Space Activities and Space Law in Japan

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"Life on earth started in the sea, then moved to land and then to the sky.
Mankind, now in the forefront of evolution,
is using science and technology to move into space."

– Preface of the Fundamental Policy of Japan's Space Activities –

I. INTRODUCTION

In the belief of many lawyers, space law still belongs to the realm of science fiction. Some may have heard of the possibility of buying real property on the moon, but the corresponding offer on the Internet has less to do with space law – national appropriation of the moon is prohibited under the Outer Space Treaty as well as under the Moon

Treaty[1] – than with criminal law. Contrary to this general attitude, space law is not only an important and independent part of public international law, but it has come in close connection with many "real" fields of law, such as telecommunications, broadcasting and international trade law, export controls, competition law, arbitration, and government procurement law. Several international organisations take part in the development of space law. Besides the United Nations Office for Outer Space Affairs (OOSA) as the principal institution for the development of space law, international organisations such as WTO, ITU, ICAO, IMO, and UNESCO are taking a growing influence, each within their special focus and objectives.

Though space law was quite steady and stable from its creation between 1967 and 1984 to the end of the Cold War,[2] the liberalisation of trade in services, including telecommunications, the restructuring of former state monopolies in the telecommunications sector, technical progress, and growing global competition among the space industry have all together put pressure on the existing body of space law to adapt to the new space environment, especially by taking into account commercial and private space activities.[3] While in the early stages of space activities only a few states were engaged in the use and exploration of outer space, commercial space activities have grown dramatically in recent years. States, state institutions, international intergovernmental organisations, as well as many private enterprises are participating today in the commercial use of outer space. Nevertheless, this development is not reflected in the present status of space law. The existing international instruments of space law were developed and finalised before this development and thus only provide very few and sometimes unfitting provisions for the commercial use of outer space, particularly by private enterprises.

Japan, as a space-faring nation of high technical and industrial excellence and ambitious scientific projects, is reacting to these global developments by restructuring its governmental organisation as well as its private space industry. Amendments to the national Japanese space law in 1998 were a first step in this direction, followed by the

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1 Art. 2 of the Outer Space Treaty provides that "Outer Space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means." Art. 11.3 of the Moon Treaty states that "neither the surface nor the subsurface of the moon, nor any part thereof or natural resources in place, shall become property of any state, international intergovernmental or non-governmental organisation, national organisation or non-governmental entity or of any natural person."

2 See HASHIMOTO, Re-emerging Concepts of International Space Law: IISL 99 IISL 5.09, 353, with a discussion of the changes caused by the end of the Cold War.

3 For the most actual and complete overview on current status and developments of space law, see "Project 2001 – Legal Framework for the Commercial Use of Outer Space", Proceedings of an International Colloquium held as a joint research project of the Institute of Air and Space Law, University of Cologne, and the German Aerospace Centre DLR, Cologne. Several volumes in different fields of space law, such as National Space Legislation, International Space Station, Remote Sensing, Launch Activities, Privatisation of Space Activities, and Space Telecommunications have been published in the framework of the project. Contact information can be provided by the authors.

general restructuring of the Japanese government in 2001, with important effects on the organisation of science and technology in Japan, including space activities. Further reforms are currently under discussion that aim to strengthen the technical and financial capacities of governmental space institutions as well as the competitiveness of the Japanese space industry.

The following article gives a basic description of these developments. After a short review of Japan's history in space (Part II), governmental authorities and institutions of relevance to space law, policy, and activities will be presented (Part III). The development and the current status of Japanese space law and policy are discussed in Part IV. Special attention will be given to Japan's participation in international co-operation (Part V), including Japan's contributions to the International Station Program. Current and future space activities will be described in Part VI, with a special focus on the H-II A rocket and on space tourism.

II. A SHORT HISTORY OF JAPANESE SPACE ACTIVITIES [4]

Japan's space activity began in 1955 with the successful horizontal firing experiment involving a pencil-shaped test rocket made by *Tokyo University*. This was Japan's first step towards the completion of an indigenous sounding rocket upon participating in the International Geophysical Year (IGY) activities during 1957 and 1958.[5] In the following years, different series of rockets such as *Kappa* and *Lambda* were launched from the testing range on the *Michikawa* coast in *Akita* Prefecture. In 1970, the launch facilities were moved to *Uchinoura* in *Kagoshima* Prefecture and Japan's first satellite, *Ohsumi,* was launched. With this successful launch, Japan went on the international scene as the fourth space nation, and thereafter began to rapidly develop its national space science program. NASDA, the *National Space Development Agency*, was founded in 1969 with the aim to regulate and promote both the scientific and commercial aspects of the Japanese Space Program, with a concentration on space applications. NASDA launched its first satellite in 1975 with the N-I series of rockets. In 1977, Japan's first geostationary satellite, *Kiku II,* was launched on an N-I rocket. The N-I rockets were followed after seven successful launches in 1981 by the N-II series, which paralleled the development of the H-I launch vehicle. The development and the problems of the H-II rocket and the first two successful launches of the H-II A rocket will be described in detail below.

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4 A general overview of the history of Japanese space activities can be found at <*http://www. isas.ac.jp/e/about/history/brief.html*> and at <*http://yyy.tksc.nasda.go.jp/Home/Info/e/ history_e.html*>.

5 See <*http://www.isas.ac.jp/e/about/history/brief.html*>. The International Geophysical Year 1957 marks the beginning of worldwide space activities. The first successful launch of an artificial satellite, Sputnik 1, on October 4, 1957, was the official contribution to the IGY by the USSR. The U.S. had planned to have their first satellite launched in the same year, but due to launch failures, Explorer 1 was not launched until January 31, 1958.

In the development of its space activities, Japan has profited from a close and intensive co-operation with the United States. American rocket technology helped Japan to build up its own launch vehicles in the late 1960s, although the use of American technology for the launch of commercial satellites was restricted in the beginning.[6] Nevertheless, the know-how and technology transferred from the U.S. was the basis for further development and growing independence.

In the history of NASDA, the 1970s were marked by the development of the N-I and N-II launch vehicles as well as the establishment of the Tsukuba Space Centre (1972) and the Earth Observation Centre (1978). In the 1980s followed the establishment of the Kakuda Propulsion Centre (1980) and the development of the H-I launch vehicle and the H-II rocket. In 1993 the development of the J-I rocket started, and different kinds of satellites (*e.g.,* "KIKU-6", "Himawari-5", "Midori", and "COMETS") were launched.

