but intermediary reaction of the UN General Assembly**

Time apparently is ripe for an adequate reaction to the problem of space debris, which makes it clear to the general public that the Member States of the United Nations take this problem seriously. For this purpose it might not be sufficient to continue with deliberations in the STSC, even when they show the perspective of achieving voluntary guidelines in some years.

Public expectation requires a more visible reaction. Such a step must not necessarily involve precipitated regulations with technically questionable provisions or unbalanced political perspectives. It could, on the contrary, build on the successful technical work which has already been accomplished and adopted in consensus. Furthermore it could encompass undisputed elements with respect to the space debris problem and a careful approach to future work in UNCOPUOS. It would therefore have the character of an intermediary reaction by the UN General Assembly

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<sup>7</sup> Edited version of UN Doc. A/AC.105/C.1/L.248/Add.2 of 21 February 2001; paras. 129 and 130 of the final report of STSC.

<sup>8</sup> Note verbale dated 20 January 2000 from the Permanent Mission of Japan (Vienna) addressed to the Secretary General, UN Doc. A/AC.105/735 of 2 February 2000.

<sup>9</sup> Note verbale dated 3 July 2000 from the Permanent Mission of South Africa to the United Nations (Vienna) addressed to the Secretary General UN Doc

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<sup>10</sup> E.g. the German tabloid "Bild" called for a missile interception of MIR ("Schießt den Russen-Schrott

demonstrating that significant work has already been done and that future work can be expected to cope with the problem.

Elements for such a UN General Assembly Resolution could have the structure as indicated in the following section. In this framework we just outline the preamble of such a Resolution in order to show its general philosophy and give the keywords for the following paragraphs containing possible recommendations which will have to be elaborated in detail - along the lines of already accepted findings and practices.

**Draft for a UN General Assembly  
Resolution for adoption at its 2001  
session**

**Recommendations on international  
cooperation with respect to space debris**

**Preamble**

RECALLING the Vienna Declaration in particular section 1.c.ii thereof,  
ENCOURAGED by the work of the Scientific and Technical Subcommittee of the United Nations Committee for the Peaceful Uses of Outer Space and its Technical Report on Space Debris (A/AC.105/720) of 1999, adopted by consensus,  
SHARING the world-wide concern at the growing amount of space debris in various orbital regions,  
CONSIDERING that the resulting problems call for specific measures to be taken as a matter of urgency to ensure that Outer Space continues to be accessible and usable for the benefit of all countries in accordance with the Outer Space Treaty of 10 October 1967,  
ENCOURAGED by the progress made by space faring nations and international agencies, in particular the Inter-Agency Space Debris Coordination Committee (IADC), through studies and implementation, which contribute collectively, on an international basis to a better understanding of the basic technical issues allowing the formulation and understanding of specific measures to reduce the risk by space debris,  
AWARE that the phenomenon of space debris is still not fully understood from the technical point of view and further studies have to be undertaken to improve the

knowledge of the debris environment and  
TAKING INTO ACCOUNT that effective international regulation in this respect can only be elaborated after the conclusion of such studies,

RECOGNISING that in spite of all uncertainties it is already established knowledge that space debris mitigation measures on an international basis are an effective means for the significant reduction of future generation of space debris

**A. Improving the knowledge of the space environment and the effects of space debris / exchange of information**

1. Information to be provided to the UN on data bases; access to this information
2. Availability of national studies through UN Secretary General
3. Information to be provided on re-entry of space objects and space debris

**B. Improving space craft protection against space debris**

1. Information to be provided on protection measures
2. Elaboration of a guide to space-craft designers

**C. Reducing the future debris hazard**

Elements/Conclusions/Recommendations taken from the UN Technical Report on Space Debris of 1999 and other studies (like the US National Research Council Study "Orbital Debris. A Technical Assessment" of 1995 or the IAA "Position Paper on Orbital Debris" of 1995/2001) containing provisions on

- the development of debris reduction methods on a multilateral basis
- design requirements for the prevention of explosions
- the prevention of the release of mission related objects
- the prevention of intentional breakups
- transfer into disposal orbits

**D. Application**

Art VI Outer Space Treaty: application also to non-governmental actors

**E. Future work**

1. Future work in STSC (the work plan 2002 to 2005 as adopted in 2001)
2. Future work in LSC