

undertaking of space related activities, Satellite Telecommunications, and domestic regulation and development of Remote Sensing Activities.

The book concludes with a Chapter on international and domestic regulation of Intellectual Property rights of Inventions made in outer space. Given the interesting topics and a well organized and written text, persons with Spanish fluency who could benefit from the more in-depth Spanish text would likely find this book a useful tool in understanding the current framework and issues in Space Law.

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SPACE COOPERATION INTO THE 21ST CENTURY, edited by Peter M. Bainum, Gayle L. May, Makoto Nagatomo, Kuninori T. Uesugi, Fu Bingchen and Zhang Hui (Am. Astronautical Soc'y, Advances in the Astronautical Sciences, vol. 96, Univelt 1997), pp. xviii, 1080.

SPACE SAFETY AND RESCUE 1995, edited by Gloria W. Heath (Am. Astronautical Soc'y, Science and Technology Ser., vol. 93, Univelt 1997), pp. xii, 469.

The first of these two publications of the American Astronautical Society includes papers presented at the Seventh International Space Conference of Pacific-Basin Societies held July 15-18, 1997, in Nagasaki, Japan. Its theme focused on "Space Cooperation into the 21st Century". Among the variety of topics addressed at the technical sessions were space communications, space transportation and propulsion, space science and missions, and beneficial applications of space systems. The technical papers were preceded by sections addressing national and international programs and contributions submitted by international students for a competition in connection with the conference. Sections which may be of special interest to lawyers include those dealing with space debris and environmental issues, as well as those focusing on manned space flight, the international space station and a Pacific Spaceport.

While the second publication under the auspices of the International Academy of Astronautics, as those under "Space Safety and Rescue" title in prior years, follows its traditional pattern by focusing on the technical aspects of the subject matter, it also provides data on effects and ramifications involving risk assessment and management issues in different scenarios. Random examples of potential legal interest may be found in both the engineering ("Space Debris Mitigation" by Joseph P. Loftus, Jr.) and the economical aspects of space debris mitigation measures ("Meteoroid and Orbital Debris Risk Mitigation for the International Space Station" by Allen J. Lindenmoyer, *et al.*). Unfortunately, the publication has no index and a perfunctory glance reveals no general exposition of safety concerns about earth threatening asteroids, perhaps because this had not been a major news item in 1995.

RECENT PUBLICATIONS*

A. Books

- BASAL, KEMAL, *THE CONCEPT OF THE COMMON HERITAGE OF MANKIND IN INTERNATIONAL LAW* (Nijhoff, The Hague 1988).
- BENDER, R., *LAUNCHING AND OPERATING SATELLITES* (Utrecht Studies in Air & Space L., Nijhoff, The Hague 1998).
- BÖCKSTIEGEL, KARL-HEINZ (ED.), *PERSPECTIVES OF AIR LAW, SPACE LAW, AND INTERNATIONAL BUSINESS LAW FOR THE NEXT CENTURY* (Carl Heymanns Verlag, Köln, 1996).
- GOROVE, STEPHEN, (ED.) *UNITED STATES SPACE LAW - NATIONAL AND INTERNATIONAL REGULATION* (Release 98-1, Oceana 1998).
- HERMIDA, JULIAN, *COMMERCIAL SPACE LAW: INTERNATIONAL, NATIONAL AND CONTRACTUAL ASPECTS* (Ediciones Depalma, Buenos Aires 1997).
- JOHNSON-FREESE, JOAN & HANDBERG, ROGER, *SPACE: THE DORMANT FRONTIER, CHANGING THE PARADIGM FOR THE 21ST CENTURY* (Praeger 1997).

B. Contributions to Books

- Isome, Noboy & Yoshida, Hiroshi, *Possibility of Commercial Space Debris Management*, in HEATH, GLORIA (ED.) *SPACE SAFETY AND RESCUE* 1995 423 (Am. Astron. Soc'y, Science & Tech. Ser. Vol. 93, Univelt 1997).
- Loftus, Joseph P., Jr., *Space Debris Mitigation*, *id.* at 345.
- Lindenmoyer, Alan J., Theall, Jeff R. & Williamsen, Joel, *Meteoroid and Orbital Debris Risk Mitigation for the International Space Station*, *id.* at 431.

C. Articles

- Abeyratne, R.I.R., *Liability of States for Collusion with Extraterrestrial Intelligence in the Sharing and Use of Space Technology*, 21 (II) ANN. AIR & SPACE L. 1 (1996).
- Almond Jr., H.H., *Application and Implementation, the Law of Outer Space*, 40 PROC. COLLOQ. L. OUTER SPACE 193 (1998).
- Andem, M., *Implementation of Article IV of the Outer Space Treaty of 1967 During the 21st Century*, 40 PROC. COLLOQ. L. OUTER SPACE 338 (1998).
- Balfour, John, *Flying High Above the Law*, 22 ANNALS AIR & SPACE L. 17 (Part 3 1997).
- Balfour, John, *Slots for Sale*, 22 ANNALS AIR & SPACE L. 109 (Part 3 1997).
- Benkö, M. & Schrögl, K., *Space Law at Unispace III (1999) and Beyond*, 40 PROC. COLLOQ. L. OUTER SPACE 157 (1998).

* Compiled and edited by Michael A. Gorove, Attorney at Law, Associate Editor, J. SPACE L.