Japan is now one of five countries (with the U.S., Russia, the EU, China and Japan) able to launch satellites in the geostationary orbit, and one of the most active countries in space. By the end of 1999, a total of 25 scientific and experimental satellites had been launched. These missions were conducted by the Institute of Space and Aeronautical Science (ISAS), the principal scientific space institution in Japan. Another 39 applications satellites for communications, broadcasting, marine observation, meteorology, resource exploration, and technology experiments had also been launched by then by the National Space Development Agency (NASDA), the principal governmental organisation for space applications. With autonomous launch vehicles and facilities; satellite programmes in telecommunications, earth observation, navigation, and meteorology; high technology developments (*e.g.*, in robotics); several scientific space missions; and its contribution to the International Space Station (ISS), Japan has come close to the capabilities of the European Space Agency (ESA), with much less of a budget.

In 1985, three people were selected as Japan's first generation of astronauts to conduct space experiments.[7] In March 1992, one of them flew aboard the Space Shuttle as the first Japanese astronaut in space. Since that time, Japan has been accumulating experience in manned space activities and is contributing to the construction and operation of the International Space Station (ISS), especially by the Japanese Experiment Module (*Kibo*),[8] which will be attached to the ISS in 2004.

Today, Japan is one of the leading nations promoting future space tourism, including one-day trips in space and space hotels.[9]

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6 DIECKMANN / SCHROGEL, Die aktuelle japanische Raumfahrtpolitik und Tendenzen der deutsch-japanischen Kooperation, in: Japanstudien, Jahrbuch des Deutschen Instituts für Japanstudien Band 9 (1997) 224.

7 For further information on the history of Japan's manned space activities, see <*http://jem.tksc.nasda.go.jp/astro/astrodoc2_e.html*>.

8 See *supra* note 6 and <*http://jem.tksc.nasda.go.jp/iss/doc09_e.html*>.

9 See Part VI of this essay.

III. JAPANESE SPACE AUTHORITIES AND INSTITUTIONS

Japan's organisational structure concerned with space policy and activities is still characterised by a wide diversification and a separation of scientific and application-oriented activities. The Space Activities Commission (SAC) is responsible for the formulation of Japanese space policy. Various ministries take part in and finance Japanese space activities, among them the Ministry of Education, Culture, Sports, Science, and Technology; the Ministry of Public Management, Home Affairs, Posts, and Telecommunications; the Ministry of Economy, Trade, and Industry; the Ministry of Land, Infrastructure, and Transport; and the Ministry of Agriculture, Forestry, and Fisheries.[10] The three major space organisations, NASDA, ISAS, and NAL, are placed under the Ministry of Education, Culture, Sports, Science, and Technology, controlled by the Science and Technology Agency, Research and Development Office. While the Institute of Space and Aeronautical Science (ISAS) primarily conducts scientific missions and research programs, the National Space Agency (NASDA) is concentrated on the development and launch of satellites for communications, meteorological, navigation, and earth observation purposes. Both institutions develop their own launch vehicles and maintain separate launch facilities.

1. Space Activities Commission (SAC)

The Space Activities Commission is the highest political institution for the planning and coordination of national space activities. It was established in 1968 by the Prime Minister's office in order to make a contribution to the planned and comprehensive promotion of Japan's space activities and its democratic management. The Commission carries out studies, long-term plans, propositions for budget decisions, and political directives concerning space activities. With the Fundamental Space Policy of Japan's space activities, SAC sets the major outline of national space policy. The latest amendment to the Fundamental Policy was issued in 1996. The Space Activities Commission reports directly to the Prime Minister.

The SAC has established various sub-committees, including the Sub-Committee on Planning and the Sub-Committee on Basic Strategy. The Sub-Committee on Planning issued a report on the progress and achievements concerning space transportation systems in 1998. The Sub-Committee on Basic Strategy issued a report regarding the middle- and long-term strategy for space development in Japan in October 2000. The reports review the Fundamental Space Policy by taking into account the consecutive launch failures with the H-II rocket.[11] It followed a prior report by the Special Committee on Fundamental Problems in Japan's Space Activities, which analysed the reasons for launch failures in 1998/99 and made proposals to the SAC.

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10 This list has already taken into consideration the restructuring of the Japanese government after the administrative reform in January 2001.

11 STA press release dated 10 November 2000, see <*http://www.sta.go.jp/english*>.

2. *National Space Development Agency (NASDA)*

NASDA,[12] together with ISAS, is the principal governmental organisation for space activities. NASDA was established in June 1969 by the 61st session of the National Diet to act as the nucleus for the development of space and the promotion for the peaceful use of space (see above). NASDA is responsible for the following tasks:

- development of satellites, space experiments, and contribution to the International Space Station development of launch vehicles;
- development of methods, facilities, and equipment required for the above.

In 2000, the budget for NASDA augmented to a record 200 billion Yen, but the financial crisis in Japan had a negative effect on subsequent annual budgets in 2001 and 2002. The NASDA organization is partitioned into several offices, in particular the Office of Space Utilization Systems, the Office of Space Transportation Systems, the Office of Satellite Technology, Research, and Applications, and the Office of Research and Development. NASDA maintains two European offices, one in Paris and one in Bonn. The Bonn office, established in 1993, acts as the main contact point in the co-operation with the DLR and other German space institutions.

The *Committee on NASDA Evolution* periodically comments on the development of NASDA. In its Statement on Progress of Activities of NASDA released March 2001, the Committee recommends that the evolution of NASDA should be made in coherence with the restructuring of government ministries and agencies and in coherence with the consolidation of the Japanese space industry.[13] Further steps are seen as necessary to increase NASDA's resources and to strengthen its international co-operation. Clarifications are needed on the organisation of space in the overall public sector regarding the respective roles of the different institutions, such as the Council for Science and Technology Policy, SAC, NASDA, ISAS, NAL, and CRL and their mutual relationship. The relationship between NASDA and the space industry has been identified as an issue where significant progress has to be made. NASDA should make further efforts to enhance the transfer of technology to the private sector, and should take into account the opinions of industry and user groups in the first phase of its satellite developments.

3. *Institute of Space and Astronautical Science (ISAS)* [14]

The Institute of Space and Astronautical Science is the principal institute for space science in Japan. As a national research institute, ISAS is under the supervision of the Ministry of Education, Culture, Sports, Science, and Technology. ISAS has nine research

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12 Further information is available on the homepage of NASDA at <*http://www.nasda.go.jp/index_e.html*>.

