

REVIEW AND REVISION OF THE PRINCIPLES RELEVANT TO THE USE OF NUCLEAR POWER SOURCES IN OUTER SPACE

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Introduction

On 14 December 1992 the UN General Assembly adopted the Principles Relevant to the Use of Nuclear Power Sources in Outer Space (hereinafter - the NPS Principles).^{1/} The adoption of this document concluded the chain of events which started almost fifteen years earlier, on 24 January 1978, when a Soviet satellite COSMOS-954 with a small nuclear reactor designed to provide electricity for on board equipment re-entered the atmosphere over Canada and scattered radioactive debris on its northern territories.^{2/}

This specific incident was successfully settled through bilateral Canadian-Soviet negotiations.^{3/}

At the same time, on the initiative of a group of States led by Canada, the elaboration of the NPS Principles commenced in the UN Committee on the Peaceful Uses of Outer Space (COPUOS). This long and arduous process has eventually led to the elaboration of an important new addition to the international law of outer space -the NPS Principles.

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This document consists of the preamble and eleven principles dealing with such subjects as the applicability of international law, guidelines and criteria for safe use, safety assessment, notification, responsibility, liability and some others.

The NPS Principles are not binding. Being a UN General Assembly resolution, they are recommendations. Yet they were elaborated on the basis of consensus in COPUOS, and were adopted without a vote by the General Assembly. Therefore, there is no doubt that, although legally non-binding, the NPS Principles have strong political and moral force, and strict compliance with them is supported by international public opinion.

The NPS Principles is the fourth declaration of legal principles related to outer space elaborated by COPUOS ^{4/}, which has also elaborated five outer space treaties. However, it is the first such declaration which contains a provision concerning review and revision.

Background

The idea of including a revision clause into the draft set of NPS Principles was introduced during the final stage of work on the draft. In 1990, at the end of the twenty-ninth session of the Legal Subcommittee of COPUOS, the delegation of Canada, which played the leading role throughout the NPS negotiations in the UN, submitted a working paper containing, inter alia, the following provision:

"PRINCIPLE 12: Revision

These principles shall be reviewed by the Committee on the Peaceful Uses of Outer Space no later than 10 years after their adoption."5/

The introductory section of that working paper indicated that the paper reflected "discussions held at the twenty-ninth session of the Legal Subcommittee". Yet neither the Subcommittee's report,6/ nor the summary records of that session 7/ contained any reference to a revision clause.

It should be noted in this connection that extensive informal consultations on the NPS subject took place in the course of that session. As a result of those consultations consensus was reached on principle 3, Guidelines and criteria for safe use,8/ which contained detailed scientific and technical recommendations aimed at ensuring safety in using NPS on board space objects.

It seems logical to assume that it was the finalization of principle 3 that led the drafters to the general understanding of the need to have a revision clause in the document under elaboration so that highly technical recommendations of principle 3 could be up-dated in the future, some time after the adoption of the NPS Principles as a whole, taking into account rapid progress of space science and technology. It was perhaps this general understanding that prompted Canada to include the review clause in its working paper.

Later in 1990 and in 1991, little attention was paid to the revision clause in the debate that took place at the sessions of COPUOS

and its Scientific and Technical, as well as Legal Subcommittees.9/ This was explained by the drafters' efforts to finalize other more substantial provisions of the document. During that time the review clause, as formulated by Canada in 1990, continued to be reproduced, without any change, in subsequent revisions of the working paper which served as the main basis for the debate.10/

In February-March 1992, at the twenty-ninth session of the Scientific and Technical Subcommittee, the delegations of Australia, Canada, France, Germany, India, Turkey and the United Kingdom submitted a working paper containing a draft preamble to the NPS Principles. The final provision of that paper was directly relevant to the review and revision question and read as follows:

"Recognizing that this set of principles may undergo future revisions in view of emerging nuclear power applications and of evolving international recommendations on radiological protection."11/

The Scientific and Technical Subcommittee's Working Group on NPS, at which session the paper was circulated, agreed that the draft preamble provided a useful basis for discussions and might be considered further at the next session of the Legal Subcommittee.12/

At the thirty-first session of the Legal Subcommittee, in March-April 1992, the NPS discussion was based on the Canadian-German working paper,13/ which, inter alia, reproduced without changes the above

formulations of both the review clause and the preambular provision.

