

THE ROLE OF COSPAR GUIDELINES IN INTERPRETING ARTICLE IX OST

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A detailed set of guidelines and recommendations aimed at avoiding biological contamination of the Moon, other celestial bodies and the Earth has been developed by COSPAR. This entity is a committee of the International Council for Science (ICSU), an international NGO, and consists of two kinds of Members: National Scientific Institutions, as defined by the ICSU, and International Scientific Unions federated in ICSU which seek membership in COSPAR. These rules are broadly respected by space agencies but have a recommendatory, non-enforceable character. The paper analyses the role of these recommendatory rules in interpreting the provisions of the Outer Space Treaty, especially Article IX aimed at the protection of the environment in outer space and on Earth.

I. INTRODUCTION

The question of sustainability of space activities and specifically the protection of the environment in connection with space activities is becoming one of the favorite issues to discuss at various fora of the United Nations dealing with outer space¹. Sooner or later, it can be expected that the problems of avoiding space debris or the issue of planetary protection shall be addressed in depth in the Legal Subcommittee of the COPUOS with the aim of developing legally binding rules².

In the sphere of planetary protection, the Committee of Space Research (COSPAR), an observer for the UN Committee on Peaceful Uses of Outer Space (COPUOS) and a committee of the International Council for Science (ICSU), plays a

crucial role in formulating guidelines and recommendations based on Article IX of the Outer Space Treaty (OST)³. These recommendations are not expressly mentioned in this provision: It mentions only unspecified “appropriate measures” aimed at avoiding harmful contamination of the Moon and other celestial bodies and adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter, which States parties to the OST shall adopt.

Despite their non-treaty character, the COSPAR recommendations enjoy great respect in the scientific community and outer space practice. It is not generally known that they have a long tradition - the first recommendations can be traced back to the very beginning of the space era. Their adaptation to the newest scientific developments occurs

periodically. The undisputed practice of States on their basis and the general recognition of these principles legitimate asking the question whether they could be considered not only as a tool for the interpretation of Article IX OST, but even as an element of evolving international customary law.

II. THE COSPAR

After the USSR launched its first Earth Satellite in 1957, the International Council of Scientific Unions (ICSU), now the International Council for Science, established its Committee on Space Research (COSPAR) during an international meeting in London in 1958. COSPAR's objectives are to promote on an international level scientific research in space, with emphasis on the exchange of results, information and opinions, and to provide a forum, open to all scientists, for the discussion of problems that may affect scientific space research. These objectives are achieved through the organization of Scientific Assemblies, publications and other means⁴.

The range of scientific activities of COPUOS is manifold. Special interest is focused on advising the UN and other intergovernmental organizations on space research matters or on the assessment of scientific issues in which space can play a role, for example the preparation of scientific and technical standards related to space research.

According to the COSPAR Charter which was approved by the COSPAR Council in June 1998 and approved by ICSU at the 76th Executive Board meeting held 5 - 6 October 1998 in Paris, COSPAR consists of two kinds of

Members: National Scientific Institutions which are engaged in space research⁵ and International Scientific Unions federated in ICSU which seek membership in COSPAR⁶. Furthermore, Article III of the COSPAR Charter recognizes a category of Associated supporters: They "may be recognized" as such by COSPAR and can be recruited from public or private organizations or individuals wishing to support activities mandated by the Charter. The By-laws of the COSPAR approved by the COSPAR Council in March 2007⁷ introduced a further category, the "Associates": According to Article IX of the By-laws, any scientist actively engaged in space research may become a COSPAR Associate by attending a COSPAR biennial Assembly or a COSPAR Colloquium.

The COSPAR is governed by a Council consisting of its President, representatives of the Member National Scientific Institutions, representatives of the Member International Scientific Unions, chairmen of the COSPAR Scientific Commissions, and the chairman of the COSPAR Finance Committee. The Council is responsible for the formulation, approval and execution of all plans and policies. Between meetings of the Council, a Bureau is responsible for administering and conducting affairs. The Bureau consists of the President and Vice-Presidents of COSPAR, and six other members elected by the Council.

All of COSPAR's scientific activities are carried out by Scientific Commissions which consist of the individual associates of COSPAR who shall elect from among themselves chairmen and other officers as required. Moreover,

COSPAR may establish subsidiary bodies, including panels, for the examination of special issues: They may be established, modified, or discontinued at any time by the Bureau. The period for which the subsidiary body is established is determined by the Bureau. Also the chairmen, other officers and members of subsidiary bodies are appointed by the Bureau for the period of the (rest of the) mandate of the subsidiary body, or four years (Article XIII of the By-laws).