13 See <*http://www.nasda.go.jp/english*>.

14 Further information is available on the homepage of ISAS at <*http://www.isas.ac.jp/e/index.html*>.

divisions, two technical divisions, seven centres, two offices, and an administration department. The research divisions (Space Astrophysics, Planetary Science, Space Propulsion, Space Systems Engineering, and others) are the main element of research and development. The technical divisions consist of a Space Operation Division and an Engineering Support Division. The Office of Project Coordination is responsible for the coordination and supervision of ISAS space missions. The Office of External Relations acts as the contact point for national and international collaboration in scientific space activities. The centres, including the Kagoshima Space Centre, the Noshiro Testing Centre, and the Space Utilization Research Centre, are responsible for conducting all kinds of launch and test activities. With its own series of launch vehicles, ISAS is able to conduct scientific missions independently from NASDA.

The present ISAS was founded in 1981 during the reorganisation of the Institute of Space and Aeronautical Science of the University of Tokyo. The Institute of Space and Aeronautical Science was already established in 1964 to further promote space science in Japan by following the path of the former Institute of Industrial Science, which conducted the first space activities and experiments in Japan. ISAS, as an inter-university joint research facility, today is the core organization of Japan's space activities along with NASDA. Its activities reflect the requirements of space science researchers throughout the entire country. In its long history, ISAS has conducted a number of outstanding scientific missions. In January 1985, the first M-3S II rocket successfully launched the SAKIGAKE probe to Halley's Comet. This was part of the "Halley Armada" of spacecraft from Japan, the U.S., Europe, and the former Soviet Union. Further important missions were the X-ray astronomy satellite, the GINGA scientific satellite, AKEBONO for the observation of northern lights, HITEN to conduct lunar swingbys, YOHKOH for solar observation, the X-ray astronomy satellite ASCA, and GEOTAIL, launched in 1992 through Japanese-U.S. co-operation for studies of the solar-terrestrial system.

4. National Aerospace Laboratory (NAL) [15]

The NAL is part of Japan's Science and Technology Agency and is involved in all aspects of aviation and aerospace research and development. NAL was established as far back as 1955, first as an auxiliary body to the Prime Minister's office, then placed in 1956 under the newly established Science and Technology Agency. Its status changed again in 2001 when NAL became an independent administrative institution under the Ministry of Education, Culture, Sports, Science, and Technology and its Science and Technology Agency. NAL has a huge number of centres (13), among them the Space Transportation Project Centre, the Space Technology Research Centre, and the *Kakuda* Space Propulsion Laboratory with the Rocket and Ramjet Propulsion Centres.

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15 Further information is available on the homepage of NAL at <*http://www.nal.go.jp/eng/history/ index.html*>.

In 1998, NAL defined its "Long-Term Research Program" by identifying its project plans through 2003. The two main projects conducted are the *Next Generation Supersonic Transport Project* in airplane technology and the *Advanced Space Technology Project* in space technology, the latter including research on unmanned winged space vehicles, reusable rocket vehicles, and space planes. A research centre has been established for each of the two projects.[16] In co-operation with NASDA, NAL conducted a series of flight experiments using small vehicles to develop technologies required for future reusable space transportation vehicles. In 2002 and 2003, two additional experiments, High-Speed Flight Demonstration I and II, will take place to verify landing sites' ground facilities and to predict tools of aerodynamic characteristics.

5. Council for Science and Technology Policy and Other Institutions

The *Council for Science and Technology Policy* was established in 2001, following the restructuring of the Japanese government in January 2001. The cabinet office now includes four major councils to advise the Prime Minister on important issues, among them the Council for Science and Technology Policy.[17] The *Bureau of Science and Technology Policy* acts as the secretariat to the Council, which is placed under the Minister of State for Science and Technology Policy. The objectives of the Council include the basic and comprehensive policy planning of science and technology and the general coordination of the ministries concerned, with an "overall and panoramic view." The CSTP has to support the Prime Minister and the Cabinet in all scientific and technical matters as a "source of wisdom." Its tasks include responding to requests for recommendations by the Prime Minister or other ministers by investigating and discussing basic policies to promote science and technology as well as allocating resources to them. Further, the CSTP is competent for the evaluation of major research and development projects, including government-funded large-scale projects, and it may express opinions to the Prime Minister and other ministers.

Shortly after its creation, the CSTP proposed a draft for the next Science and Technology Basic Plan.[18] At its 11th meeting, the Council established an *Expert Panel on Space Development and Utilization.* The panel is charged with the reconsideration of the basic framework for space development and utilization necessary to strengthen the international competitiveness of Japan's space industry and to upgrade quality of life by using space-related technology. In its monthly reports, analyses on the reformation of governmental research institutes as independent administrative agencies and on trends of information and communication technologies have been published.

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16 STA press release dated 21 May 1998, see <*http://www.sta.go.jp/english*>.

17 The creation of the Council was based on the Law for Establishing the Cabinet Office.

18 In this draft, life sciences, information technology, environmental science, and nanotechnology are identified as the areas of highest priority, whereas space technologies are not expressively mentioned.

The Communications Research Laboratory (CRL) is a laboratory responsible for telecommunication technologies, radio applications, and radio science in Japan. Research in satellite communications, satellite navigation, and terrestrial and planetary science is among its field of activities. The predecessor of CRL was the Radio Telegraph Research Division of the Ministry of Communications, founded in 1896. In 1994, the Science and Technology Agency designated CRL as a centre of excellence for research of advanced optical communications and sensing technologies. Since 2001, CRL has had the status of an independent administrative institution under the newly established Ministry of Public Management, Home Affairs, Posts, and Telecommunications.

The *Science and Technology Agency* (STA) and the *Space Development Commission* are additional institutions involved in Japanese space policy. In 2000, STA initiated a Council on Science and Technology in the 21st Century, analysing the current status of science and technology in Japan and issuing guidelines for further development. The *Industry Technology Council*, acting as an advisory body to MITI, adopted a strategy paper in 2000, including propositions on space activities.

6. Involvement of the Space Industry [19]

The Japanese space industry exerts its influence on space policy and law mainly via two organisations. The Federation of Economic Organisations, *Keidanren*, has established the *Space Activities Promotion Council*. More than 80 companies are members of the Council, among them such organisations as the Rocket System Corporation, the Japan Manned Space Systems Corporation, the Remote Sensing Technology Centre of Japan, and the Telecommunications Carrier Association. Another forum of the space industry is the *Society of Japanese Aerospace Companies*, SJAC, in which more than 120 companies and organisations are associated. In 2000, the SJAC started action to persuade Asian countries to form an international cooperative framework that would develop a Regional Asian Satellite Project, which is designated to transmit emergency calls, intergovernmental communications, data, and information on environmental observation.[20]

Space activities in the Japanese industry are mainly in the hands of electronic and heavy engineering companies, such as Mitsubishi Heavy Industries, Nissan Motor Company, Toshiba, Nippon Electric Cooperation, Fuji Heavy Industries, Kawasaki Heavy Industries, Sumitomo Heavy Industries, Shimizu Corporation, and IHI Company. The Japanese space industry is still characterised by a high dependency on governmental demand. Of their space-related products, more than 70% are destined for governmental use. So far, governmental institutions and organisations have launched all Japanese satellites. The first commercial satellite is planned to be launched in 2006 by an industrial consortium led by Ishikawajima-Harima Heavy Industries and Mitsubishi Corp., using a

19 See TATSUZAWA, Space Commercialisation Law and Policy in Japan, published in ECSL News no. 16 (May 1996), <*http://esapub.esrin.esa.it/ecsl/ecsl16/tats16.htm*>.