- Bennet, Gary L., *Lessons of space nuclear power*, 36 AEROSPACE AMERICA 32 (No. 7, 1998).
- Betancourt, C.H.R., *The Treaty of 67 in Front of 21st Century*, 40 PROC. COLLOQ. L. OUTER SPACE 309 (1998).
- Böckstiegel, Karl-Heinz, Kramer, Paul & Polley, Isabel, *Patent Protection for the Operation of Telecommunications Satellite Systems in Outer Space* (Part I), 47 ZLW 3 (1998).
- Brennan, T. J. & Macauley, M. K., *Technology and Coordination: Antitrust Implications of Remote Sensing Satellites*, 42 ANTITRUST BULL. 477 (1997)
- Brooks, E., *Dangers from Asteroids and Comets: Relevance of International Law and the Space Treaties*, 40 PROC. COLLOQ. L. OUTER SPACE 234 (1998).
- Castro Villalobos, José Humberto, *La Ley Federal de Telecomunicaciones y la Comunicación Satelital*, 4 LEX 42 (No. 32, Feb. 1998).
- Christol, C. Q., *Important Concepts for the International Law of Outer Space*, 40 PROC. COLLOQ. L. OUTER SPACE 73 (1998).
- Christol, C. Q., *The Moon Treaty and the Allocation of Resources*, 22 (II) ANNALS AIR & SPACE L. 31 (1997).
- Cocca, A. A., *Solidarity and Humanism in the Outer Space Treaty*, 40 PROC. COLLOQ. L. OUTER SPACE 68 (1998).
- Cocca, de las Mercedes Esquivel, *Is It Necessary to Redefine Principles and Concepts of the Outer Space Treaty?*, 40 PROC. COLLOQ. L. OUTER SPACE 84 (1998).
- Cramer, K., *The Lunar Users Union - An Organization to Grant Land Use Rights on the Moon in Accordance with the Outer Space Treaty*, 40 PROC. COLLOQ. L. OUTER SPACE 352 (1998).
- Debus, A., Runavot, J., Rogovsky, G., Bogomolov, V., Khamidullina, N. & Trofimov, V., *Mars 96 Planetary Protection Program and Implementations for Mars Environment Preservation*, 40 PROC. COLLOQ. L. OUTER SPACE 220 (1998).
- Dembling, P. G., *Negotiating Issues in Forming the 1967 Treaty on Outer Space*, 40 PROC. COLLOQ. L. OUTER SPACE 34 (1998).
- Diederiks-Verschoor, I.H. Ph., *The Development of Financing of Spacecraft*, 40 PROC. COLLOQ. L. OUTER SPACE 212 (1998).
- Doyle, S. E., *Concepts of Space Law Before Sputnik*, 40 PROC. COLLOQ. L. OUTER SPACE 3 (1998).
- Freeman Marsha, *Hermann Oberth: The Father of Spaceflight*, 5 SPACE GOVERNANCE 48 (No.1, 1998).
- Gál, G., *Thirty Years of Functionalism*, 40 PROC. COLLOQ. L. OUTER SPACE 125 (1998).
- Galloway, E., *The United States and the 1967 Treaty on Outer Space*, 40 PROC. COLLOQ. L. OUTER SPACE 18 (1998).
- Goldman, N.C. & O'Donnell, D.J., *Revisiting the Outer Space Treaty: A Re-Examination of the Sovereignty-Jurisdiction Compromise*, 40 PROC. COLLOQ. L. OUTER SPACE 316 (1998).
- Golrounia, A.A., Bahrami, M., *Outer Space Treaty in 21st Century: A Change of Concept*, 40 PROC. COLLOQ. L. OUTER SPACE 303 (1998).

- Gorove, Stephen, *Aerospace Object - Legal and Policy Issues for Air and Space Law*, 25 J. SPACE L. 101(1997).
- Gorove, Stephen, *Legal and Policy Issues Raised by the Proposed Notion of "Aerospace Object"*, 40 PROC. COLLOQ. L. OUTER SPACE 411 (1998).
- Hashimoto, Yasuaki, *Legal Analysis of Military Observation from Outer Space*, 40 PROC. COLLOQ. L. OUTER SPACE 229 (1998).
- Hashimoto, Yasuaki, *Japanese Space Policy - Where is she going?*, KOREAN J. AIR & SPACE L. 435 (No. 9, 1997).
- Haeck, L., *Aspects Juridiques de Certaines Utilisations Militaires de L'espace*, 21 (I) ANN. AIR & SPACE L. 65 (1996).
- He, Qizhi, *The Outer Space Treaty in Perspective*, 25 J. SPACE L. 93 (1997).
- He, Qizhi, *The Outer Space Treaty in Perspective*, 40 PROC. COLLOQ. L. OUTER SPACE 51 (1998).
- Hermida, J., *Argentine Space Law and Policy*, 21 (II) ANN. AIR & SPACE L. 177 (1996).
- Hoskova, M., *Outer Space Treaty as a Framework for the Regulation of Space Debris*, 40 PROC. COLLOQ. L. OUTER SPACE 280 (1998).
- Hwangbo, Han, *A Proposal on the Peaceful and Efficient Use of Space Resources for Meeting Increased Satellite Demand in the Asia-Pacific Region*, KOREAN J. AIR & SPACE L. 421(No. 9, 1997).
- Jakhu, R. S., *Application and Implementation of the 1967 Outer Space Treaty*, 40 PROC. COLLOQ. L. OUTER SPACE 442 (1998).
- Jankowitsch P., *From the Cold War to Detente in Outer Space: The Role of the United Nations in Outer Space Law Development*, 40 PROC. COLLOQ. L. OUTER SPACE 43 (1998).
- Jasentuliyana, N., *The Development of the Outer Space Treaties and Legal Principles from a Third World Perspective*, 40 PROC. COLLOQ. L. OUTER SPACE 57 (1998).
- Jin, Lee Young, *A Study on Legal Issues in Telecommunication and Direct Broadcasting by Uses of Artificial Satellites*, KOREAN J. AIR & SPACE L. 487 (No. 9, 1997).
- Kerrest, A., *Launching Spacecraft from the Sea and the Outer Space Treaty: The Sea Launch Project*, 40 PROC. COLLOQ. L. OUTER SPACE 264 (1998).
- Kerrest, A., *Remarks on the Responsibility and Liability for Damages Caused by Private Activity in Outer Space*, 40 PROC. COLLOQ. L. OUTER SPACE 134 (1998).
- Kofi Henaku, B.D., *The International Liability of the GNSS Space Segment Provider*, 21 (I) ANN. AIR & SPACE L. 143 (1996).
- Kolosov, Y., *Background and History of the Outer Space Treaties*, 40 PROC. COLLOQ. L. OUTER SPACE 437 (1998).
- Kolosov, Y., *The USSR and the 1967 Treaty on Outer Space*, 40 PROC. COLLOQ. L. OUTER SPACE 14 (1998).
- Kopal, V., *Outer Space as a Global Common*, 40 PROC. COLLOQ. L. OUTER SPACE 108 (1998).
- Kopal, V., *Some Comments on the Significance of the 1967 Outer Space Treaty for the Establishment and Development of Space Law of our Times*, 40 PROC. COLLOQ. L. OUTER SPACE 454 (1998).

