

State Responsibility/Liability for “National” Space Activities

Towards Safe and Fair Competition in Private Space Activities

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Abstract

The purpose of this study is to review whether today’s private space activities are properly regulated by the existing legal framework established by the space treaties, and to propose practical measures to align them with today’s complicated private space activities. Since actual regulations for space activities are determined by domestic laws, our primary concern is “which countries shall regulate which aspects of private space activities,” especially for multinational private space activities. Usually, States bear responsibility and liability only over activities under their jurisdiction. However, the space treaties contain ambiguous provisions. Therefore, the existing framework will firstly be clarified through a review of negotiation history and interpretation, domestic laws and the UNSG registry. Special attention will be paid to licensing, insurance and registration because they are important landmarks. Based on the analysis for the existing framework, practical problems will be argued. Finally, a practical approach for better regulation of private space activities will be proposed.

[Part 1: Theoretical framework]

Chapter I. Travaux préparatoires

The negotiation history of space treaties reveals following aspects.¹

(1) The notions of the responsibility and liability for space activities are closely related to each other. This is supported by the fact that many delegations to the negotiation connected these notions, and that in many

domestic laws, the notion of liability is not separated from responsibility.²

(2) The first United States draft for the Declaration of Principles and the following negotiations indicated that the assistance or permission for a space project by a State is a fundamental factor for “procurement.”

(3) The United Kingdom pointed out that the State of responsibility may shift after the launching phase, with the emphasis on the effective control by the State.

(4) States were aware of the close link between the registration of a launched space object and its ownership at the negotiations of the Registration Convention.

Chapter II. Interpretations

A. General International law

Responsibility does not necessary involve the payment of compensation,³ but will, in the main, impose a duty to compensate the victim who has suffered damage due to a lack of control or mismanagement.⁴ In contrast, the term “liability” is often the obligation to make reparation for any damage caused, especially in the form of monetary payment. Liability may be a consequence of a fault, but may also be related to an act without fault.⁵ However, a person who can be liable will wish to control the activity to avoid incurring heavy duty.⁶ Consequently responsibility and liability are closely interrelated and

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¹ This chapter is mainly based on the author’s investigations in C.Q.Cristol, *The “Launching State” in International Space Law*, *Annuaire de Droit Maritime et Aero-Spatial* (Tome XII (1993), PP.366-376. and in Bin Cheng, *Studies in International Space Law* (1997), Chapter 9 (pp.215-264) and 11 (pp.286-356.).

² Bin Cheng, *Article VI of the 1967 Space Treaty Revised: “International Responsibility,” “National Activities,” and “The Appropriate State,”* *Journal of Space Law* vol. 26, No.1 (1998), pp.10.

³ Frans G. von der Dunk specifies three types of reparation, restitution, compensation and satisfaction. *Liability versus Responsibility in Space Law: Misconception or Misconstruction?*, IISL Proceedings (1991), pp.363-364.

⁴ Arnel Kerrest, *Remarks on the Responsibility and Liability for Damages Caused by Private Activity in Outer Space*, IISL Proceedings (1997), p.136.

⁵ *ibid.* note 4.

⁶ *ibid.* note 4.

sometimes used interchangeably, as was found in the negotiation history,⁷ although responsibility is generally granted a broader concept than liability.⁸

As a principle, a State bears responsibility only for the activities within its jurisdiction. However, there are several principles for jurisdiction.⁹ A State can exercise *the territorial jurisdiction* over any activities in its territory. Furthermore, *the personal jurisdiction* can be exercised over any private entity with its nationality.¹⁰ Additionally, quasi-territorial jurisdiction over a ship or an aircraft by the State with their registry is generally accepted, which may also be applicable to the registered space objects.

B. Interpretation for the space treaties

1. Responsibility and Jurisdiction

It is generally granted that Article VI of the OST established the direct responsibility of States for national space activities by non-governmental entities as if they were its own acts. It provides activities for which the State bears responsibility as “national activities in outer space.” This can be separated into two concepts, “national activities” and “activities in outer space.” In case of a conflict of jurisdiction among the States, territorial jurisdiction overrides quasi-territorial jurisdiction, whilst quasi-territorial jurisdiction overrides personal jurisdiction.¹¹ Some authors, however, insist that only personal jurisdiction can be exercised.¹²

There is an observation that the ambit of Article VI of the Outer Space Treaty is only the activities *in outer space*. However, such interpretation should not be applied too strictly since it may exclude launching activities that are not activities *in outer space*.