20 <*http://www.sjac.or.jp/english*>.

new rocket named GX. Nevertheless, the consortium has asked the government to pay two-thirds of the total development cost estimated at $404 million. As of 1999, the Japanese space industry employed some 8,000 people; the turnover amounted to approximately 347 billion Yen.[21]

The space industry has now come under increasing pressure to restructure and adapt to competitive global space markets in launch vehicles, satellite communication, satellite navigation, and remote sensing satellites. NEC Corp. and Toshiba Corp. concluded an agreement in 2000 on combining their space business activities, which are concentrated on the development and manufacturing of satellites. Both companies agreed to consolidate their space business by setting up a joint venture in 2001.[22] The same year, IHI and Nissan Motor Corp. reached an agreement on the transfer of Nissan's space business unit to IHI. Taking into account global competition, the restructuring of the space industry on a worldwide level and the financial situation of the Japanese government, further mergers, joint ventures, and other forms of co-operation are to be expected. With the Japanese government authorities, models of public private partnerships should be developed to augment the participation of the Japanese space industry in governmental projects through financial contribution and commercial risks. In 1999, the space industry initiated the "Space Infrastructure Research Community", in which industry, universities, and governmental institutions evaluate future visions. In 2000, a report titled "Space Story" was published by the initiative with the participation of more than 300 experts.

7. Current Developments

In 2000, the "Conference on Coalition and Co-operation in Space Science and Technology" decided to strengthen co-operation among NASDA, NAL, and ISAS by the execution of joint research programs, joint ownership of technological information and knowledge, and the common use of facilities and equipment.[23] Following this conference, ISAS, NAL, and NASDA concluded a collaboration agreement in 2001 with the purpose of promoting space development in a more efficient and effective way. Under this agreement, a "Head Office of Collaboration between Three Space Organizations" was established. In April 2003, the three organisations will be merged into one single space agency.[24]

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21 <*http://www.sjac.or.jp/english*>.
21 <*http://www.sjac.or.jp/English*>.
22 Topics in Japanese and International Aerospace Arena 2000; see <*http://www.sjac.or.jp/English*>.
23 STA press release dated 22 August 2000, see <*http://www.sta.go.jp/english*>.
24 Space News, vol. 13 no.7 (February 18, 2002) 20, Space News vol. 13 no. 8 (February 25, 2002) 30.

IV. JAPANESE SPACE LAW AND POLICY

National space law in Japan is limited to the law establishing NASDA first issued in 1969 and amended in 1998. The amendment takes into account the growing number of private space activities, but only with a view to liability for damages caused by launching or operating space objects. As of today, Japan still has no separate law regulating private space activities. The need for such legislative action arises from the state's obligations under the Outer Space Treaty. States party to the Treaty bear international responsibility for national activities in outer space and have to assure that the same are carried out in conformity with the provisions of the Treaty. This responsibility applies for activities carried out both by governmental agencies and non-governmental entities. The activities of non-governmental entities require authorization and supervision by the appropriate state party (Art. VI of the Outer Space Treaty). As of today, only six countries have established corresponding legislation.[25] Nevertheless, a number of countries, including Germany, are currently analysing and/or preparing national space law. Japan, as one of the most active countries in outer space, should – in the mid-term – consider similar action to adapt its legislation to the growing "privatisation" and commercialisation of space activities.

1. Law Establishing NASDA [26]

The *Law Establishing the National Space Development Agency of Japan,* dated June 23, 1969, is the only "true" Japanese space law. It contains seven chapters, regulating the establishment, tasks and obligations, internal structure, and finance of NASDA.

The first chapter (Artt. 1 through 9) includes "General Provisions." NASDA was established with a view to conduct – in an integrated, systematic, and effective manner – the development, launching, and tracking of artificial satellites and rockets for the launching of artificial satellites, exclusively for peaceful purposes, thereby contributing to the promotion of space development and utilization. The main office of the NASDA is located in Tokyo, but NASDA may establish subordinate offices elsewhere as necessary. The capital of NASDA amounts to 500,000,000 Yen. NASDA may increase its capital upon authorization from the competent minister whenever necessary. Under Art. 5, NASDA shall issue investment bonds for the contributions. Artt. 6 through 9 provide prohibition of refundment of holdings, registration of NASDA, restrictions on the use of appellation, and application of Articles 44 and 50 of the Japanese Civil Code (Law No. 89/1896 and Law No. 9/1898, as amended by Law No. 41/2001).

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25 U.S.A., U.K., Russian Federation, Sweden, Australia, and South Africa, see: Legal Framework for the Commercial Use of Outer Space: Workshop Proceedings Volume VI: Proceedings of the Project 2001 Workshop on National Space Legislation.

26 An English translation is available at <*http://www.oosa.unvienna.org/SpaceLaw/national/japan/nasda_1969E.html*>.

Chapter II (Artt. 10 through 21) regulates NASDA hierarchy. Accordingly, NASDA shall have one president, one vice president, a maximum of five executive directors, and two general auditors as executives. The president represents NASDA and presides over its overall business. He is appointed by the Prime Minister, taking into account the propositions of the Space Activities Commission. The term of office is four years. The vice president is the second representative of NASDA and manages the business of NASDA in assistance to the president. The general auditors review the business of NASDA and may submit opinions to the president or the competent ministers on the basis of audit findings.

Chapter III (Artt. 22 through 24) describes the tasks and obligations of NASDA. Pursuant to Art. 22 (Scope of Business), NASDA will conduct the development of artificial satellites and launch vehicles for transportation into space, the development of facilities and necessary equipment to these activities, the launching and tracking of artificial satellites, and the development of respective means, facilities, and equipment. The business of NASDA is conducted in accordance with the *Basic Plan for Space Development*, issued annually by the Prime Minister following proposals made by the Space Activities Commission.