- Kosuge, T., *Commercialization of Space Activities and Applications of the Space Treaty...Geostationary Orbit and Frequency Spectrum*, 40 PROC. COLLOQ. L. OUTER SPACE 330 (1998).
- Kotaite, A., *ICAO's Role with respect to the Institutional Arrangements and Legal Framework of Global Navigation Satellite System (GNSS) Planning and Implementation*, 21 ANNALS AIR & SPACE L. 195 (Pt. I, 1996).
- Kries, W. von, *Some Comments on the U.S. Global Positioning System Policy*, 45 Z. LUFT. R. 406 (1996).
- Lafferranderie, G., *Outlook on Space Law over the Next 30 Years*, 40 PROC. COLLOQ. L. OUTER SPACE 458 (1998).
- Lafferranderie, G., *The Outer Space Treaty and the International Organisations Conducting Space Activities*, 40 PROC. COLLOQ. L. OUTER SPACE 161 (1998).
- Larsen, P.B., *GNSS Global Navigation Satellite Systems Augmentation: Legal Issues*, 40 PROC. COLLOQ. L. OUTER SPACE 271 (1998).
- Le Gall, Jean-Yves, *CNES - The Way Forward*, 13 SPACE POL'Y 15 (No.1, 1997).
- Leive, David, *The Accounting Rate Crisis - What is the Real Problem?*, ITU NEWS 28 (No.2, 1998).
- Lyall, F., *Telecommunications and the Outer Space Treaty*, 40 PROC. COLLOQ. L. OUTER SPACE 385 (1998).
- Martinez, L.F., *Space Telecommunications and the Internet: Implications for the Outer Space Treaty*, 40 PROC. COLLOQ. L. OUTER SPACE 393 (1998).
- Miniatis, Dimitri, *The Law Governing Liability for Damage Caused by Space Objects: From State Responsibility to Private Liability*, 22 ANNALS AIR & SPACE L. 380 (Pt. II, 1997).
- Monserrat Filho, José, *Total Militarization of Space and Space Law: The Future of the Article IV of the 67' Outer Space Treaty*, 40 PROC. COLLOQ. L. OUTER SPACE 358 (1998).
- Montluc, Bertrand de, *The Changing Face of the European Space Sector: The Policies of Germany, Italy and the United Kingdom*, 13 SPACE POL'Y 9 (No. 1, 1997).
- Nakatani, K., *Bilateral Agreements on Shuttle Contingency Landing Sites: Practical Application of the Basic Concepts and Provisions of the Outer Space Treaty and Other Agreements in Air and Space Law*, 40 PROC. COLLOQ. L. OUTER SPACE 205 (1998).
- O'Donnell, D. J., *Benefit Sharing the Municipal Model*, 5 SPACE GOVERNANCE 66 (No.1, 1998).
- O'Donnell, D.J. & Goldman, N., *Astro Law as Lex Communis Spatialis*, 40 PROC. COLLOQ. L. OUTER SPACE 322 (1998).
- O'Donnell, D.J. & Harris, P.R., *Legal Strategies for a Lunar Economic Development Authority*, 21 ANNALS AIR & SPACE L. 121 (Pt. I, 1996).
- O'Donnell, D.J., Robinson III, G. & Robinson IV, G., *This Treaty Needs a Lawsuit*, 40 PROC. COLLOQ. L. OUTER SPACE 185 (1998).
- Ojalehto, G. & Hertzfeld H., *Growth, cooperation mark 1997 space activities - All eyes turn to Latin America*, 36 AEROSPACE AMERICA 4 (No. 7, 1998).
- Ospina, S., *The Privatisation of the "Province of Mankind": Time to Reassess Basic Principles of Space Law?*, 40 PROC. COLLOQ. L. OUTER SPACE 89 (1998).

- Perek, L., *Outer Space Treaty in Perspective*, 40 PROC. COLLOQ. L. OUTER SPACE 291 (1998).
- Poulantzas, N.M., *The Judicial Settlement of Disputes Arising Out of Space Activities: Returning to an Old Proposal*, 40 PROC. COLLOQ. L. OUTER SPACE 150 (1998).
- Sgrosso, G. Catalano, *Must the Special Typology of Aerospace Planes Lead to the Supplementation of the Rules of the Outer Space Treaty?*, 40 PROC. COLLOQ. L. OUTER SPACE 402 (1998).
- Smith, B.L. & Mazzoli, E., *Problems and Realities in Applying the Provisions of the Outer Space Treaty to Intellectual Property Issues*, 40 PROC. COLLOQ. L. OUTER SPACE 169 (1998).
- Sterns, P.M. & Tennen, L.I., *Exobiology and the Outer Space Treaty: From Planetary Protection to the Search for Extraterrestrial Life*, 40 PROC. COLLOQ. L. OUTER SPACE 141 (1998).
- Terekhov, A.D., *UN General Assembly Resolutions and Outer Space Law*, 40 PROC. COLLOQ. L. OUTER SPACE 97 (1998).
- Tompson, J.C., *Space for Rent: the International Communications Union, Space Law and Orbit/Spectrum Leasing*, 62 J. AIR L. & COMM. 279 (1996).
- von der Dunk, F., *Future Developments Related to Outer Space Treaties*, 40 PROC. COLLOQ. L. OUTER SPACE 449 (1998).
- von der Dunk, F.G., *The Dark Side of the Moon - The Status of the Moon: Public Concepts and Private Enterprise*, 40 PROC. COLLOQ. L. OUTER SPACE 119 (1998).
- White, W.N., Jr., *Real Property Rights in Outer Space*, 40 PROC. COLLOQ. L. OUTER SPACE 370 (1998).
- Williams, M., *The Development of Article IX of the 1967 Space Treaty*, 40 PROC. COLLOQ. L. OUTER SPACE 177 (1998).
- Williamson, M., *Protection of the Space Environment Under the Outer Space Treaty*, 40 PROC. COLLOQ. L. OUTER SPACE 296 (1998).