The Scientific Commissions (SCs) and Panels are two main types of scientific bodies which are active in COSPAR. The rules governing these bodies are contained in the COSPAR By-Laws and reproduced in the COSPAR Directory of Organization and Associates⁸. Three panels are of relevance from the perspective of planetary protection: The Panel on Planetary Protection (PPP) describes its primary objectives as being to develop, maintain, and promulgate planetary protection knowledge, policy, and plans to prevent the harmful effects of such contamination, and through symposia, workshops, and topical meetings at COSPAR Assemblies to provide an international forum for the exchange of information in this area. Through COSPAR, the Panel will inform the international community, e.g., the Committee on the Peaceful Uses of Outer Space (COPUOS) of the United Nations, as well as various other bilateral and multilateral organizations, of policy consensus in this area⁹.

The second relevant structure is the Panel on Exploration (PEX)¹⁰ which, i.a., concentrates on the issues of safeguarding the space environment while exploring and using space. Its

main targets are the Moon, Mars and near Earth objects as places which could be reached by human spaceflight. It plans to take specific measures to support, i.a. the activities of the Panel on Planetary Protection in protecting the lunar and Martian environment for scientific research. Moreover, it sees its role as providing a focus in one place for all environmental activities and “in particular to give consideration to the impact on scientific research of these potentially deleterious activities”¹¹.

Last but not least, the Panel on Potentially Environmentally Detrimental Activities in Space (PEDAS) can be mentioned¹². It is mainly concerned with perturbations of the terrestrial and planetary environments resulting from space activities. Typical examples of its subjects of interest are space debris in Earth orbit, release of chemicals in the Earth's atmosphere by rocket launches, perturbation of the lunar environment by manned activities as well as possible perturbation of the Martian environment by space activities. The Panel acts on an ad hoc basis to evaluate questions of environmental impacts by space activities alone or together with other relevant organizations primarily to advise the international community, e.g., the Committee on the Peaceful Uses of Outer Space (COPUOS) of the United Nations.

III. THE CHARACTER OF COSPAR RECOMMENDATIONS

International standards setting in the area of planetary protection goes back to 1958 when, after the successful start of the Sputnik, quarantine standards were

introduced by the International Council of Scientific Unions (ICSU)¹³. By 1967 – prior to the first successful landing in a solar system other than the Moon – there was general agreement among space faring nations that interplanetary contamination should be regulated.

This general agreement continues to exist following the entry into force of the Outer Space Treaty (Article IX) which gives binding instructions how to avoid back and forward contamination of outer space. However, the general character of the provisions of Article IX – the necessity to adopt “appropriate measures” – requires interpretation which can take place both on the international or national level. On the international level, the main bulk of work connected with the alignment of protection standards with the current scientific developments is performed in the framework of the COSPAR and its Panels: Its contemporary Planetary Protection Policy based on Article IX of the Outer Space Treaty which was approved by the COSPAR Bureau and Council in 2002 and updated four times¹⁴ defines itself as “the international standard on procedures to avoid organic-constituent and biological contamination in space exploration, and to provide accepted guidelines in this area and to guide compliance with the wording of the Outer Space Treaty and other relevant international agreements”.

Without going into the details of the respective standards, the wording of the COSPAR Planetary Protection Policy is cautious and usually does not exceed the form of a recommendation: It “recommends” that its members inform COSPAR when establishing planetary protection requirements for planetary

missions; it “recommends” that COSPAR members provide information within six months of launch about the procedure and computations used for planetary protection for each flight which is delivered in the form of a record to the Secretary General of the UN.

However, certain rules are formulated in the form that can usually be found in binding instruments: The COSPAR “accepts” that for certain missions/Target body combinations, control of contamination “shall be imposed” in accordance with a specified range of requirements. The specific provisions which are divided according to the target body/ mission type combinations even use constructions such as “requirements”, “must be protected”, “absolute prohibition”, “must remain contained” etc.

In the Appendix to the COSPAR Planetary Policy encompassing the Implementation Guidelines and Category Specifications for Individual Target Bodies¹⁵, a combination of both styles can be found: Some provisions keep the character of recommendations (“recommends the use of the best available clean room technology”), other are formulated as imperatives (“must be sterilized”, “must provide a method to break the chain of contact with Mars”).