Chapter IV (Artt. 25 through 35) concerns NASDA's finance and accounting, which will not be discussed here. Chapter V (Artt. 36 through 37) deals with supervision of NASDA. The competent ministers exercise the supervision of NASDA. They have the right to require NASDA to file a report on its business and to inspect the conditions of the business, the respective books, documents, and other necessary objects. Chapter VI (Artt. 38 through 41) contains miscellaneous provisions, *i.e.*, the dissolution of NASDA, the competent ministers and ordinance of competent ministries, namely the Prime Minister, the Minister of Post and Telecommunications, and the ministers who are in charge of matters concerning the development of artificial satellites, etc., and consultations with the Minister of Finance.

Chapter VII (Artt. 42 through 44) contains penal provisions. In the appendix to the law, some supplementary provisions are laid down. Art. 3 of the annex (succession of rights and obligations) prescribes that rights and obligations owned and owed by the state at the time of establishing NASDA, and which are relevant to the business, shall be succeeded by NASDA.

2. *Law Partially Amending the NASDA Law: Third-Party Liability Resulting from NASDA Launch Activities*

In conjunction with the development of the H-II A launch vehicle, it seemed essential for the competent authorities to take legislative action to implement a legal framework concerning third-party liabilities in case of accidents arising from launching activities.[27]

27 N. SUGITA, Amendment to the Law Concerning the National Space Agency of Japan (July 1999); M. SATO, The Japanese Legal Framework: Third-Party Liability Resulting from

In June 1998, the National Diet approved a corresponding law submitted by the government. By this law, called *Law Partially Amending the NASDA Law,* Artt. 24-2 and 24-3 were amended and inserted into the *Law Establishing the National Space Development Agency of Japan*.

Under amended Art. 24-2 para. 1, NASDA will not launch an artificial satellite or other space objects until and unless it has entered into an insurance contract to secure such amounts as may be necessary to compensate for damages incurred as a result of the launch of the space object.[28] This regulation applies for launches conducted by NASDA for its own purposes as well as for launches conducted for third parties.[29] The reason for this regulation was to protect potential victims, expecting that the number of launches will increase.[30] After Japan's accession to the Liability Convention in 1983 and before the amendment, NASDA was purchasing third-party liabilities at its discretion based only on case-to-case instructions by the *Science and Technology Agency.*[31]

Under Art. 24-2 para. 2, the amount secured under the insurance contract will be determined by the competent minister, appropriate from the viewpoint of victims and the financial situation of NASDA, taking into account the amount that insurers may be willing to underwrite. It must be stressed that the amount of insurance is to be determined by the competent minister, not by NASDA.[32]

Art. 24-2 para. 3 applies to a launch consigned by the government or by other public institutions. In the event that the launch is to be performed by NASDA on behalf of the government or another public institution, the insurance contract may be entered into by the entity which has consigned the launch for and on behalf of NASDA. Under this option, NASDA would not be responsible for the costs of purchasing the insurance, but still an insurance covering compensation for damages to a third party is mandatory.[33]

Art. 24-3 allows special arrangements for the consigned launch that NASDA may conclude with the consigner upon the approval of the competent ministers. Under such a special arrangement, NASDA will assume all liabilities if NASDA and the consignor are both liable for compensation for damages to a third party. NASDA will have the right to be reimbursed for compensations paid if the damages are caused by a wilful misconduct of any third party related to the launch[34] (Art. 24-3 para. 3). Parties related to the launch may include the consignor, satellite companies, manufactures of the launch vehicle and the satellite, as well as the employees of those entities. Art. 24-3 para. 3 fur-

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NASDA Launch Activities. The essays are available from the authors.

28 In case of damages to third parties caused by launch activities, NASDA would be liable under Artt. 1 and 2 of the State Liability act of 1947, see SUGITA, *supra* note 27.

29 According to Art. 22 para. 1 of NASDA Law, NASDA may conduct launches by consignment of third parties.

30 See *supra* note 27.

31 See M. SATO, *supra* note 27.

32 See N. SUGITA, *supra* note 27.

33 See *supra* note 28.

34 See *supra* note 28.

ther provides that if NASDA concluded a special arrangement with the consignor, the consignor will conclude the insurance contract for and on behalf of NASDA. If NASDA conducts a consigned launch under a special arrangement, the insurance must be purchased by the consignor.

With the amendment of NASDA law, the launch of space objects by private parties has been encouraged. As far as no special arrangement is concluded, NASDA will be responsible for the insurance of the launch, covering all damages caused to third parties. This provides the private customer with protection and legal certainty regarding liabilities for damages caused by its space activities. Nevertheless, future steps are to be taken regarding private space activities. The amendment does not, for example, treat the issue of supervision and authorisation of private space activities, and does not contain special conditions for foreign customers.

3. Fundamental Policy of Japan's Space Activities [35]

The *Space Activities Commission* formulated the first Fundamental Policy of Japan's Space Activities, as a general guideline for Japan's space activities, in March 1978. This policy has since been revised several times to react to changes in the domestic and international space environment and to adapt national space policy correspondingly. After initial amendments in 1984 and 1989, the Space Activities Commission approved the latest revision of the Fundamental Policy of Japan's Space Activities on January 24, 1996. This revision was based on the results of a long-term study, titled "Towards Creation of Space Age in the New Century", conducted by a sub-committee of the SAC in 1994 to evaluate the perspectives of national space activities for the next thirty years.[36] The Fundamental Policy is implemented under the "Space Development Plan", formulated by the Space Activities Commission (SAC) under the "Basic Plan for Space Development" laid down by the Prime Minister.

In six chapters, the actual Fundamental Policy gives an overview of the various research and technology programs to be undertaken (*e.g.*, launch vehicles, scientific missions, commercial activities) and sets the direction and framework of Japan's space activities for the next decade. Chapter 1 describes the basic policy and space development, Chapter 2 the organisation of space development, and Chapter 3 the institutional structure of space development. Chapter 4 deals with international co-operation, Chapter 5 with the promotion of space activities in the private sector, and Chapter 6, finally, with the preparation for the promotion of space activities.

Civil and commercial space activities and international co-operation are recognised as the two main trends in worldwide space development to which national space activities need to be adopted. Japan's participation in these developments is therefore an

35 An English translation is available at <*http://yyy.tksc.nasda.go.jp/Home/Info/e/gaiyo_e.html#fm*>.

36 See DIECKMANN / SCHROGEL, *supra* note 5; the report covers the period until 2020.

important part of its space policy. The national space industry must be strengthened and restructured to take part in the highly competitive international markets for space products and applications. Cost reductions and increased cost/benefit analyses are an important aspect to increase profitability. While safeguarding its national autonomy, international co-operation has to be improved, especially in manned space missions and earth observation. Regarding the growing problem of space debris, the policy considers the preservation of the space environment by avoiding the production of space debris in future space activities.