2. Shift of the responsible or liable State(s)

The negotiation history and many authors support that

there can be more than one “appropriate State,” although it is expressed as singular. Additionally, there is an observation that “Appropriate states” are changeable during a single joint space activity,¹³ which can be supported by the authors insisting that responsibility should be linked with actual controlling power. However, “the launching State,” consists of four categories and does not allow such shift from its interpretation. Therefore, in order to avoid the imbalance of responsibility and liability among the States involved in a joint space activity, separate agreements are required among involved Parties according to Article 5.2 of the Liability Convention.

3. The meaning of “procurement”

Three of the four launching State categories excluding the category “procures the launching” are usually identifiable without difficulty, although “facility” requires certain interpretation.¹⁴

The general meaning of “procure” is to acquire, secure, or to bring. Many authors insist that the central element of procurement is usually *an effort or initiative on the part of the person seeking a given result*, which can be supported by *travaux préparatoires*.¹⁵ This *effort or initiative* appears to be close to the *control* that is the core factor for the responsibility in Article VI of the OST and enables a coherent interpretation of responsibility and liability for space activities.¹⁶ If we adopt such a view, a State authorizing or continuously supervising the launch of certain space objects may correspond to the launching State because of its procurement.¹⁷

The nationality of the private entity who procures the launch or who owns launching facility plays an important role in deciding the launching States in case

⁷ Karl-Heinz Bockstiegel, *The Terms “appropriate State” and “Launching State” in the Space Treaties- Indicators of State Responsibility and Liability for State and Private Space Activities*, IISL.Proceedings (1991), p.14.

⁸ *ibid.* note 2.

⁹ Frans G. Von der Dunk, *Private Enterprise and Public Interest in the European ‘Spacecape’* (1998), p.14, p.51.; Bin Cheng, *International Responsibility and Liability for Launch Activities*, Air & Space Law. Vol.XX, Number 6 (1995), pp.308-309.

¹⁰ The meaning of nationality allows several interpretations. *ibid.* note 7.

¹¹ *ibid.* note 9, p.p.51.

¹² *ibid.* note 7.

¹³ G. Silvestrov, *On the notion of the “Appropriate” in Article VI of the Outer Space Treaty*, IISL.Proceedings(1991), pp.328-329.; *ibid.* note 9., p.61,76. Some authors even considered the case of the purchase of a space object after its launch. William B. Wirin, *Practical Implication of Launching State- Appropriate State Definitions*, IISL.Proceedings (1994), p.113., The idea of shifting responsibility already exist during the negotiation of the Declaration of Principles, Chapter I above.

¹⁴ *ibid.*note 13 (William B. Wirin), p.111., If a launch facility is a ship owned by international consortium and located in common territory, its nationality would be controversial.

¹⁵ *ibid.* note 1(C.Q.Christol),pp.366-376., *ibid.* note 7., p.15.

¹⁶ *ibid.* note 7., pp.13-14.

¹⁷ *ibid.* note 14.

of a joint launch. Some authors properly contend that the level of involvement for a State to be regarded as procuring the launch should be *substantial or direct control or management over the launch*.¹⁸ According to them, supplying *minor* components is not sufficient to qualify as a “procurement,”¹⁹ while product failure of *major* components may cause fatal accidents. However, a State whose nationals purchase launch services and use the payload in orbit is categorized as a “launching State,”²⁰ since they first decide how to operate the payload while it is under the control of the launch operator during the launching phase.²¹ The liability of such activities can be allocated by contracts among the parties.

4. Registry

Article 8 of the Outer Space Treaty established quasi-territorial jurisdiction of a State over its registered space objects and is similar to the framework for ships or aircraft. Since the State of Registry retains jurisdiction and control over the launched space object, the State of the owner of such a space object is likely to register it.²² Article 2.2 of the Registration Convention provides for the possible separation of jurisdiction and control over a launched space object from its registration. This enabled more than one State to retain jurisdiction and control over a space object, which makes the legal framework for space activities more complicated.

Chapter III. Findings in this Part

The negotiation history and author’s interpretation clarified at least four points.