These variations in style might be considered irrelevant from the legal point of view¹⁶: Art. IX OST does not encompass any “bridge” which would vest binding character in the COSPAR standards; they have been elaborated and adopted not by States Parties of the OST, but by the Bureau and Council of the COSPAR, an international

nongovernmental organization. The question remains, however, whether the practice of states and their recognition of these rules as legally binding provisions could justify a thesis that they are in the process of becoming customary rules of international law.

The practice on the basis of the COSPAR's Planetary Protection Policy and their implementation can be qualified as *usus longaevis*. E.g., the general recommendations have been implemented by European Cooperation for Space Standardization (ECSS), a normative system jointly elaborated by European space agencies and companies.¹⁷ The goal of these standards is to guarantee, that the entire European space community works under the same rules and uses the same procedures – not only the ESA member states but also organizations from non-member countries involved in ESA missions or missions launched from launching pads located in the territory of an ESA member State (e.g. the Guyana Space Center in Courou). Based on the CNES 2002 Planetary Protection Standard¹⁸, a working group has been nominated by ESA in order to build an ECSS. The result is a 2006 set of recommendations aimed at forward and back contamination protection, as well as extraterrestrial sample property preservation. Later on, “formal” rules should be included in a specific document focusing on management of space missions: a planetary protection authority should be nominated in space agencies in order to approve and to report to COSPAR independently of the mission project management.

In addition to international and European standards, there are national systems

which implement general recommendation of COSPAR into requirements applicable by project teams. Such national standards have been issued by e.g. NASA¹⁹ or CNES²⁰, each body of standards for the same topic respecting the culture and general practice of each agency but the requirements remaining the same for everyone.²¹

Concerning the *opinio iuris*, national legislation on space activities can be reported as a sign of understanding the rules as binding: E.g., the US domestic space law consists of a series of laws and regulations which govern specific aspects of different space activities, as well as of several non-specific norms which have a direct impact on the space industry²². The authorization requirement is structured through a system of licenses for space launches and re-entry operations, for the operation of launch and re-entry sites, and for telecommunications and remote sensing satellites. The first categories are dealt with in the *Commercial Space Launch Act* of 1984²³, which mainly requires a US license for all launches in the US territory and for the activities of US citizens or corporations outside the United States. The safety review and the mission review play the most important role within the license procedure. In the framework of this review, it is examined whether the operation concerned constitutes a hazard to public health and whether it is consistent with the United States' international obligations. Before the license is issued, the compliance of the mission with the National Environmental Policy Act²⁴ has to be verified.

The principal norm concerning the licensing of the activities of Russian

non-governmental entities is the Law on Space Activity of 1993²⁵. It established a licensing procedure for organizations and citizens of the Russian Federation as well as foreign organizations and citizens under its jurisdiction. Concerning environmental criteria, all participants in space activities are obliged to take all necessary measures to ensure that it is carried out without posing any threat to the environment (Article 2). The Russian Space Agency is empowered to monitor the licensed operation and may shut down the operations if they threaten public health. Environmental criteria are also part of the licensing procedures of several other national space acts, such as the 1998 Australian Space Activities Act²⁶, the 1986 United Kingdom Act on Outer Space Activities²⁷ or the 1996 Law on Space Activities of Ukraine²⁸.

To qualify the COSPAR rules on Planetary Protection Policy on the basis of the national environmental legislations as *opinio iuris* seems to be, however, premature: First, these legal acts do not implement the specific COSPAR rules themselves, but mainly the general rules of Article IX OST. Second, the practice of involving environmental criteria in the national legislation cannot be qualified as a general practice: Some laws regulating space activities like the 1993 South African Space Affairs Act²⁹ have not included environmental criteria in their framework; it gives a general discretion to the State Council for Space Affairs in this area. Moreover, many other States have not adopted any space legislation at all yet. Third, there are no public statements of States expressing their *opinion iuris* in this area, such as in the UN General Assembly. In summary, it seems that there is not enough argument

for stating that the COSPAR standards can be considered an element of evolving customary international rules at present - which does not exclude the possibility that they could become such in the future. Even if they must be qualified (only) as recommendatory rules at the moment, they are a significant tool for interpreting Article IX OST and an important basis for State practice.