4. Science and Technology Basic Law [37]

The *Basic Law on Science and Technology*, initially enacted in November 1995, defines the promotion of science and technology as one of the most important national tasks. As one of the leading industrial nations in the world, Japan is highly dependent on its scientific and technological achievements. According to the Basic Law, the Japanese government approves the *Science and Technology Basic Plan* as the fundamental framework for science and technology efforts. Space activities, one of the most sophisticated fields of science and technology, are an important part of these efforts. The current *Basic Plan* was approved in March 2001 and covers the period from 2001 through 2005. The objective of the Basic Law is to achieve a higher standard of science and technology, to contribute to the development of economy and society in Japan and improvement of the welfare of the nations, as well as to contribute to the progress of science and technology in the world and the sustainable development of human society through prescribing the basic policy requirements for the promotion of science and technology and comprehensively and systematically promoting policies for the progress of science and technology (Art. 1 Basic Law). The government is to consult the *Council for Science and Technology* on the Basic Plan prior to its formulation. In order to secure necessary funds for the implementation of the Basic Plan, every fiscal year the government will take the necessary measures for the smooth implementation of the Basic Plan, such as including the necessary funds in the budget within the limits of its national financial status (Artt. 9-3 and 9-6). Private activities shall be encouraged by the implementation of necessary policy measures to promote private sector research and development activities (Art. 17). The promotion of international exchange is highlighted in Art. 18, under which the nation is required to implement necessary policy measures to promote international exchange – such as international exchange of researchers, international joint research and development, and international distribution of information on science and technology – in order to play an active role in international society and to contribute to

37 An English text is available at <*http://www8.cao.go.jp/cstp/english/law.html*>; further information about this topic can be found at the English homepage of the Ministry of Education, Culture, Sports, Science, and Technology, *e.g.,* <*http://www.mext.go.jp/english/org/science/07b.htm*> or at <*http://www.globalwatchonline.net/countries/CjpGPOV.asp*>.

further progress in science and technology in Japan by intensely promoting international science and technology activities.

V. INTERNATIONAL CO-OPERATION

International co-operation has always been strongly promoted by Japan. In the early years of Japanese space activities, co-operation was used as an instrument to develop indigenous technology and capabilities. The transfer of U.S. technology made it possible to achieve national autonomy and to conduct independent missions and launch activities. Nevertheless, international co-operation has been developed further. Today, Japan is an important partner in the construction and operation of the International Space Station (ISS), the most outstanding international project in space ever known.

1. Civil Co-operation with the U.S., the Russian Federation, France, and Germany

The co-operation with the U.S. has always played a major role, beginning with the transfer of rocket and satellite technology in the 1960s. In 1969, an agreement was signed by the U.S. and Japan, permitting the U.S. space industry to provide Japan and the Japanese space industry with unclassified technology and equipment for the development of indigenous Japanese satellites as well as a launch vehicle for non-military use.[38] The agreement subsequently has been amended. Co-operation between Japan and the U.S. continued with Japanese participation in various Space Shuttle missions by the provision of payloads as well as by the participation of the first Japanese astronauts.[39] Integration of the Japanese multi-functional satellite (MSAT) satellite-based augmentation system (MSAS) for navigation and air traffic management, which is based on the U.S. WAAS technology in the U.S. GPS system, is a major field of co-operation today.[40] In 2000, the Ministry of Transport and the Meteorological Agency awarded the

38 SATO / KOSUGE / VAN FENEMA: Legal Implications on Satellite Procurement and Trade Issues between Japan and the United States, IISL 99 IISL 3.13, 224, with a discussion and critical review of the trade dispute between the U.S. and Japan regarding the procurement of non-R&D satellites.

39 Five Japanese astronauts have participated in shuttle and ISS missions; see *Der Spiegel* (8/2002) 188.

40 MSAS satellite has been subject to a procurement tender published by the Japanese Ministry of Transport in 1996. In 1997, this procurement further became the subject of a request by the EU for consultation with Japan under the WTO Government Procurement Agreement and Art. 4 of the Understanding on Rules and Procedures governing the settlement of dispute. The EU raised the concern that the tender specifications referred explicitly to those of the U.S. WAAS and that therefore European industry was prevented from participating in the tender without discrimination. The U.S. joined the consultations due to its substantial trade interests in the case. As a result of the consultations, a mutual agreement was found between the EU and Japan by the establishment of cooperation in the field of satellite navigation, creating interoperability among the European EGNOS and the Japanese MSAS; see

contract for the manufacture of the first MTSAT to the U.S. company Space Systems/ Loral. The second model will be manufactured by Mitsubishi Electric Corp. Due to launch failures of H-II, the Ministry of Transport decided in August 2000 to launch the first MTSAT on an ARIANE 5 instead of an H-IIA, as initially planned.

Further, a Governmental Cooperation Agreement in Space Science and Exploration was signed with the Russian Federation in 1993. With the European Space Agency and different national European space agencies, such as CNES of France and DLR of Germany, various co-operation agreements are in place. ISAS and the European Space Agency (ESA) are co-operating in the exploration of Mars. The Japanese probe, *Nozomi,* will reach Mars more or less at the same time as ESA's *Mars Express*, offering an opportunity for joint observation and data exchange. ISAS intends to collaborate in the exploration of Mercury, in the *ASTRO-F* and *Solar B* missions. A note to the European astronomical community on the possibility of direct collaboration with ISAS on data reduction for ASTRO-F catalogues was released to astronomers in ESA member states in August 2001. Further co-operation might take place in the ESA *XEUS* and *Venus Express* missions.[41] In 2000, a co-operation agreement between NASDA and CNES was signed concerning the High-Speed Flight Demonstration (HFSD) project for the HOPE-X, a test vehicle for a future reusable transportation system initially scheduled for launch in 2004.[42] With the German Space Agency DLR, MITI and its sub-organisation NEDO are conducting joint research and development programs in the field of micro gravity and for the European *Mars Express.*

Co-operation is also taking place in the Asia-Pacific region, where Japan intends to play a leading role in space activities as well as in telecommunications and broadcasting. In 2000, NASDA concluded an agreement with the Republic of Kiribati concerning the use of Christmas Island for the construction of a landing site for HOPE-X. [43] In consequence of the H-II launch failures, the HOPE-X program is currently being reconsidered and may soon be abandoned.[44] The initial tests to verify navigation and communication systems will take place at the end of 2002 on Christmas Island. A scale model of HOPE-X will take off horizontally and fly using a jet engine.