(1) A State bears responsibility to authorize and supervise space activities under its territorial jurisdiction, quasi-territorial jurisdiction and personal

¹⁸ *ibid.* note 13 (William B. Wirin), p.113.; C.Q.Christol requires the initiative in obtaining launch. *ibid.* note 1., p.376.; Bockstiegel holds that a State at least has to be somehow actively involved by requesting, initiating or at least promoting the launching of a particular space object in order to consider him as having “procured” the launching. *ibid.* note 7., p.15.

¹⁹ *ibid.* note 7., P.15.

²⁰ *ibid.* note 13.(William B. Willin), p.113.

²¹ *ibid.* note 7., p.15.

²² Bin Cheng pointed out the practical difficulty to ensure the duty of authorization and supervision to a contacting State other than the State of registry. *International Responsibility and Liability for Launch Activities*, Air and Space Law Vol.XX. (1995), pp.304-305.

jurisdiction.²³

(2) The appropriate State can shift during a joint space activity, while the State of liability cannot shift without an agreement according to Article 5.2 of the Liability Convention.

(3) Procurement that incurs State liability under the Liability Convention requires substantial control or management over the launching activity.

(4) The State of the owner of the launched space objects is the most appropriate candidate for the State of Registry.

[Part II: Domestic laws and regulations]

Chapter IV. The United States

49 USC Sec. 70102 provides a wide definition for “ citizen of the United States” who must obtain a license for launch activities. It even requires a license to be obtained by entities organized and existing under the laws of a foreign country but under *the controlling interest* of US citizens. CFR 401.5 provides that such *controlling interest* means ownership of an amount of equity in such entity sufficient to directly manage the entity or to void transactions entered into by management. It also provides that *ownership of at least fifty-one percent of the equity* in an entity creates a rebuttable presumption that such interest is controlling.

The ambit of nationals over whom the United States exercises jurisdiction is the same as those of liability borne by it, since the entity that must obtain a license is at the same time forced to comply with financial responsibility in case of damage. This financial responsibility is firstly ensured by insurance obtained by the licensee or transferee, while governmental funding is available as a second measure for specified cases.

The United States linked registration to the ownership of the launched space objects.²⁴ As long as

²³ The concept of “effective jurisdiction” introduced by Bin Cheng seems useful in order to avoid complicated exercise of jurisdiction by States to single space activities. It is applicable when and where a State’s jurisdiction is not overridden by that of any other State, and may actually be exercised. *ibid.* note 2., pp.20-26.

²⁴ Sec. 415. 81 of CFR provides that each licensee must submit information to the U.S. Government in order to assist the registration of launched space objects, *except*:

- (1) Any object owned and registered by the U. S. Government ;
- (2) Any object *owned* by a foreign entity

the space objects are owned by United States citizens, the objects will be registered by the United States as a launching State according to CFR. Sec. 415.81.

Chapter V. Russian Federation

Although the 1993 Act defines its purpose as being to regulate activities within the jurisdiction of Russian Federation, the actual scope of the jurisdiction of the Russian Federation could be wide, because Article 28.2 holds that Russian registration basically prevails over that of other States in case of conflicts. Furthermore, the examples of “space activities” given in Article 2 indicate that it is a wide concept, but they are limited to the activities *immediately* connected with operations to explore and use outer space. It is especially notable that the “space activities” in the 1993 Act include manufacturing hardware. Article 9 provides that space activities of organizations and citizens of the Russian Federation or those of *foreign organizations and citizens under the jurisdiction of the Russian Federation* require a license, if such activities include test, manufacture, storage, preparation for launching and launching, and control over space flights. Additionally, Articles 20.4 and 20.5 explicitly hold that Russian jurisdiction and control over any crew of a manned space object with a Russian registration shall prevail over the jurisdiction by other States over the personnel on board unless otherwise agreed by treaties. Consequently, the Russian Federation’s jurisdiction for space activity in the 1993 Act appears to be very wide.