At the formal meetings of the Subcommittee's Working Group on NPS some delegations expressed the view that the time period within which a review of the NPS Principles was to take place, should be shortened to commence from two to five years from the adoption of the Principles.14/ The view was also expressed that the above-cited preambular provision should be deleted, and its substance should be incorporated in the review principle.15/ Still another delegation suggested that the title of the relevant principle should be not just "Review", but rather "Review and revision".16/

Most of the negotiations, however, were conducted not at the formal meetings of the NPS Working Group of the Legal Subcommittee, but during informal consultations which were not recorded in any official form. As a result of those consultations, the Chairman of the Working Group, who also acted as the moderator of the consultations, presented a "working non-paper" containing a new version of a preamble and of a review principle. In that "non-paper", a reference to the future revision of the NPS Principles was deleted from the preamble, and the review clause was formulated in broader terms as follows:

"PRINCIPLE 12: Review and revision

These Principles shall be reviewed by the Committee on the Peaceful Uses of Outer Space no later than two years after their adoption in order to consider, for the purpose of their effective

implementation, the possible revision of these Principles, bearing in mind emerging nuclear power applications, evolving international recommendations on radiological protection and any other circumstances that may affect one or more of these principles."17/

While no consensus was recorded, the Chairman of the Working Group expressed his belief that the "working non-paper" could provide a good basis for reaching consensus on the preamble and the review principle "in the very near future".18/

Intensive informal consultations aimed at finalizing the NPS Principles continued at the thirty-fifth session of COPUOS in June 1992.19/ During those consultations, the Chairman of COPUOS submitted "a text containing a draft set of principles for consensus recommendation by the Committee for adoption by the General Assembly".20/

COPUOS succeeded in reaching consensus on the basis of the Chairman's text without any changes, and recommended its adoption to the General Assembly.21/

At the same time, having noted the need for early review and possible revision of the NPS Principles, COPUOS recommended that the Legal Subcommittee, through its Working Group, should, at its next session, consider the question of early review and possible revision of the Principles.22/ For the same reason, it was also decided that the Scientific and Technical Subcommittee should continue the consideration of

the NPS item with the assistance of its Working Group.^{23/}

As indicated above, the UN General Assembly, at its forty-seventh session in 1992, adopted, without a voting, the NPS Principles,^{24/} and approved the above COPUOS recommendations concerning future consideration of the NPS subject in the Scientific and Technical, and in the Legal Subcommittees.^{25/}

Review and revision: purposes and procedures

The NPS Principles, in their final form as approved by the General Assembly, contain two separate provisions pertaining to the review and revision.

Firstly, the sixth preambular paragraph of the document reads as follows:

"The General Assembly,

...

Recognizing that this set of Principles will require future revision in view of emerging nuclear power applications and evolving international recommendations on radiological protection."

Secondly, the concluding principle of the document was formulated as follows:

"PRINCIPLE 11: Review and revision

These Principles shall be reopened for revision by the Committee on the Peaceful Uses of Outer Space no later than two

years after their adoption."

It is clear from the above two texts that the first, preambular one, deals primarily with the purposes, while the second concerns mainly timing and procedures of the review and revision.

1. Purposes of review and revision

In the most general terms, the overall purpose of the revision of the NPS Principles is to enhance them and to ensure that they would provide adequate legal protection against potential hazards of the use of nuclear power sources in outer space by incorporating in the document new, primarily technological requirements reflecting scientific and technical progress, which requirements, after their adoption, would be followed by designers, manufacturers and users of NPS in outer space.

The above-cited preambular provision of the NPS Principles indicates two specific areas to be taken into account in the course of the revision: emerging nuclear power applications and evolving international recommendations on the radiological protection.

As for nuclear power applications, it should not be overlooked that the scope of coverage of the NPS Principles is limited and specific. Pursuant to the sixth preambular paragraph of the document, the set of Principles

"applies to nuclear power sources in outer space devoted to the generation of electric power on board space objects for non-propulsive purposes, which have

characteristics generally comparable to those of systems used and missions performed at the time of the adoption of the Principles".