Reports

- Masson-Zwaan, T., *Report of the Discussion Held After the Sessions of the 40th Colloquium on the Law of Outer Space*, 40 PROC. COLLOQ. L. OUTER SPACE 423 (1998).
- Masson-Zwaan, Tanja, *Space Law Colloquium in Turin, Italy*, 25 J. SPACE L. 133 (1997).
- Polley, Isabel, *European Centre for Space Law (ECSL): Sixth Practitioner's Forum, Paris, ESA Headquarters, November 14, 1997*, 47 ZLW 74 (1998).
- Sanidas, Matthew W. and Thaker, Jitendra S., *Establishment of a New Bureau and Elaboration of the Agenda of UNISPACE III Highlight 40th COPUOS Session*, 25 J. SPACE L. 127 (1997).
- Sanidas, Matthew W., *Scientific and Technical Subcommittee of the COPUOS Holds Thirty-Fourth Session and also Acts as Advisory Committee for Third UNISPACE Conference*, 25 J. SPACE L. 113 (1997).

- Schrögl, Kai-Uwe, *International Colloquium: Legal Aspects of Cooperation Between the European Space Agency (ESA) and Central and Eastern European Countries, Prague, 11-12 September 1997*, 47 ZLW 72 (1998).
- Schrögl, Kai-Uwe, *International Institute of Space Law (IISL): 40th International Colloquium on the Law of Outer Space During the 48th International Astronautical Congress*, 47 ZLW 76 (1998).
- Terekhov, A. *Annual Report 1997: Standing Committee on the Status of International Agreements Relating to Activities in Outer Space*, 40 PROC. COLLOQ. L. OUTER SPACE 426 (1998).
- Thaker, Jitendra S., *U.N. Legal Subcommittee on Space Agrees on New Agenda Item*, 25 J. SPACE L. 123 (1997).

Notes/Comments

- Cassidy, Daniel E., *Current Space Insurance Market Conditions*, 25 J. SPACE L. 155 (1997).
- Hodge, S. H., *Satellite Data and Environmental Law: Technology ripe for Litigation Application*, 14 PACE ENVTL. L. REV. 691 (1997).
- Rothblatt, Martine, *The Legal Status of Stratospheric Platforms: An Update*, 25 J. SPACE L. 159 (1997).
- Sagar, David, *Mobile Satellite Communications: Challenging the Regulatory Barriers*, 25 J. SPACE L. 150 (1997).
- Twibell, T. S., *Space Law: Legal Restraints on Commercialization and Development of Outer Space*, 65 UMKC L. REV. 589 (1997).

Case Notes

- Case Developments*, 25 J. SPACE L. 161 (1997).

Short Accounts

- Colomb, Fernando Raul, *First United States - Argentina Joint Conference on Space Science and Technology for Society*, 25 J. SPACE L. 166 (1997).
- Crowther, Daphné, *Legal Aspects of Cooperation Between ESA and Central and Eastern European Countries*, 25 J. SPACE L. 164 (1997).
- NASA's Reusable Launch Vehicle Program*, 25 J. SPACE L. 169 (1997).

Book Reviews/Notices

- DALLMEYER, DORINDA G. & TRIPIS, KOSTA (EDS.) *HEAVEN AND EARTH: CIVILIAN USES OF NEAR-EARTH SPACE* (Kadletz), 46 ZLW 552 (1997).
- JASENTULIYANA, NANDASAIRI (ED.), *PERSPECTIVES ON INTERNATIONAL SPACE LAW* (Stephen Gorove), 25 J. SPACE L. 177 (1997).
- LAFFERRANDERIE, G. & CROWTHER, D. (CO-EDS.), *OUTLOOK ON SPACE LAW OVER THE NEXT 30 YEARS* (K. Gorove), 25 J. SPACE L. 177 (1997).
- LAFFERRANDERIE, G. & CROWTHER, D. (CO-EDS.), *OUTLOOK ON SPACE LAW OVER THE NEXT 30 YEARS* (Kadletz), 46 ZLW 553 (1997).

- MERGES, ROBERT P. & REYNOLDS, GLENN H., OUTER SPACE - PROBLEMS OF LAW AND POLICY, 25 J. SPACE L. 182 (1997).
- PALYGA, EDWARD J. (ED.), INTERNATIONAL SPACE LAW MISCELLANEA - LIBER AMICORUM HONOURING PROFESSOR DR. ANDRZEJ GÓRBIEL IN HIS 65TH ANNIVERSARY, 25 J. SPACE L. 181 (1997).
- ZUBRIN, ROBERT M. (ED.), FROM IMAGINATION TO REALITY: MARS EXPLORATION STUDIES OF THE JOURNAL OF THE BRITISH INTERPLANETARY SOCIETY, 25 J. SPACE L. 182 (1997).