IV. CONCLUSION

The COSPAR rules on Planetary Protection represent an international policy consensus and a set of evolving, recommendatory rules which are highly recognized in the international community. However, there is not a clear *opinio iuris* at present which would enable us to consider them a part of customary international law. This does not diminish their character as an important tool for interpreting Article IX of the Outer space Treaty and an important basis for State practice.

¹ See e.g. A/AC.105/C.1/2011/CRP.9 of 4 February 2011 or A/AC.105/L.281/Add.6 of 9 June 2011.

² For an academic proposal of a declaration on planetary protection, see M. Hofmann/ P. Rettberg/ M. Williamson (eds.), *Protecting the Environment of Celestial Bodies: The Need for Policy and Guidelines*, IAA 2010.

³ UN Doc. A/Res/222 (XXI).

⁴ See the Website of the COSPAR <http://cosparhq.cnes.fr/About/about.htm>.

⁵ National scientific institution members and their representatives to COSPAR see

<http://cosparhq.cnes.fr/About/natinst.htm>.

⁶ International scientific unions' members and their representatives to COSPAR see

<http://cosparhq.cnes.fr/About/sciunion.htm>.

⁷ [Http://cosparhq.cnes.fr/About/Bylaws.htm](http://cosparhq.cnes.fr/About/Bylaws.htm).

⁸ [Http://cosparhq.cnes.fr/Scistr/Scistr.htm](http://cosparhq.cnes.fr/Scistr/Scistr.htm).

⁹ <http://cosparhq.cnes.fr/Scistr/Scistr.htm#PPP>.

¹⁰ [Http://www.gwu.edu/~spi/cospar.cfm](http://www.gwu.edu/~spi/cospar.cfm).

¹¹ COSPAR Panel on Exploration Report (2010), *Toward a Global Space Exploration Program: A Stepping Stone Approach*, COSPAR, Paris, June 2010, 47 ff.

¹² [Http://cosparhq.cnes.fr/Scistr/Scistr.htm#PEDAS](http://cosparhq.cnes.fr/Scistr/Scistr.htm#PEDAS)

¹³ C. A. Conley, *COSPAR Planetary Protection Policy – Present Status*, in: M. Hofmann/ P. Rettberg/ M. Williamson (eds.), *Protecting the Environment of Celestial Bodies: The Need for Policy and Guidelines*, IAA 2010.

¹⁴ [Http://cosparhq.cnes.fr/Scistr/PPPolicy%20\(24Mar2011\).pdf](http://cosparhq.cnes.fr/Scistr/PPPolicy%20(24Mar2011).pdf).

¹⁵ Appendix of the COSPAR Planetary Policy in the Version of 2005.

¹⁶ See G. Danilenko, *Space Activities and Customary Law of Environmental Protection*, in: K.-H. Böckstiegel, *Environmental Aspects of Outer Space*, 1990, 169 ff.

¹⁷ A. Debus, *The European Standard on Planetary Protection Requirements*, *Research in Microbiology*, Elsevier, 2005, p. 15.

¹⁸ CNES, *System of Safety: Planetary Protection Requirements*, *Référenciel Normatif CNES*, RNC-CNES-R-14, fourth ed., 2002.

¹⁹ NASA, *Planetary Protection Provisions for Robotic Extra-Terrestrial Mission*, NPR 8020.12C, 2005.

²⁰ CNES, *System of Safety: Planetary Protection Requirements*, *Référenciel Normatif CNES*, RNC-CNES-R-14, fourth ed., 2002.

²¹ A. Debus, *The European Standard on Planetary Protection Requirements*, *Research in Microbiology*, Elsevier, 2005, p. 15.

²² J. Hermida, *Legal Basis for a National Space Legislation*, Dordrecht, Kluwer, 2004, 98 et seq.

²³ 49 U.S.C. Subtitle IX, ch. 701 – *Commercial Space Launch Activities*, Secs. 70101-70119, formerly the *Commercial Space Launch Act of 1984 (CSLA)*, as amended (49 U.S.C. App. 2601-2623).

²⁴ 42 U.S.C. 4321. et. seq.

²⁵ *Law of the Russian Federation on Space Activities*, August 20, 1993 Resolution No. 5663-1, as amended

²⁶ *Australian Space Activities Bill, 1998: No. 123, Division 2 Part 18.*

²⁷ Chapter 38, article 5.

²⁸ VVRU, 1997, p.2, Article 8 and 21.

²⁹ No. 84 of 2 July 1993, as amended.