WTO documents: WT/DS73/1-4. This case has been the first proof of the growing importance of the WTO in the field of space law and technology, with substantive impacts on the international regulation of space; see MALANCZUK: The Role of International Economic Law and the World Trade Organisation WTO for Commercial Outer Space Activities, in: Proceedings of the Project 2001: Legal Framework for the Commercial Use of Outer Space, Working Group on Privatisation, Workshop on Legal Issues of Privatising Space Activities, 40-51.

41 See ESA Scientific Programme Committee: Yearly Report on International Relations, 7 February 2002, ESA/SPC (2002) 10.

42 STA press release dated 1 February 2000, see <*http://www.sta.go.jp/english*>.

43 STA press release dated 23 February 2000, see <*http://www.sta.go.jp/english*>.

44 Space News vol. 13 no. 7 (February 18, 2002) 20.

2. Co-operation with the U.S. in Security and Defence Space Activities

The Japanese government is further jointly conducting research on a Regional Ballistic Missile Defence System with the U.S., Taiwan, and South Korea. The planned U.S.-Japanese system is expected to provide Japan and the other allies in the region with a protection against missile attack. Japan's decision to take part in the project was made following a North Korean medium range missile test in 1998 over Japanese Territory.[45] This event was also followed by the decision to purchase key parts for Japan's first spy satellites from the U.S. On September 29, 1999, the governments of Japan and the United States exchanged notes concerning the acquisition of parts and components to be used for the program in which the government of Japan indigenously develops the Information Gathering Satellite System in the framework of the MDA Agreement between Japan and the U.S. This *Mutual Defence Assistance Agreement* provides the framework for mutual co-operation in the area of defence between Japan and the U.S. In a press bulletin issued by the Ministry of Foreign Affairs it is stated that "the government of Japan considers that the promotion of co-operation with the U.S. in introducing the Information Gathering Satellite System will deepen Japan-U.S. co-operation in the field of intelligence as well as further enhance the credibility of the Japan-U.S. security arrangements."[46] In May 2000, the Cabinet Secretariat informed the Planning and Co-ordination Group Meeting of SAC that the government had decided to start research and development of the Information Gathering Satellites in 2001, aiming to launch these satellites between 2005 and 2007.[47] The engagement in such security and defence space projects is in potential conflict with Art. 9 of the Japanese Constitution stating that "the Japanese people forever renounce war as a sovereign right of the nation and the threat or use of force as a means of settling international disputes." In order to accomplish this aim, "land, sea, and air forces, as well as other war potential, will never be maintained. The right of belligerency of the state will not be recognised."[48] According to press information, the U.S. has urged Japan to consider a future amendment to this article if it could be interpreted to prevent Japan from taking part in the Regional Missile Defence System.[49]

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45 YUASA, Japan Grapples with Space War Failure, 19 January 2000, <*http://www.spacedaily.com/news*>.

46 <*http://www.mofa.go.jp/announce/announce/1999*>.

47 Topics in Japanese and International Aerospace Arena 2000, <*http://www.sjac.or.jp/English*>.

48 To the history and interpretation of Art. 9, see H.P. MARUTSCHKE, Einführung in das japanische Recht (München 1999) 60-62.

49 See AFP press release: "US Envoy Urges More Japanese Cooperation on Missile Defence," July 26 2001, <*http://www.spacedaily.com/news*>.

3. Participation in the Evolution of Space Law

Japan has ratified almost all of the major UN space treaties that form the core of International Space Law: the Outer Space Treaty of 1967,[50] the Rescue Agreement of 1968,[51] the Liability Convention of 1972,[52] and the Registration Convention of 1979.[53] The only major space treaty not ratified by Japan is the Moon Treaty of 1979,[54] which has in general found very little acceptance since its entry into force in 1984.[55] In addition, Japan is a member of the International Satellite Organisation (INTELSAT), the International Maritime Satellite Organisation (IMSO, formerly INMARSAT), and the International Telecommunications Union, responsible for the coordination of frequency use by satellites and other space objects. Japan further takes part in the Space Agency Forum (SAF) and in the Inter-Agency Space Debris Coordination Committee (IADC), in which a future legal framework for space debris is discussed and developed. As described above, a huge number of bilateral and multilateral agreements concerning specific missions and projects are in place.

4. Participation in the International Space Station (ISS)

The International Space Station is the most ambitious international project in space today. Japan has participated from the beginning in the international negotiations, which started back in 1984. In January 1984, President Reagan directed NASA to develop and place into orbit a permanently manned space station, and invited friends and allies of the U.S. to participate in its development and use. Japan's interest in the space station program manifested itself during official visits of NASA representatives to Japan in 1984 and 1985. Japan participated in the station program through initial materials processing tests. Japan signed the first intergovernmental agreement related to the space station[56] in September 1988. Approval by the National Diet followed in June

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50 Treaty on the Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, 10 October 1967. See <*http://www.oosa.unvienna.org*>.

51 Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space, 3 December 1968.

52 Convention on International Liability for Damage Caused by Space Objects, 1 September 1972.

53 Convention on Registration of Objects Launched into Outer Space, 15 September 1976.

54 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, 11 July 1984.

55 Only nine states have signed the agreement in the beginning, another seven have signed it subsequently; see <*http://www. oosa.unvienna.org*> .

56 Agreement among the Government of the United States of America, Governments of Member States of the European Space Agency, the Government of Japan, and the Government of Canada on Cooperation in the Detailed Design, Development, Operation, and Utilization of the Permanently Manned Civil Space Station, 29 September 1988.

1989. This first agreement was afterwards replaced by the ISS IGA of 1998,[57] which Japan also signed and subsequently ratified.

Under the 1998 IGA, Japan will provide the following elements:

- the Japanese Experiment Module as a user element, including basic functional outfitting, as well as the Exposed Facility and Experiment Logistics Module;
- other flight elements to supply the space station;
- space station-unique ground elements.

The *Japanese Experiment Module (JEM)* is the main contribution to the ISS.[58] This in-orbit laboratory will be used by up to four astronauts for a large series of experiments using the micro-gravity environment. JEM, also named *Kibo*, consists of four components, two experimental facilities, the *Pressurized Module* and the *Exposed Facility*, logistics modules attached to each of them, and the *Remote Manipulator System*. Its transportation to the ISS is scheduled in three phases between 2004 and 2005 by the U.S. Space Shuttle.[59] In addition, the provision of a centrifuge for the ISS laboratory of the U.S. is planned for 2007.[60] This centrifuge, a life science experiment facility, will be used to investigate the effects of micro-gravity on animals and plants.