It is obvious from the above formulation that there are a number of the potential nuclear power applications in outer space which are not covered by the NPS Principles and, therefore, could become "candidates" for consideration during the future review and revision. Among those space applications are, for example, the use of NPS for propulsive purposes, the use of NPS which will have characteristics not generally comparable to current ones, the use of NPS not for generation of electric power, and others.

The existing international recommendations on radiological protection adopted by the International Commission for Radiological Protection (ICRP) and by the International Atomic Energy Agency (IAEA) played a major role in the elaboration of the NPS Principles. Hence, if those provisions are modified, it would be only logical to enhance the corresponding parts of the NPS Principles which were based on those provisions.

In this connection, it is worth recalling that even before the NPS Principles as a whole were finalized in COPUOS and adopted by the General Assembly in 1992, the US representatives had suggested that certain provisions of the draft agreed upon earlier, namely, principle 3, Guidelines and criteria for safe use,^{26/} should be "revisited" in order to enhance their technical credibility.^{27/} While Principle 3 had not been modified and

had remained unchanged in the final version of the NPS Principles, some of the concerns expressed by the US seem to have been taken care of in Principle 2, Use of terms. However, it is possible that original US proposals, or at least some of them, may be reintroduced during the review of the NPS Principles.

It may be added in this connection that, as presently formulated, paragraph 3 of Principle 2, Use of terms, looks more like an important substantive principle, rather than merely a provision concerning the use of terms.^{28/}

While the above-cited sixth preambular paragraph of the NPS Principles specifically refers to emerging nuclear power applications and evolving international recommendations on radiological protection as areas to be taken into account in future revision, Principle 11 contains no qualifications as to the purposes of that exercise. Accordingly, this means that no provision of the document should be considered "immune" from possible modifications in the course of the revision.

The final text of the NPS Principles was a compromise among various States and groups of States which participated in the negotiations. As the delegate of Brazil at the 1992 COPUOS session aptly said, "the text embodies equal distribution of discontent, reflecting a delicate balance of expectations and frustrations on the part of each and every delegation".^{29/}

In view of this it would be only logical to expect that, during the review process, various States may try again to achieve results which had not been attained in the

course of the original elaboration of the NPS Principles. Besides, certain ambiguities contained in the document (unless those ambiguities were intentional and, therefore, "useful") might deserve to be removed.^{30/}

One of the questions which also may be clarified during the review and revision of the NPS Principles is their applicability to the use of nuclear power sources on the moon and other celestial bodies. As M.S. Smith correctly pointed out, little debate has emerged about this particular application.^{31/} Indeed, perusal of travaux preparatoires shows that the main objective of the drafters was the elaboration of guidelines for nuclear powered satellites on Earth orbits. Moreover, certain specific scientific and technical recommendations of the Principles are formulated in such a way which does not give a clear-cut answer to the question whether they cover the NPS use on, for example, the lunar surface. On the other hand, there seems to be no evidence of the drafters' intention to exclude the use of NPS on the moon and other celestial bodies from the scope of application of the Principles. In any case, the clarification of this matter would be desirable.^{32/}

Naturally there are many other areas which may require attention in the course of the review and revision of the NPS Principles. For example, the possibility may be explored of including in the future document of a provision to the effect that the Principles should be reviewed every two/five/ten years after their adoption. Relationship may be examined between, on one hand, Principle 5, Notification of re-entry, and Principle 7, Assistance to States, and, on the other hand, the 1986 IAEA Conventions on early notification of a nuclear accident

and on assistance in the case of a nuclear accident or radiological emergency.^{33/} A desirability and/or possibility may also be discussed of elaborating a treaty on the basis of the current NPS Principles.

Practical application of the Principles would perhaps show what modifications are really required. At this stage it may be premature to make a definite judgement.

2. Procedures of review and revision

Pursuant to Principle 11, the NPS Principles should be reopened for revision "no later than two years after their adoption".

The Principles were adopted by the General Assembly on 14 December 1992. Thus, the deadline for reopening is 14 December 1994. However, the formulation ("no later than") allows to commence the exercise at any time before the indicated date.

In this connection, the question of competency should be clarified, namely, who has the authority to take a decision to reopen the NPS Principles for revision. Since the Principles were adopted by the UN General Assembly, it is within the exclusive competence of the Assembly to take the decision in question.