D. Official Publications

AGREEMENTS

- Constitution and Convention of the ITU (Geneva, 1992). In 1997, *acceptance* by Suriname; *accession* by Cambodia, Saint Lucia; *approval* by Hungary, Saudi Arabia; *ratification* by Argentina, Austria, Belgium, Chad, Gambia, Iceland, Nepal, Pakistan, Tunisia, the United States.
- Instruments Amending the Constitution and the Convention of the ITU (Geneva, 1992), Kyoto, 1994. In 1997, *acceptance* by Suriname; *accession* by Cambodia, Saint Lucia; *approval* by Hungary, Saudi Arabia; *ratification* by Argentina, Austria, Belgium, Chad, Ecuador, Gambia, Iceland, Mexico, Nepal, Pakistan, Portugal, Tunisia, United Arab Emirates, the United States. In 1998, *acceptance* by Korea (Republic of).
- Optional Protocol on the Compulsory Settlement of Disputes Relating to the Constitution and Convention of the ITU and to the Administrative Regulations (Geneva, 1992). In 1997 *ratification* by Austria, Belgium, Iceland, Tunisia.
- U.S.-Canada-ESA-Japan-Russia Agreement on the Civil International Space Station. Done at Washington, January 29, 1998.*
- U.S.-ESA Memorandum of Understanding concerning Cooperation on the Civil International Space Station. Done at Washington, January 29, 1998.**

CONGRESS

- HOUSE COMM. ON SCIENCE, COMMERCIAL SPACE ACT OF 1997, REPORT, OCT. 24, 1997. 105TH CONG., 1ST SESS. (1997).
- HOUSE COMM. ON SCIENCE, HEARINGS BEFORE THE SUBCOM. ON SPACE AND AERONAUTICS TO CONSIDER NASA FY98 AUTHORIZATION REQUEST, MAR. 4, 12, 13, 19, APR. 9, 10, 1997. 105TH CONG, 1ST SESS. (1997).

* Excerpts of the Agreement, are reproduced in CURRENT DOCUMENTS, *infra*. For full text, see UNITED STATES SPACE LAW - NATIONAL AND INTERNATIONAL REGULATION, Sec. II. 22(f) (Stephen Gorove ed., OCEANA 1998).

** For a text of the Memorandum of Understanding, see UNITED STATES SPACE LAW - NATIONAL AND INTERNATIONAL REGULATION, Sec. II. 22(g) (Stephen Gorove ed., OCEANA 1998).

HOUSE COMM. ON SCIENCE, HEARING BEFORE THE SUBCOM. ON SPACE AND AERONAUTICS TO EXAMINE ISSUES RELATED TO CONSIDERATION OF H.R. 1702, THE COMMERCIAL SPACE ACT OF 1997, TO PROMOTE DEVELOPMENT OF COMMERCIAL SPACE INDUSTRIES, INCLUDING REMOTE SENSING AND SPACE TRANSPORTATION, MAY 21, 22, JUNE 4, 1997. 105TH CONG., 1ST SESS. (1997).

HOUSE GOVERNMENT REFORM AND OVERSIGHT COMM., HEARING BEFORE THE SUBCOM. ON NATIONAL SECURITY, INTERNATIONAL AFFAIRS, AND CRIMINAL JUSTICE TO EXAMINE NASA EFFORTS TO ACHIEVE SPENDING REDUCTIONS AND PROGRAM EFFICIENCIES THROUGH DOWNSIZING OF INFRASTRUCTURE, SEPT. 11, 1996. 104TH CONG., 2ND SESS. (1996).

ESA

Annual Report of the European Space Agency (1997), UN Doc. A/AC.105/695.

EUMETSAT

Annual Report of the European Organization for the Exploitation of Meteorological Satellites (1997), UN Doc. A/AC.105/695.

IAA

Morgenthaler, George W. & Smith, Gerald (eds.), *International Exploration of Mars* (IAA, Paris 1996).

Position Paper on EVA Safety (compiled by an Ad Hoc Expert Group of the International Academy of Astronautics, Paris 1996).

Position Paper on Orbital Debris (compiled by an Ad Hoc Expert Group of the International Academy of Astronautics, Paris 1996).

INTELSAT

Annual Report of the International Telecommunication Satellite Organization (1997), UN Doc. A/AC.105/696

ITU

World Telecommunication Development Report (Geneva 1998).

NASA

NASA THESAURUS, VOL. 1: HIERARCHICAL LISTING WITH DEFINITIONS & VOL. 2: ROTATED TERM DISPLAY (NASA/SP 1998-7501, vols. 1 & 2).

NATIONAL RESEARCH COUNCIL

Protecting the Space Shuttle from Meteorites (National Acad. Sciences Press, 1997).

UNITED NATIONS

- General Assembly, Committee on the Peaceful Uses of Outer Space, Report of the Scientific and Technical Subcommittee on the Work of its Thirty-fifth Session, Doc. A/AC.105/697 (1998).
- General Assembly, Committee on the Peaceful Uses of Outer Space, Report of the Legal Subcommittee on the Work of its Thirty-seventh Session, Doc. A/AC.105/698 (1998).
- General Assembly, Committee on the Peaceful Uses of Outer Space, Report of the Committee on the Peaceful Uses of Outer Space, Off. Rec. 53rd Sess., Doc. A/53/20 (1998).
- Highlights in Space: Progress in Space Science, Technology and Applications, International Cooperation and Space Law, 1997, Doc. A/AC.105/691 and Corr. 1.
- Report on the United Nations/European Space Agency Symposium on Space Industry Cooperation with the Developing World (Graz, Austria, 8-11 Sept. 1997), Doc. A/AC.105/683.
- Report on the United Nations/International Astronautical Federation Workshop on Space Technology as a Cost-effective Tool to Improve Infrastructures in Developing Countries (Turin, Italy, 2-5 October 1997), Doc. A/AC.105/686.
- Secretariat, Note on "Questionnaire on possible legal issues with regard to aerospace objects: replies from member States," Doc. A/AC.105/635 and Add. 1-5.
- Secretariat, Note on "Comprehensive analysis of the replies to the questionnaire on possible legal issues with regard to aerospace objects," Doc. A/AC.105/C.2/L.204.
- Steps taken by space agencies for reducing the growth of damage potential of space debris, Doc. A/AC.105/681.
- Work Plan for Developing a Framework for safety assurance processes and standards for nuclear power sources in outer space: working paper submitted by the Russian Federation, the United Kingdom of Great Britain and Northern Ireland and the United States of America, Doc. A/AC.105/C.1/L.222.

