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Review of international mechanisms for cooperation in the peaceful exploration and use of outer space

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Note by the Secretariat

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I. Introduction

1. At its fifty-third session, in 2014, the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space agreed that the States members of the Committee on the Peaceful Uses of Outer Space and the international intergovernmental and non-governmental organizations having permanent observer status with the Committee should, in accordance with the workplan for 2015 (A/AC.105/1003, para. 179), again be invited to provide examples and information on the mechanisms for international cooperation they utilized for space cooperation. States members of the Committee and permanent observers of the Committee were encouraged to refer to the set of questions agreed by the Working Group on the Review of International Mechanisms for Cooperation in the Peaceful Exploration and Use of Outer Space, as appropriate and on a voluntary basis, for guidance on their contribution to the work of the Working Group (A/AC.105/1067, annex III, paras. 9 and 10).

2. The present document has been prepared by the Secretariat on the basis of replies received from Japan and Spain.

II. Replies received from States members of the Committee on the Peaceful Uses of Outer Space

Japan

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[16 January 2015]

Further to the request from the Office of Outer Space Affairs of the Secretariat, Japan submits the information on the mechanisms for international cooperation with reference to the set of questions provided in the report of the Working Group. In this paper, Japan provides the following examples:

1. Cooperation on the high-quality protein crystal growth experiment on board the Japanese Experiment Module "KIBO";

2. Asteroid Explorer "Hayabusa2" Project (Hayabusa2 Project);

3. Sentinel Asia;

4. Cooperative project between the Japan Aerospace Exploration Agency (JAXA) and the Asian Development Bank.

Question 1. What is the main area of your cooperation (e.g., space exploration, scientific research, testing, education and personnel training, global navigation, disaster management through remote sensing, commercial launch services, etc.)?

Japan has cooperated in numerous areas, and the cooperation referenced below is illustrative only. The areas of cooperation are set out below.

1. Scientific research and utilization services: JAXA intends to promote the utilization of the Japanese Experiment Module "KIBO" of the International Space Station, for example, by conducting an experiment to obtain high-quality protein crystals in a microgravity environment.

2. Space exploration: the Hayabusa2 Project is aimed at exploring one of the carbonaceous (C-type) asteroids in the universe, retrieving materials and bringing them to the Earth.

3. Disaster management through remote sensing: Sentinel Asia is aimed at mitigating and preventing damage caused by natural disasters using Earth-observation satellites and other space technologies by collecting disaster-related information and sharing it over the Internet.

4. Disaster management, climate change mitigation and adaptation, forest monitoring and water resources management: JAXA and the Asian Development Bank cooperate in promoting the application of satellite technology in the Asia and Pacific region.

Question 2. Is this multilateral or bilateral cooperation (e.g., intergovernmental cooperation, inter-agency cooperation, cooperation between non-governmental entities, mixed cooperation, etc.)?

1. The high-quality protein crystal growth experiment on board "KIBO" was carried out as bilateral cooperation between JAXA and the Government of Malaysia.

2. The Hayabusa2 Project is undertaken through bilateral cooperation between JAXA and the National Aeronautics and Space Administration (NASA) on the one hand, and between JAXA and the German Aerospace Center (DLR) on the other hand. NASA provided support for the development, launch and operation of the Hayabusa2, gathering data and undertaking related scientific activities. DLR developed and provided the Mobile Asteroid Surface Scout, which is a small lander on board Hayabusa2.

3. Sentinel Asia is a multilateral collaboration among space agencies and disaster management agencies. Sentinel Asia promotes cooperation among the space community, the disaster management community (the Asian Disaster Reduction Center and its members) and the international community (the Economic and Social Commission for Asia and the Pacific, the Office for Outer Space Affairs of the Secretariat, the Association of Southeast Asian Nations (ASEAN), the Asian Institute of Technology, etc.).

4. JAXA and the Asian Development Bank cooperate bilaterally in providing technical assistance to projects supported by the Bank, using satellite data and working on capacity development on the use of satellite data through the training of persons from national institutions in Asia and the Pacific region.

Question 3. What is the duration of the cooperation?

The duration of the cooperation is determined on a case-by-case basis.

1. The arrangement between JAXA and the Government of Malaysia concerning this cooperation remains effective for four years after signature.

2. In the cooperation between JAXA and NASA, the implementing arrangement (a memorandum of understanding) remains effective for 11 years after signature, in accordance with the exchange of notes between the Government of Japan and the Government of the United States of America concerning the cooperation.

In the cooperation with DLR, the arrangement remains effective for 10 years after signature.