Of course, the formal decision to reopen the NPS Principles for revision may (and most probably will) be taken by the General Assembly upon the recommendation of COPUOS. Yet COPUOS itself has no right to begin the process on its own initiative.^{34/} While the Committee was authorized, by Principle 11, to conduct revision of the NPS

Principles, the General Assembly did not delegate to COPUOS the right either to decide when the revision should commence or to actually reopen the document for that purpose.

If, however, COPUOS fails to make a timely "reopening" recommendation to the General Assembly, it itself will have to deal with the matter and to instruct COPUOS and/or its Legal Subcommittee to include an appropriately formulated item in the agenda.

As mentioned above, the finalization of the NPS Principles at the COPUOS session in 1992 was a "package deal", one element of which envisioned that the question of early review and possible revision of the NPS Principles would be included in the agenda of the Legal Subcommittee at its next session in 1993.

While, in practice, discussion of this item may very well constitute a first stage of the revision process, it should not, strictly speaking, be considered as such, because at the time of recommending the inclusion of this item in the agenda of the Subcommittee, the General Assembly did not take a decision to reopen the NPS Principles for revision in accordance with Principle 11. The Legal Subcommittee was not requested by the Assembly to commence review and revision, rather it was requested to consider a question of early review and possible revision. This nuance should not be overlooked.

It may be recalled that three of the five outer space agreements, elaborated in COPUOS, contain review clauses.^{35/} Pursuant to those clauses, the Convention on International Liability for Damage Caused by Space Objects and the Convention on Registration of Objects

Launched into Outer Space were reviewed by the General Assembly in 1982 and 1986 respectively.^{36/} The review of the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies is due in 1994.^{37/}

The review provisions of the above three instruments are relevant to the subject of this paper, and their practical implementation might provide certain guidelines or procedures to be followed in implementing Principle 11.

The process of reviewing and possibly revising the NPS Principles will most probably require several years. It is obvious that, as in the case of the original elaboration of the document, consensus among experts in the Scientific and Technical Subcommittee will be necessary for lawyers in the Legal Subcommittee in order to modify existing or to add new provisions concerning safe use of NPS in outer space. As practice shows, reaching consensus on other, less scientific and technical subjects does not happen overnight either.

In view of the above, it should be born in mind that reopening of the NPS Principles for review and revision will not affect their validity. The Principles will remain fully operational until superseded by a new UN resolution on the subject. Any new or modified principles agreed upon in COPUOS during the review and revision process will of course be important per se, and States will probably commence to take them into account immediately after their finalization in the Committee or even in the Legal Subcommittee. Yet, from a legal perspective, such intermediate stages in the revision exercise will be without prejudice to

the continued validity of the NPS Principles as adopted in 1992.

The decision to conclude the review and revision of the NPS Principles will have to be taken by the UN General Assembly. This decision, inter alia, will instruct COPUOS and its two subcommittees as to how to deal with the NPS items on their agendas: to drop them or perhaps to commence immediately a new round of review and revision. At present it is too early to speculate on possible contingencies in this field.

Consideration of the NPS subject in the United Nations in 1993

As mentioned above, finalization of the NPS Principles in 1992 was a "package deal" envisioning that items dealing with the use of nuclear power sources in outer space would continue to be on the agendas of both the Scientific and Technical Subcommittee and the Legal Subcommittee of COPUOS.

The thirtieth session of the Scientific and Technical Subcommittee was held in February 1993.^{38/} The item entitled "Use of nuclear power sources in outer space" was discussed both in the plenary and in the Working Group of the Subcommittee.

The delegation of the United Kingdom submitted a working paper entitled "Safety principles for nuclear power sources in space revisited".^{39/} The paper, as was stated in its opening paragraph, attempted "to summarize the achievements to date in formulating the principles relating to the use of NPS in outer space" and suggested "a number of ways in which the principles could be further improved".^{40/}

The Working Group noted that space applications using nuclear power in space were continuing to develop, that international recommendations on radiological protection were continuing to evolve and that the NPS Principles were limited in scope. The Group, therefore, agreed that it was useful to consider how they might be revised. None the less, the Group also noted that the NPS Principles had been adopted by the General Assembly and would remain in their current form until such time as they were amended.^{41/}

The Working Group expressed the view that "an incremental approach" to revising the Principles should be considered.^{42/} It discussed a number of questions relating to possible ways of revising the Principles, including a further definition of terms, expanding the scope of the document to other uses of nuclear power in outer space, criteria for acceptable risk, the applicability of probabilistic risk assessment and of fundamental nuclear safety principles, the effect of space debris on the NPS safety and some others,^{43/} but did not make any specific recommendations thereon.