CURRENT DOCUMENTS**AGREEMENT AMONG THE GOVERNMENT OF CANADA,
GOVERNMENTS OF MEMBER STATES OF THE EUROPEAN SPACE
AGENCY, THE GOVERNMENT OF JAPAN, THE GOVERNMENT OF
THE RUSSIAN FEDERATION, AND THE GOVERNMENT OF THE
UNITED STATES OF AMERICA CONCERNING COOPERATION ON
THE CIVIL INTERNATIONAL SPACE STATION.**

Done at Washington, January 29, 1998

Excerpts*

Article I
Object and Scope

1. The object of this Agreement is to establish a long-term international cooperative framework among the Partners, on the basis of genuine partnership, for the detailed design, development, operation, and utilization of a permanently inhabited civil international Space Station for peaceful purposes, in accordance with international law. This civil international Space Station will enhance the scientific, technological, and commercial use of outer space. This Agreement specifically defines the civil international Space Station program and the nature of this partnership, including the respective rights and obligations of the Partners in this cooperation. This Agreement further provides for mechanisms and arrangements designed to ensure that its object is fulfilled.
2. The Partners will join their efforts, under the lead role of the United States for overall management and coordination, to create an integrated international Space Station. The United States and Russia, drawing on their extensive experience in human-space flight, will produce elements which serve as the foundation for the international Space Station. The European Partner and Japan will produce elements that will significantly enhance the Space Station's capabilities. Canada's contribution will be an essential part of the Space Station. This Agreement lists in the Annex the elements to be provided by the Partners to form the international Space Station.
3. The permanently inhabited civil international Space Station (hereinafter "the Space Station") will be a multi-use facility in low-earth orbit, with flight elements and Space Station-unique ground elements provided by all the Partners. By providing Space Station flight elements, each Partner acquires certain rights to use the Space Station and participates in its management in accordance with this Agreement, the MOUs, and implementing arrangements.
4. The Space Station is conceived as having an evolutionary character. The Partner States' rights and obligations regarding evolution shall be subject to specific provisions in accordance with Article 14.

* For full texts of the Agreement and the Memorandum of Understanding of the same date, see UNITED STATES SPACE LAW - NATIONAL AND INTERNATIONAL REGULATION, Secs. II.22 (f) and (g) (Stephen Gorove ed., OCEANA 1998).

Article 2
International Rights and Obligations

1. The Space Station shall be developed, operated, and utilized in accordance with international law, including the Outer Space Treaty, the Rescue Agreement, the Liability Convention, and the Registration Convention.
2. Nothing in this Agreement shall be interpreted as:
 - (a) modifying the rights and obligations of the Partner States found in the treaties listed in paragraph 1 above, either toward each other or toward other States, except as otherwise provided in Article 16;
 - (b) affecting the rights and obligations of the Partner States when exploring or using outer space, whether individually or in cooperation with other States, in activities unrelated to the Space Station; or
 - (c) constituting a basis for asserting a claim to national appropriation over outer space or over any portion of outer space.

Article 3
Definitions

For the purposes of this Agreement, the following definitions shall apply:

- (a) "this Agreement":
the present Agreement, including the Annex;
- (b) "the Partners" (or, where appropriate, "each Partner"):
the Government of Canada; the European Governments listed in the Preamble which become parties to this Agreement, as well as any other European Government that may accede to this Agreement in accordance with Article 25(3), acting collectively as one Partner; the Government of Japan; the Government of the Russian Federation; and the Government of the United States;
- (c) "Partner State":
each Contracting Party for which this Agreement has entered into force, in accordance with Article 25.

Article 4
Cooperating Agencies

1. The Partners agree that the Canadian Space Agency (hereinafter "CSA") for the Government of Canada, the European Space Agency (hereinafter "ESA") for the European Governments, the Russian Space Agency (hereinafter "RSA") for Russia, and the National Aeronautics and Space Administration (hereinafter "NASA") for the United States shall be the Cooperating Agencies responsible for implementing Space Station cooperation. The

Government of Japan's Cooperating Agency designation for implementing Space Station cooperation shall be made in the Memorandum of Understanding between NASA and the Government of Japan referred to in paragraph 2 below.

2. The Cooperating Agencies shall implement Space Station cooperation in accordance with the relevant provisions of this Agreement, the respective Memoranda of Understanding (MOUs) between NASA and CSA, NASA and ESA, NASA and the Government of Japan, and NASA and RSA concerning cooperation on the civil international Space Station, and arrangements between or among NASA and the other Cooperating Agencies implementing the MOUs (implementing arrangements). The MOUs shall be subject to this Agreement, and the implementing arrangements shall be consistent with and subject to the MOUs.

3. Where a provision of an MOU sets forth rights or obligations accepted by a Cooperating Agency (or, in the case of Japan, the Government of Japan) not a party to that MOU, such provision may not be amended without the written consent of that Cooperating Agency (or, in the case of Japan, the Government of Japan).

Article 5

Registration; Jurisdiction and Control

1. In accordance with Article II of the Registration Convention, each Partner shall register as space objects the flight elements listed in the Annex which it provides, the European Partner having delegated this responsibility to ESA, acting in its name and on its behalf.