3. Sentinel Asia will remain effective for an indefinite period.

4. The letter of intent between JAXA and the Asian Development Bank concerning this cooperation remains effective for six years after signature.

Question 4. Does a national space agency play a key role in the cooperation?

JAXA, an incorporated administrative agency, plays a key role in each of the cooperation arrangements.

Question 5. Does a national authority or institution other than a space agency play an important role in the cooperation (e.g., a scientific institution, meteorological agency, development or financial assistance authority, etc.)?

The involvement of such Japanese national authorities or institutions and their role are as follows:

1. No.

2. Japanese national universities are participating in the Hayabusa2 Project as scientific investigators and are playing key roles in the development of scientific payloads.

3. Japanese national universities are participating in Sentinel Asia and are playing important roles in data analysis and capacity-building.

4. Professors of a Japanese national university are participating in the Asian Development Bank project as experts (consultants).

Question 6. Are private companies or industries directly involved in the cooperation?

Private entities are not directly involved.

Question 7. Is the cooperation conducted within the framework of:

(a) The United Nations and its specialized agencies;

(b) Independent intergovernmental organizations;

(c) Regional or interregional space cooperation organizations or mechanisms;

(d) Non-governmental organizations;

(e) Other types of forums?

1. Other types of forums: the International Space Station.

2. Other types of forums: intergovernmental and inter-agency cooperation.

3. Regional or interregional space cooperation organizations or mechanisms: the Asia-Pacific Regional Space Agency Forum.

4. Other types of forums: the Asian Development Bank project.

Question 8. Is the cooperative mechanism multilateral or bilateral?

1. Multilateral cooperative mechanism.

The high-quality protein crystal growth experiment, in cooperation with Malaysia, is conducted on board “KIBO” of the International Space Station. Fifteen countries,

including Canada, Japan, the Russian Federation, the United States and several European States, participate.

2. Bilateral cooperative mechanism.

3. Multilateral cooperative mechanism.

Sentinel Asia is a multilateral mechanism in the Asia-Pacific region that consists of 95 organizations, including 80 organizations from 25 countries and regions and 15 international organizations (as at November 2014).

4. Bilateral cooperative mechanism.

Question 9. Is the cooperative mechanism:

(a) A legally binding agreement?

(b) A non-legally binding arrangement (if so what kind of arrangement)?

(c) A combination of both?[1]

1. A combination of both: the Agreement among the Government of Canada, Governments of States members of the European Space Agency, the Government of Japan, the Government of the Russian Federation and the Government of the United States Concerning Cooperation on the Civil International Space Station, done at Washington, D.C. on 29 January 1998, is a legally binding, intergovernmental agreement; and there is a non-legally binding arrangement between JAXA and the Government of Malaysia.

2. Concerning the cooperation with NASA, it is a combination of both: the Agreement between the Government of Japan and the Government of the United States Concerning Cross-Waiver of Liability for Cooperation in the Exploration and Use of Space for Peaceful Purposes is a legally binding agreement, the exchange of notes between the two Governments concerning the cooperation on the Asteroid Explorer Hayabusa2 Project is a legally binding agreement, and the implementing arrangement (a memorandum of understanding), agreed upon by JAXA and NASA, is a non-legally binding arrangement. The cooperation with DLR is based on a non-legally binding arrangement.

3. Sentinel Asia was launched based on the recommendation of the Asia-Pacific Regional Space Agency Forum and is currently conducted in accordance with the terms of reference on the Joint Project Team for Sentinel Asia Step3 (a non-legally binding arrangement).

4. Letter of intent and partnership arrangement between JAXA and the Asian Development Bank (non-legally binding arrangements).

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[1] The information given here is based on the understanding that a “legally binding agreement” is an international agreement such as a legally binding agreement concluded between Governments, and “a non-legally binding arrangement” is any arrangement other than an international agreement.

Question 10. Is the cooperative mechanism constituted by a framework agreement, either multilateral or bilateral, and is it accompanied by an implementing agreement or arrangement and/or a memorandum of understanding for technical cooperation and coordination within the cooperation?

1. The Government of Malaysia is regarded as a user of JAXA, and the cooperation is executed in line with the intergovernmental agreement.

2. No.

3. No.

4. No.

Question 11. What kinds of provisions do the legally binding agreement and/or non-legally binding arrangement contain?

1. (a), (b), (c), (d), (e), (f), (g), (h) and (i) ("Release of results and public information" and "Use of experiment").

2. (a), (c), (d), (e), (f), (g), (h) and (i) ("Registration of space object" and "Release of results and public information").

3. (a) and (i) ("Membership", "Responsibility", "Operation", "Secretariat", "Accession", "Withdrawal", "Duration" and "Modification").