The Scientific and Technical Subcommittee recommended that the NPS item be retained on its agenda and that the Working Group be reconvened in 1994.^{44/}

The thirty-second session of the Legal Subcommittee was held in March-April 1993.^{45/} The item entitled "Question of early review and possible revision of the Principles relevant to the use of nuclear power sources in outer space" was discussed both in the plenary and in the Working Group of the Subcommittee. No working papers on

that subject were submitted at the session.

The debate on the item was not very active. The general feeling of the delegations was reflected in the only substantive "consensus" paragraph of the Working Group's report which said that "any future revision [by the Working Group on NPS of the Legal Subcommittee] of the substantive scientific and technical provisions of the Principles should be based on developments which might occur in the scientific and technical fields, and... it was therefore advisable to await the input of the Scientific and Technical Subcommittee in that respect".^{46/}

Although some delegations in the Working Group made one or two preliminary suggestions as to how certain specific provisions of the NPS Principles might be revised,^{47/} those ideas did not provoke a meaningful debate.

The thirty-sixth session of COPUOS was held in June 1993.^{48/} The Committee discussed the work on the NPS subject conducted by its two subcommittees. As far as the Scientific and Technical Subcommittee is concerned, COPUOS, "noting the need for early review and possible revision of the Principles,... recommended that the Scientific and Technical Subcommittee should reconvene the Working Group on nuclear power sources to give further consideration to the question."^{49/}

Having considered the Legal Subcommittee's work at its 1993 session, "the Committee agreed that the Principles should be implemented and that they should be reviewed to consider whether revision is necessary. It was also agreed that the Scientific and Technical Subcommittee should consider the need

for revision in the light of changing technology before any actual revision should be undertaken by the Legal Subcommittee or the Committee."^{50/}

Conclusions

1. Inclusion of the "review clause" into a UN declaration of principles on outer space activities is a new phenomenon explained by the significance attached by States to the subject-matter of the document and the highly technical character of some of its central provisions. The main purpose of the future review and possible revision of the NPS Principles is to ensure that they would keep abreast with scientific and technical progress and would be modified accordingly to provide optimum protection against possible hazards of the use of NPS in outer space.

2. The decision to actually reopen the NPS Principles for revision, as provided in their Principle 11, is within the exclusive competence of the UN General Assembly. This decision must be taken no later than at the Assembly's forty-ninth session in 1994.

3. The emerging applications of nuclear power and evolving international recommendations on radiological protection are specifically referred to in the NPS Principles' preamble as areas to be taken into account in the course of the revision. However, the document will be reopened in its entirety, and any provision may be modified.

4. The process of review and revision of the NPS Principles may take some time, perhaps several sessions of COPUOS and its two subcommittees. The reopening of the document for review and revision will not affect its validity: the NPS

Principles will remain operational until superseded by a new UN resolution on the subject.