2. Pursuant to Article VIII of the Outer Space Treaty and Article II of the Registration Convention, each Partner shall retain jurisdiction and control over the elements it registers in accordance with paragraph 1 above and over personnel in or on the Space Station who are its nationals. The exercise of such jurisdiction and control shall be subject to any relevant provisions of this Agreement, the MOUs, and implementing arrangements, including relevant procedural mechanisms established therein.

Article 6

Ownership of Elements and Equipment

1. Canada, the European Partner, Russia, and the United States, through their respective Cooperating Agencies, and an entity designated by Japan at the time of the deposit of its instrument under Article 25(2), shall own the elements listed in the Annex that they respectively provide, except as otherwise provided for in this Agreement. The Partners, acting through their Cooperating Agencies, shall notify each other regarding the ownership of any equipment in or on the Space Station.

2. The European Partner shall entrust ESA, acting in its name and on its behalf, with ownership over the elements it provides, as well as over any other equipment developed and funded under an ESA programme as a contribution to the Space Station, its operation or utilization.

3. The transfer of ownership of the elements listed in the Annex or of equipment in or on the Space Station shall not affect the rights and obligations of the Partners under this Agreement, the MOUs, or implementing arrangements.

4. Equipment in or on the Space Station shall not be owned by, and ownership of elements listed in the Annex shall not be transferred to, any non-Partner or private entity under the jurisdiction of a non-Partner without the prior concurrence of the other Partners. Any transfer of ownership of any element listed in the Annex shall require prior notification of the other Partners.

5. The ownership of equipment or material provided by a user shall not be affected by the mere presence of such equipment or material in or on the Space Station.

6. The ownership or registration of elements or the ownership of equipment shall in no way be deemed to be an indication of ownership of material or data resulting from the conduct of activities in or on the Space Station.

7. The exercise of ownership of elements and equipment shall be subject to any relevant provisions of this Agreement, the MOUs, and implementing arrangements, including relevant procedural mechanisms established therein.

* * *

Article 16
Cross-Waiver of Liability

1. The objective of this Article is to establish a cross-waiver of liability by the Partner States and related entities in the interest of encouraging participation in the exploration, exploitation, and use of outer space through the Space Station. This cross-waiver of liability shall be broadly construed to achieve this objective.

2. For the purposes of this Article:

(a) A "Partner State" includes its Cooperating Agency. It also includes any entity specified in the MOU between NASA and the Government of Japan to assist the Government of Japan's Cooperating Agency in the implementation of that MOU.

(b) The term "related entity" means:

(1) a contractor or subcontractor of a Partner State at any tier;

(2) a user or customer of a Partner State at any tier; or

(3) a contractor or subcontractor of a user or customer of a Partner State at any tier.

This subparagraph may also apply to a State, or an agency or institution of a State, having the same relationship to a Partner State as described in subparagraphs 2(b)(1) through 2(b)(3) above or otherwise engaged in the implementation of Protected Space Operations as defined in subparagraph 2 (f) below.

"Contractors" and "subcontractors" include suppliers of any kind.

(c) The term "damage" means:

- (1) bodily injury to, or other impairment of health of, or death of, any person;
- (2) damage to, loss of, or loss of use of any property;
- (3) loss of revenue or profits; or
- (4) other direct, indirect or consequential damage.

(d) The term "launch vehicle" means an object (or any part thereof) intended for launch, launched from Earth, or returning to Earth which carries payloads or persons, or both.

(e) The term "payload" means all property to be flown or used on or in a launch vehicle or the Space Station.

(f) The term "Protected Space Operations" means all launch vehicle activities, Space Station activities, and payload activities on Earth, in outer space, or in transit between Earth and outer space in implementation of this Agreement, the MOUs, and implementing arrangements. It includes, but is not limited to:

- (1) research, design, development, test, manufacture, assembly, integration, operation, or use of launch or transfer vehicles, the Space Station, or a payload, as well as related support equipment and facilities and services; and
- (2) all activities related to ground support, test, training, simulation, or guidance and control equipment and related facilities or services.

"Protected Space Operations" also includes all activities related to evolution of the Space Station, as provided for in Article 14. "Protected Space Operations" excludes activities on Earth which are conducted on return from the Space Station to develop further a payload's product or process for use other than for Space Station related activities in implementation of this Agreement.

3. (a) Each Partner State agrees to a cross-waiver of liability pursuant to which each Partner State waives all claims against any of the entities or persons listed in subparagraphs 3(a)(1) through 3(a)(3) below based on damage arising out of Protected Space Operations. This cross-waiver shall apply only if the person, entity, or property causing the damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations. The cross-waiver shall apply to any claims for damage, whatever the legal basis for such claims against:

- (1) another Partner State;
- (2) a related entity of another Partner State;
- (3) the employees of any of the entities identified in subparagraphs 3(a)(1) and 3(a)(2) above.

(b) In addition, each Partner State shall, by contract or otherwise, extend the cross-waiver of liability as set forth in subparagraph 3(a) above to its related entities by requiring them to:

(1) waive all claims against the entities or persons identified in subparagraphs 3(a)(1) through 3(a)(3) above; and

(2) require that their related entities waive all claims against the entities or persons identified in subparagraphs 3(a)(1) through 3(a)(3) above.

(c) For avoidance of doubt, this cross-waiver of liability includes a cross-waiver of liability arising from the Liability Convention where the person, entity, or property causing the damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations.

(d) Notwithstanding the other provisions of this Article, this cross-waiver of liability shall not be applicable to:

(1) claims between a Partner State and its related entity or between its own related entities;

(2) claims made by a natural person, his/her estate, survivors or subrogees (except when a subrogee is a Partner State) for bodily injury to, or other impairment of health of, or death of such natural person;

(3) claims for damage caused by willful misconduct;

(4) intellectual property claims;

(5) claims for damage resulting from a failure of a Partner State to extend the cross-waiver of liability to its related entities, pursuant to subparagraph 3(b) above.