4. The partnership arrangement between the Asian Development Bank and JAXA contains other types of provision, namely "Roles and responsibilities of the Asian Development Bank and JAXA", "Financial provisions", and "Miscellaneous".

Question 12. Is it clearly provided for in the legally binding agreement or non-legally binding arrangement that the operation of the project shall be conducted in accordance with the United Nations treaties on outer space and in consideration of principles on outer space and related General Assembly resolutions (resolutions on the concept of the launching State, registration practice, national legislation etc.)?

1. Yes. The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies; the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space; the Convention on International Liability for Damage Caused by Space Objects; and the Convention on Registration of Objects Launched into Outer Space.

2. Yes. The Registration Convention and the Liability Convention.

3. No.

4. No.

Spain

[Original: Spanish]
[24 November 2014]

Spain attaches the utmost importance to international cooperation in space matters. For more than 50 years, it has engaged continuously in cooperation in outer space affairs with other States and international organizations, and continues to conduct most of its space activities in collaboration with other States. As the local aerospace industry has been developing, national projects have also been undertaken, but Spain is aware of the tremendously positive impact that international cooperation has always had and continues to have on the development of the Spanish aerospace sector.

Multilateral cooperation

A large number of the space activities of Spain are carried out within the framework of multilateral cooperation. Within the United Nations, Spain has been a member of the Committee on the Peaceful Uses of Outer Space since 1980. Likewise, Spain is a party to four of the five United Nations treaties on outer space: the Outer Space Treaty, the Rescue Agreement, the Liability Convention and the Registration Convention. All these treaties, which were published in the Official State Gazette of Spain, are considered applicable law in Spain.

Spain is also a member of the International Telecommunication Union (ITU) and, as such, is a party to the Union's basic treaty, the Constitution and Convention of ITU, the current version of which dates from 1992. Within the field of satellite telecommunications, Spain is a member of the International Telecommunications Satellite Organization (ITSO, formerly INTELSAT), the International Mobile Satellite Organization (IMSO, formerly the International Maritime Satellite Organization (INMARSAT)) and the European Telecommunications Satellite Organization (EUTELSAT-IGO, formerly EUTELSAT), having ratified at the time of their adoption the founding conventions and operating agreements, as well as the subsequent amendments thereto that privatized the assets of those three organizations and modified their internal structure in order to adapt it to reform. Since 1992, Spain has also participated in the International Satellite System for Search and Rescue (COSPAS/SARSAT), used for search and rescue in cases of shipwreck and other emergencies, and has contributed a part of the programme's ground segment.

Within the European Union, of which it has been a State member since 1986, Spain plays a key role in the Galileo satellite navigation system and the Copernicus Earth observation system. Furthermore, Spanish universities and companies are participating to a growing extent in the successive framework programmes for science of the European Union.

Spain plays an even more prominent role as a member of the European Space Agency (ESA). In that regard, it should be recalled that Spain has participated from the outset in the European space effort, becoming a member of the European Space Research Organization (ESRO), one of the then two regional space institutions, in 1964. Once both ESRO and the parallel organization dedicated to launchers (the European Launch Development Organization) were replaced by ESA, Spain became

a founding member of ESA on ratifying the Convention of 1975 that established the Agency. Owing to that role in ESA, Spain was one of the 18 nations that participated in the construction of an orbital research laboratory, Spacelab, that was launched aboard the NASA Space Shuttle.

In 1986, Spain established a public entity, the Centre for Industrial Technological Development (CDTI), dedicated to managing and promoting the participation of Spanish companies in the Agency's programmes. Spain is active in all ESA programmes, from space science to Earth observation, microgravity experiments, and telecommunications, among others. Spain also has an astronaut, Pedro Duque, posted with the European Astronaut Corps, who has flown to space twice, both times in international cooperation missions. As of 2014, Spain is the sixth biggest net contributor to ESA, providing 139 million euros, which is about 5 per cent of the budget. ESA has two outstanding facilities on Spanish soil: the European Space Astronomy Centre in the Madrid Region, and a deep space tracking station in Cebreros.

Through ESA, Spain is one of the 15 States that participates in the International Space Station. Spanish companies have contributed to the construction of many objects that are part of the hardware of the Station. In order to make that participation possible, Spain ratified the International Space Station Intergovernmental Agreement of 1998. Both the Intergovernmental Agreement and all the other agreements and memorandums of understanding that accompany it constitute applicable law in Spain. The Agreement is an excellent legal framework and one that can serve as a model for future international initiatives relating to cooperation in outer space affairs.

Spain is also a founding member and an active member of the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT), which was established in 1983.