5. Inter-Agency Consultative Group for Space Science (IACG)

In 1981, the IACG was established by ISAS, NASA, ESA, and the USSR Academy of Science to co-ordinate the co-operation with these institutions in the observation of Halley's Comet and related space missions. The co-operation in this specific activity proved to be so successful that all parties involved agreed to establish IACG as a constant point of contact and exchange in space science. Four working groups for solar system exploration, solar-terrestrial science, data archives, and satellite tracking and operation were established in 1996.

VI. CURRENT ACTIVITIES AND DEVELOPMENTS

Future Japanese space activities are highly dependent on the success of the H-II A rocket. The H-II A is the fifth type of rocket developed by NASDA, following the N-I,

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57 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, 29 January 1998.

58 See KOSUGE, U.S. Commercial Space Act of 1998 and its Implications for the ISS, in: IISL 99 IISL 1.05, 28.

59 In August 2000, NASDA informed the SAC that the launch of JEM and of the HTV logistic support system have been postponed to 2004.

60 For further information, please see the official NASDA ISS homepage: <*http://www.jem.tksc.nasda.go.jp/iss*>.

N-II, H-I, and H-II. Development of the H-II A began in 1996 with the goal of entering into the global market for commercial launch activities by cutting launch costs by more than half in comparison to H-II and by improving the reliability, security, and launch success rate. The H-II A is 53 meters high, has a diameter of 4 meters, and weighs 285 tons. The first H-II A was successfully launched on August 29, 2001, after the launch was postponed for more than a year at the end of 1999 due to two consecutive failures with H-II in February 1998 and November 1999. Since 1994, a total number of seven launch failures with the H-II occurred, hindering the acquisition of international launch orders for commercial satellites. In May 2000, NASDA reacted to the failures of the H-II rocket by proposing a revised development and launch schedule for the H-II A, based on the opinions and recommendations pointed out at a special meeting of SAC. The second launch of H-IIA No. 2 occurred on February 4, 2002, carrying the Mission Demonstration Test Satellite, MDS-1. Beginning with H-II A No. 3, the rocket will be used for launching various commercial satellites, one multi-functional transportation satellite, and four information-gathering satellites. It will further be used for transporting material to ISS. A total of twelve launches is scheduled to 2006. For 2002, three more launches are currently scheduled by NASDA. The first is DRTS-W (Data Relay Test Satellite), followed by ADEOS II, an advanced earth observation satellite. In late 2002 and during 2003, launches of two Information-Gathering Satellites and of the MTSAT-1R (Multi-Functional Transport Satellite) are planned to take place.

Japan seems to be the only space nation with actual plans for moon exploration and landing. NASDA has started a joint flight experiment of the *Flying Test Bed* (FTB), in collaboration with NAL and ISAS. The test is part of the development of a soft landing on the moon by SELENE, a moon observation satellite scheduled to be launched in 2004 as a joint project of NASDA and ISAS. First tests are being conducted to acquire basis technology for SELENE, such as for vertical descending flights on the moon surface.

Finally, another interesting point of current Japanese space activities is the ambition to build a re-usable shuttle for future space mass tourism.[61] By 2004, a syndicate of Mitsubishi, Fujitsu, Sharp, Nissan, and other companies plans to finish work on a prototype and targets the production of 52 shuttles to seat 50 persons,[62] while NASDA has plans to construct a shuttle that will bring five persons into space for one day.[63] The ticket for the flight should cost nearly $5.3 million. Even more spectacular are plans for the construction of hotels in orbit, but reliable suggestions for this project do not exist at this time.

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61 M. NAGATOMO / T. HANADA / Y. NARUO / P.Q. COLLINS, Study on Airport Services for Space Tourism, <*http://www.spacefuture.com/archive/study_on_airport_services_for_ space_tourism.shtml*>.

62 See <*http://www.heise.de/tp/deutsch/special/raum/4626/1.html*>.

63 See online news of the "Deutsche Welle" at <*http://dw-world.de/german/0,3367,1644_A_374320_1_A,00.html*>.

VII. CONCLUSION

Japanese space activities were strongly affected by the launch failures of H-II in 1998 and 1999. For more than two years, NASDA and other institutions had to concentrate their efforts in the analyses of these failures and the first and second launch of the new H-II A. Fortunately, both launches have now been successfully conducted. With the reliability of H-II A proven, Japan will have a future competitive launch vehicle for satellites and transports to the ISS. However, the success of H-II A still needs to be followed by a restructuring of the Japanese space organisations. Integration of NASDA, ISAS, and NAL into one Japanese space agency for scientific and applications missions will take place in April 2003. This re-organisation will probably be based on another amendment of NASDA law. The establishment of a national space law regulating private space activities has to be the next step in the mid- and long-term Japanese space policy. Such a law will have to install a mechanism of authorisation and supervision of those activities necessary to fulfil Japan's obligations under Art. 6 of the Outer Space Treaty, but must also strongly promote private space activities by strengthening close co-operation between governmental institutions and space industry in commercial projects. International co-operation is an effective tool in enhancing the maturity of the private sector and its capability to participate in a highly competitive international environment.

ZUSAMMENFASSUNG

Der Aufsatz behandelt die Weltraumforschung und deren rechtliche Rahmenbedingungen in Japan. Gegenwärtig gehört Japan zu den diesbezüglich aktivsten Nationen. Seit Beginn der Forschungstätigkeit im Jahre 1955 arbeitet eine Reihe von japanischen Institutionen an verschiedenen Projekten, und auch internationale Kooperationen sind vielfältig. Mit der Weltraumforschung verbinde Japan auch insbesondere wirtschaftliche und industrielle Interessen. Dabei sei es eines der Länder, das den Weltraumtourismus besonders fördern möchte. Derzeit werde versucht, staatliche und wirtschaftliche Projekte stärker in eine Kooperation einzubinden.

Japan habe die wesentlichen multilateralen völkerrechtlichen Verträge über die Nutzung des Weltraums ratifiziert. Darüber hinaus gebe es ein Gesetz für die Errichtung und Aufgaben der National Space Development Agency (NASDA). Ein spezielles Gesetz, das private Weltraumforschung von japanischen Institutionen reguliert, habe Japan derzeit noch nicht. Es solle aber wie auch Deutschland darüber nachdenken, ein solches zu schaffen, da die Überwachung privater Aktivitäten nach dem Völkerrecht den Staaten überlassen sei, von denen sie ausgehen. Ferner existiere noch das Grundgesetz über Wissenschaft und Technologie, das die staatliche Beteiligung im Rahmen allgemeiner wissenschaftlicher und technischer Forschungsprojekte regele sowie verschiedene zwischenstaatliche Abkommen zur Kooperation bei der Weltraumforschung, einschließlich des Betriebes der International Space Station (ISS). *(die Red.)*