(e) With respect to subparagraph 3(d)(2) above, in the event that a subrogated claim of the Government of Japan is not based upon government employee accident compensation law, the Government of Japan shall fulfill its obligation to waive such subrogated claim by ensuring that any assisting entity specified pursuant to subparagraph 2(a) above indemnifies, in a manner consistent with Article 15(2) and in accordance with applicable laws and regulations of Japan, any entity or person identified in subparagraphs 3(a)(1) through 3(a)(3) above against liability arising from such subrogated claim by the Government of Japan. Nothing in this Article shall preclude the Government of Japan from waiving the foregoing subrogated claims.

(f) Nothing in this Article shall be construed to create the basis for a claim or suit where none would otherwise exist.

Article 17
Liability Convention

1. Except as otherwise provided in Article 16, the Partner States, as well as ESA, shall remain liable in accordance with the Liability Convention.
2. In the event of a claim arising out of the Liability Convention, the Partners (and ESA, if appropriate) shall consult promptly on any potential liability, on any apportionment of such liability, and on the defense of such claim.
3. Regarding the provision of launch and return services provided for in Article 12(2), the Partners concerned (and ESA, if appropriate) may conclude separate agreements regarding the apportionment of any potential joint and several liability arising out of the Liability Convention.

* * *

Article 20
Treatment of Data and Goods in Transit

Recognizing the importance of the continuing operation and full international utilization of the Space Station, each Partner State shall, to the extent its applicable laws and regulations permit, allow the expeditious transit of data and goods of the other Partners, their Cooperating Agencies, and their users. This Article shall only apply to data and goods transiting to and from the Space Station, including but not limited to transit between its national border and a launch or landing site within its territory, and between a launch or landing site and the Space Station.

Article 21
Intellectual Property

1. For the purposes of this Agreement, "intellectual property" is understood to have the meaning of Article 2 of the Convention Establishing the World Intellectual Property Organization, done at Stockholm on 14 July 1967.
2. Subject to the provisions of this Article, for purposes of intellectual property law, an activity occurring in or on a Space Station flight element shall be deemed to have occurred only in the territory of the Partner State of that element's registry, except that for ESA-registered elements any European Partner State may deem the activity to have occurred within its territory. For avoidance of doubt, participation by a Partner State, its Cooperating Agency, or its related entities in an activity occurring in or on any other Partner's Space Station flight element shall not in and of itself alter or affect the jurisdiction over such activity provided for in the previous sentence.
3. In respect of an invention made in or on any Space Station flight element by a person who is not its national or resident, a Partner State shall not apply its laws concerning secrecy of inventions so as to prevent the filing of a patent application (for example, by imposing a delay or requiring prior authorization) in any other Partner State that provides for the protection of the secrecy of patent applications containing information that is classified or otherwise protected for national security purposes. This provision does not prejudice (a) the

right of any Partner State in which a patent application is first filed to control the secrecy of such patent application or restrict its further filing; or (b) the right of any other Partner State in which an application is subsequently filed to restrict, pursuant to any international obligation, the dissemination of an application.

4. Where a person or entity owns intellectual property which is protected in more than one European Partner State, that person or entity may not recover in more than one such State for the same act of infringement of the same rights in such intellectual property which occurs in or on an ESA-registered element. Where the same act of infringement in or on an ESA-registered element gives rise to actions by different intellectual property owners by virtue of more than one European Partner State's deeming the activity to have occurred in its territory, a court may grant a temporary stay of proceeding in a later-filed action pending the outcome of an earlier-filed action. Where more than one action is brought, satisfaction of a judgment rendered for damages in any of the actions shall bar further recovery of damages in any pending or future action for infringement based upon the same act of infringement.

5. With respect to an activity occurring in or on an ESA-registered element, no European Partner State shall refuse to recognize a license for the exercise of any intellectual property right if that license is enforceable under the laws of any European Partner State, and compliance with the provisions of such license shall also bar recovery for infringement in any European Partner State.

6. The temporary presence in the territory of a Partner State of any articles, including the components of a flight element, in transit between any place on Earth and any flight element of the Space Station registered by another Partner State or ESA shall not in itself form the basis for any proceedings in the first Partner State for patent infringement.

Article 22 Criminal Jurisdiction

In view of the unique and unprecedented nature of this particular international cooperation in space:

1. Canada, the European Partner States, Japan, Russia, and the United States may exercise criminal jurisdiction over personnel in or on any flight element who are their respective nationals.

2. In a case involving misconduct on orbit that: (a) affects the life or safety of a national of another Partner State or (b) occurs in or on or causes damage to the flight element of another Partner State, the Partner State whose national is the alleged perpetrator shall, at the request of any affected Partner State, consult with such State concerning their respective prosecutorial interests. An affected Partner State may, following such consultation, exercise criminal jurisdiction over the alleged perpetrator provided that, within 90 days of the date of such consultation or within such other period as may be mutually agreed, the Partner State whose national is the alleged perpetrator either:

(1) concurs in such exercise of criminal jurisdiction, or

(2) fails to provide assurances that it will submit the case to its competent authorities for the purpose of prosecution.

3. If a Partner State which makes extradition conditional on the existence of a treaty receives a request for extradition from another Partner State with which it has no extradition treaty, it may at its option consider this Agreement as the legal basis for extradition in respect of the alleged misconduct on orbit. Extradition shall be subject to the procedural provisions and the other conditions of the law of the requested Partner State.

4. Each Partner State shall, subject to its national laws and regulations, afford the other Partners assistance in connection with alleged misconduct on orbit.

5. This Article is not intended to limit the authorities and procedures for the maintenance of order and the conduct of crew activities in or on the Space Station which shall be established in the Code of Conduct pursuant to Article 11, and the Code of Conduct is not intended to limit the application of this Article.