NOTES

- 1/ GA resolution 47/68 of 14 December 1992.
- 2/ For description of the COSMOS-954 incident and of the Canadian-Soviet negotiations on the subject see B.A. Hurwitz "State liability for outer space activities in accordance with the 1972 Convention on international liability for damage caused by space objects", Utrecht Studies in Air and Space Law, Vol. 11, Martinus Nijhoff Publishers, 1992, pp. 113-132. Hurwitz considers, *inter alia*, that the 1972 Liability Convention was applicable to the COSMOS-954 case, and that the Canadian claim against the Soviet Union was settled on the basis of that instrument. For opposing view see A.D. Terekhov "International liability for damage caused by space objects with nuclear power sources on board", Proc. of 35th Colloquium on the Law of Outer Space, Washington, AIAA, 1993, pp. 151-162.
- 3/ The Canadian claim against the USSR for damage caused by COSMOS-954, and the Canadian-Soviet Protocol settling the claim were published in 18 I.L.M. 899-930 (1979) and in 20 I.L.M. 689 (1981) respectively.
- 4/ See GA resolutions 1962(XVII) "Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space" of 13 December 1963; 37/92 "Principles Governing the Use by States of Artificial Earth Satellites for Direct Television Broadcasting" of 10 December 1982; 41/65 "Principles Relating to Remote Sensing of the Earth from Outer Space" of 3 December 1986.
- 5/ U N d o c . A/AC.105/C.2/L.154/Rev.6 of 17 April 1990, reproduced in UN doc. A/AC.105/457 of 2 May 1990, Annex III.A.3.
- 6/ See UN doc. A/AC.105/457 of 2 May 1990, which, in Annex 1, contained the report of the Subcommittee's Working Group on NPS.
- 7/ S e e U N d o c s . A/AC.105/C.2/SR.527 to 538.
- 8/ See UN doc. A/AC.105/457 of 2 May 1990, para. 30, and Annex I, paragraph 12.
- 9/ See UN docs. A/AC.105/483 of 5 March 1991, paragraphs 54-64; A/AC.105/484 of 17 April 1991, paragraphs 21-27 and Annex I, paragraph 26; A/46/20 of 7 October 1991, paragraphs 101-105.
- 10/ S e e U N d o c s . A/AC.105/C.2/L.154/Rev.7 of 20 June 1990, reproduced in UN doc. A/AC.105/484 of 17 April 1991, Annex IV.A.2; A/AC.105/C.2/L.154/Rev.9 of 12 April 1991, reproduced in UN doc. A/AC.105/484 of 17 April 1991, Annex IV.A.6; A/AC.105/C.2/L.154/Rev.10 of 5 June 1991, reproduced in UN doc. A/46/20 of 7 October 1991, Annex IV. Starting with Rev.7, the revisions of the working paper A/AC.105/C.2/L.154 were co-sponsored by Canada and Germany. Rev.8 is not included in the above listing because it was withdrawn immediately after submission due to technical reasons.
- 11/ UN doc. A/AC.105/C.1/WG.5/L.29 of 4 March 1992, reproduced in UN doc. A/AC.105/513 of 10 March 1992, Annex III, Appendix.
- 12/ See UN doc. A/AC.105/513 of 10 March 1992, Annex III, paragraph 7.

13/ See UN doc. A/AC.105/C.2/L.154/Rev.11 of 16 March 1992, reproduced in UN doc. A/AC.105/514 of 20 April 1992, Annex IV.A.

14/ See UN doc A/AC.105/514 of 20 April 1992, Annex 1, paragraph 13.

15/ Ibid., paragraph 16.

16/ Ibid., paragraph 17.

17/ Ibid., paragraph 18.

18/ Ibid.

19/ See UN doc. A/47/20 of 28 August 1992, paragraphs 107-109.

20/ Ibid., paragraph 109. The Chairman's text was contained in UN doc. A/AC.105/L.198 of 23 June 1992.

21/ See ibid., paragraphs 110-111. The text of the NPS Principles, as approved by COPUOS, was annexed to its report.

22. See ibid., paragraphs 112 and 151(a).

23/ See ibid., paragraph 64.

24/ Supra note 1.

25/ GA resolution 47/67 of 14 December 1992, paragraphs 4(a), 8(a)(iv) and 12.

26/ See UN doc. A/AC.105/457 of 2 May 1990, paragraph 30 and Annex I, paragraph 12.

27/ See US working paper A/AC.105/C.2/L.185 of 10 April 1991, reproduced in UN doc. A/AC.105/484 of 17 April 1991, Annex IV.A.5.

28/. Paragraph 3 of Principle 2, Use of terms, reads as follows:

"For the purposes of principle 3, the terms 'foreseeable' and 'all possible' describe a class of events or circumstances whose overall probability of occurrence is such that it is considered to encompass only credible possibilities for purposes of safety analysis. The term 'general concept of defence-in-depth' when applied to nuclear power sources in outer space refers to the use of design features and mission operations in place of or in addition to active systems, to prevent or mitigate the consequences of system malfunction. Redundant safety systems are not necessarily required for each individual component to achieve this purpose. Given the special requirements of space use and of varied missions, no particular set of systems or features can be specified as essential to achieve this objective. For the purposes of paragraph 2 (d) of principle 3, the term 'made critical' does not include actions such as zero-power testing which are fundamental to ensuring system safety".