Article 25 provides for *compulsory insurance* to be obtained by organizations and citizens that exploit space hardware or that order the space hardware to be created. The coverage amount is to be set by relevant laws and to be reviewed by RSA. According to Article 27.3, such compulsory insurance is extended to the activities by foreigners under Russian jurisdiction. Article 30.2 provides that compensation for damage caused by space activity including creation and use of space hardware shall be paid by the organization and citizens responsible for exploiting the hardware involved. Article 30.3 provides that each party shall bear liability in proportion to its fault. Article 30.4 provides that the liability is limited to the amount of the insured sum, while recourse may be taken in case the insured sum is insufficient. Article 13.3 provides that

the Russian Space Fund, which shall be established mostly by the Federal budget and whose aim is to support and promote space science and industry, shall be employed to insure risks associated with space activities and to eliminate the after-effects of accidents, which may result from such activity.

Article 17.2 provides that space objects of the Russian Federation shall be registered by Russia and that the Russian Federation retains jurisdiction and control over them. Article 5 (g) of the Statute on Licensing Space Operations of 1996 provides that, as a condition for obtaining a license, the applicant has to guarantee that *foreign satellite equipment put into orbit by Russian launch facilities will be entered in the national register of the equipment’s proprietor nation.*

Chapter VI. Australia

Part 3 of the 1998 Act specifies five categories of space activities that require appropriate approvals.

- (1) A launch from a launch facility located in Australia.
- (2) Overseas launch by an Australian national.
- (3) Return to Australia of Australian-launched space object.
- (4) Return to Australia of overseas-launched space object.
- (5) Operation of a launch facility in Australia.

The time duration of liability is limited by the “liability period for a launch,” which is defined in Sec. 8 as a period of 30 days beginning when the launch takes place. However, Sec. 64 declares that it does not prevent Australia from complying with any obligation to pay compensation under international law. Sec. 47 provides that the holder of a launch permit or an overseas launch certificate must either obtain insurance throughout the liability period or show direct financial responsibility. Sec. 48 provides such a holder must obtain insurance to secure the holder against any liability under the Act and secure the Commonwealth against any liability under international law. It provides for the total insurance to be not less than the maximum probable loss without specifying the amounts. Sec. 69 provides that liability borne by private entities under the Act is limited within the amount of the insured amount. Sec. 74 also provides that the indemnification to the Commonwealth for the compensation under international law is also limited to the lesser of either

the amount of the compensation or the insured amount.

Sec. 76 specifies information to be furnished in the registry including the name of the Country in case of a joint launching.

Chapter VII. Other Countries

A. Sweden

Section 6 of the Act on Space Activities merely provides the obligation of reimbursement by the persons who carried on space activities, without mentioning the insurance or any governmental support to share liability. Section 4 of the Decree on Space Activities provides the registration procedures without providing any standard by which Sweden is to be considered the launching State. It will be decided on a case-by-case basis, probably within the discretion of the National Board for Space Activity.

B. The United Kingdom

The interpretation of “national activities” by the United Kingdom is at once both too narrow and too broad, since it excludes the activities within its territory carried out by foreigners but tries to exercise jurisdiction over all the listed activities carried out by the nationals even though outside its territory.²⁵ Licensing and insurance against liability is obligatory for the listed space activities. No standard for becoming the “State of registry” is given, which appears to be decided by the Secretary of State on a case-by-case basis.

C. South Africa

The ambit of the present Act is not clear since it depends on the interpretation of Article 11, especially the term “the space activities that entail international obligations to the State or may affect national interests.” Besides, the Minister can decide whether other activities require licensing. At least launching and procuring of the launching require licensing. The actual framework for bearing liability is also unclear since it is decided on a case by case basis.

D. Japan

There is no system for issuing licenses for space activities because it is generally granted that most space activities in Japan are carried out through quasi-governmental agencies such as NASDA or ISAS,

which are directly authorized and supervised by the Government. The 1998 amendment of the NASDA Act to accommodate commercial launching was also based on the understanding that foreseeable commercial launch activities in Japan would be carried out only using the launching facility of NASDA. Therefore, it was granted that there is still no need to establish a specific law to regulate private space activities.

As for liability, the 1998 amendment of the NASDA Act established an obligatory insurance system as a risk allocation between NASDA and involved private entities.²⁶ It seems that the new framework established by the amendment is insufficient to regulate all of today’s private space activities in Japan, since it merely provides the framework for *liability concerning launching activities carried out through NASDA*.²⁷ It does not provide a framework for other than liability, nor does it provide details for the liability framework such as the amount to be insured. Needless to say, there are other kinds of space activities than launching. In Japan, telecommunication or broadcasting using satellites, are regulated under the relevant domestic laws concerning radio frequency or permission of broadcasting business that do not focus on the specific aspects of space activities.