Bilateral cooperation

At the bilateral level, Spain has maintained a very close relationship with the United States since 1960, maintaining permanent space cooperation treaties since that date to the present. Those treaties have been of great importance to both parties, allowing the United States to establish on Spanish territory several space stations for tracking both manned and unmanned space vehicles and benefiting Spain through the training of numerous technical staff in managing those stations.

Specifically, the NASA stations located in Maspalomas (1960), Cebreros (1966) and Fresnedillas (1967) had a prominent role in the first United States manned programmes: Mercury, Gemini and the Apollo lunar missions. In addition, the Robledo de Chavela tracking station (1964), one of three such stations worldwide that form the NASA Deep Space Network and currently managed jointly with the Spanish National Institute for Aerospace Technology (INTA), has played a key role in the tracking both of the Apollo lunar missions and of unmanned NASA missions to explore the solar system, such as Mariner, Pioneer, Voyager, Viking, Cassini and Mars Exploration Rovers.

The El Arenosillo rocket launch site, which began operating in 1966, was also the fruit of a cooperation agreement between Spain and the United States. Over the years, both the United States and various European countries have made use of the

launch facility, which remains in operation today. The launch of the first Spanish satellite, Intasat, was also the result of a cooperation agreement between INTA and NASA. The satellite was built in Spain and was launched aboard a Delta rocket from the United States in 1974.

A further noteworthy aspect of space cooperation between Spain and the United States was the memorandum of understanding signed by the two countries in 1983 and elevated to the status of international treaty in 1991, which allowed the Space Shuttle to land in case of emergency in certain Spanish airports (Morón and Zaragoza). This bilateral agreement referred to and was fully compatible with the Outer Space Treaty and the Rescue Agreement.

Lastly, the Astrobiology Centre (CAB) in Torrejón de Ardoz (Madrid) maintains close ties with NASA as it is an associate partner of the NASA Astrobiology Institute. It was as a result of those ties that, through a specific bilateral cooperation agreement, Spain participated in the NASA Mars Science Laboratory mission, CAB providing the Rover Environmental Monitoring Station, which has been operating aboard the robot Curiosity since its landing on Mars in 2012. A high-gain antenna enabling direct communication between Curiosity and the Earth was also built in Spain.

In 2006, Spain concluded another important bilateral treaty on cooperation in outer space affairs with the Russian Federation. That instrument can be considered a model framework treaty since it covers multiple aspects of space cooperation, both at the Government level and between private entities, and activities relating both to launches and to the exploration and use of outer space, whether scientific or commercial.

The treaty establishes the conditions governing the conclusion of subsequent agreements and specific contracts relating to each of the activities covered by the treaty. To that end, the treaty provides for the planning and implementation of joint programmes and projects; regulates the exchange of scientific and technical information between the parties, including the protection of confidential information and intellectual property rights; adopts the principle of mutual waiver of responsibility, which is common in joint space projects; facilitates the passage of staff through customs and the import and export of space materials between the two countries; and also facilitates the provision of technical assistance and mutual access to national and international programmes and projects involving each party. Disputes are settled amicably through consultation between the parties and, if necessary, through referral to an arbitral tribunal agreed upon by both parties.

International cooperation at the level of entities and companies

No less important are the activities of Spanish entities involving cooperation with private companies and other entities of other countries. Some examples of such cooperation are set out below.

To date, Spain has launched all of its space objects by means of United States, European (Ariane) and Russian (Soyuz) private launch systems.

Several Spanish companies participate in the European consortium Arianespace, which is responsible for marketing Ariane rockets, and contribute directly to the construction of the Ariane launcher.

For its part, Hispasat, the Spanish operator of telecommunications satellites, has built all of its satellites in collaboration with European and United States companies and has a subsidiary company in Brazil to market the services of the Amazonas transatlantic satellite system.

The Swiss company Swiss Space Systems (S3), together with several Spanish aerospace companies, has in recent months established a private consortium that plans to launch manned suborbital flights and small space objects into Earth orbit from Spanish territory (the Canary Islands).

A number of satellites manufactured in Spanish universities are involved in the QB50 project to launch 50 small satellites (including CubeSats and nanosatellites), led by the von Karman Institute for Fluid Dynamics in Belgium.

Conclusion

Spain supports the adoption, in the future, of appropriate international measures to promote transparency in outer space activities. It also supports the development of multilateral regulations that ensure the long-term sustainability of space activities, such as the European Union proposal for a code of conduct governing the activities of States in outer space.

For Spain, international cooperation in space matters is essential both in order to ensure the long-term safety and security of the space environment and to make possible the sustainable development of all countries.