29/ UN doc. A/AC.105/PV.378 of 9 July 1992, page 9.

30/ For example, in paragraph 1 of Principle 4, Safety assessment, the

following formulation is used: "A launching State... at the time of launch shall, prior to the launch,... ensure that a thorough and comprehensive safety assessment is conducted" (emphasis added).

31/ See M.S. Smith "Legal Aspects of Using Nuclear Reactors on the Moon", Proc. of 35th Colloquium on the Law of Outer Space, Washington, AIAA, 1993, pp. 312-322.

32/ One of the possible practical solution to this problem (if of course the intention is to make the scope of application of the NPS Principles as wide as feasible) would be to add the following words at the end of the current title of the NPS Principles: "including the moon and other celestial bodies".

33/ On this question see A.D. Terekhov "The 1986 IAEA Conventions on nuclear accidents and the consideration of the use of nuclear power sources in outer space in the Legal Sub-Committee of COPUOS", Proc. of 30th Colloquium on the Law of Outer Space, Brighton, AIAA, 1988, pp. 403-410.

34/ In this connection, it is necessary to point out that, in the text of Principle 11 ("These Principles shall be reopened for revision by the Committee on the Peaceful Uses of Outer Space..."), the words "by the Committee on the Peaceful Uses of Outer Space" relate to "revision", not to "shall be reopened". The text envisions that the Principles shall be revised by the Committee, not reopened for revision by it.

35/ See Article XXVI of the Convention on International Liability for Damage Caused by Space Objects, of 29 March 1972, 24 U.S.T. 2389, T.I.A.S. 7762, 961 U.N.T.S. 187

(entered into force on 1 September 1972); Article X of the Convention on Registration of Objects Launched into Outer Space, of 14 January 1975, 28 U.S.T. 695, T.I.A.S. 8480, 1023 U.N.T.S. 15 (entered into force on 15 September 1976); Article 18 of the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, of 18 December 1979, UN resolution 34/68 of 5 December 1979, annex, 18 I.L.M. 1434 (entered into force on 11 July 1984).

36/ See GA resolutions 37/91 of 10 December 1982 and 41/66 of 3 December 1986. In both cases no decision was taken to revise the two Conventions on the basis of the review of their past application.

37/ On various legal questions in connection with the review of the Moon Agreement, and the review clauses of the outer space treaties in general, see A.D. Terekhov "Review clause of outer space treaties: reflections on the forthcoming review of the Moon Agreement", Proc. of the 33rd Colloquium on the Law of Outer Space, Dresden, AIAA, 1991, pp.356-361. Cf. T.L. Masson-Zwaan, W.W.C. de Vries "The establishment of a legal regime for the exploitation of the natural resources of the Moon and other celestial bodies: when and how?", Proc. of the 34th Colloquium on the Law of Outer Space, Montreal, AIAA, 1992, pp. 257-263.

38/ See report of that Subcommittee: UN doc. A/AC.105/543 of 5 March 1993.

39/ UN doc. A/AC.105/C.1/L.198 of 16 February 1993.

40/ In addition to the UK paper, working papers concerning various technical questions of the use of NPS in outer space were submitted at the session by the Russian Federation

(A/AC.105/C.1/L.187) and by Pakistan (S&T/1993/CRP.2).

41/ See UN doc. A/AC.105/543 of 5 March 1993, Annex III, paragraph 5.

42/ Ibid., paragraph 6

43/ Ibid., paragraph 9.

44/ See UN doc. A/AC.105/543 of 5 March 1993, paragraph 61.

45/ See report of that Subcommittee: UN doc. A/AC.105/544 of 15 April 1993.

46/ Ibid., Annex 1, paragraph 5.

47/ See ibid., paragraphs 7 and 8.

48/ See report of COPUOS: UN doc. A/48/20 of 16 August 1993.

49/ Ibid., paragraph 60.

50/ Ibid., paragraph 95.