The registration of launched space objects has been carried out merely by administrative rules among the competent Ministries.

E. France

The Ariane Declaration of 1981 established a remarkable system of risk allocation between the Government of France and Arianespace, which attracted a commercial launch business and thus influenced later domestic laws in other countries.

However, other legal issues concerning commercial space activities still remain unclear in France.²⁸

²⁵ *ibid.* note1(Bin Cheng), pp.302-303.

²⁶ Masahiko Sato, *The Japanese Legal Framework: Third Party Liability Resulting from NASDA Launch Activities*, IILS Proceedings (1998), p.130.

²⁷ Sato described the amendment of NASDA act as a tentative treatment. It further pointed out the measures to be taken in the future, such as establishment of licensing system. *ibid.* note 34., p.136.

²⁸ There are other efforts within the framework of European Union to harmonize authorization for the space activities in the Member States, especially for those that need licenses in more than one country such as telecommunication. Commission Directive 94/46 of

Chapter VIII. Registration by the UNSG

This chapter will review the UN registry of the space objects launched in 1999²⁹ and the *1999 Launch Events in the appendix of the 1999 Year in Review by the United States FAA-AST*.³⁰ At least the launch sites and operators of 60 launchings in 1999 can be identified by comparing these two materials.^{31,32} Eight of the 60 launches were joint launches. Of the eight joint launchings, six space objects were registered by the State of nationals of the owner and thus procured the launch from the territory in other States.³³ Five of these six launches were for commercial payloads. The remaining two joint launches, neither of which were commercial payloads, were registered by the State from whose territory the space object was launched and not by the owner. However, one launch, the Brazilian satellite (SACI 1) launched and registered by China, can be granted as an exception, since Brazil is not a member of the Registration Convention. Therefore, the Ukrainian satellite (Okean O1) launched and registered by the Russian Federation is the only case of registration by the State from whose territory the launch was done and not by the State of the nationals who procured the launch. From these facts, we can conclude that, for joint launches, the State procured or whose nationals procured the launch tends to register the launched space object.

There are other points in the registration by each State to be noted for the future development of the

the 13 October 1994 is one such effort. Stephan Le Goueff, *Satellite Services Licensing in the European Union*, Journal of Space Law Vol.25, No.1(1997), pp.40-44.

²⁹ ST/SG/SER.E/357-360,362- 363, 365-367and 369 are reviewed for this analysis.

³⁰ As was attached to the P. v. Fenema, *Launch Services*, Proceedings of the 2000 IISL/ECSL Symposium (Legal Aspects of Commercialization of Space Activities), A/AC.105/C.2/2000/CRP.6, pp.17-18.

³¹ The launches from the Baikonur space port in Kazakhstan are considered as launches from Russian territory or facilities in this study, because special arrangements between the two States grant Russia the special jurisdiction over the Baikonur space port.

³² There are difficulties identifying space objects registered by the United State because its information to the UNSG lacks the name of each space object. However, most of them can be identified by comparison of the launch date.

³³ Between the United States and Russia (Telestar 6), Russia and China (AsiaSat 3S), France and India (Insat 2E), France and Korea (KoreaSat 3), the United States and France (Telestar 12, GE4, Galaxy 11), and one Korean satellite (Kitsat 3) without any information for the launching site in these materials.

registration system. First of all, the United States registers Spent boosters in orbit as space objects, which is more precise for the interpretation of "space object"³⁴ and will contribute to the safety of space activities. Second, the Russian federation reports additional information on objects launched from its territory or facilities but not under its registration, which would be useful.³⁵

Chapter IX. Findings in this Part

Since domestic regulations are still being developed, it is difficult to determine common State practices to regulate private space activities. However, the above studies reveal the following points.

A. Appropriate State-jurisdiction

Most countries include launch activities and operating launched space objects as "*activities in outer space*." Manufacturing space objects appears to fall outside the regulations for space activities, but can be regulated under general laws concerning product liability. Also, remote controlling of space objects is often not treated as an individual space activity, probably because such activity is usually part of a launching activity or based on the direction by the entity who owns or uses the space object.

Concerning "*national activities*," most countries support the general principle of territorial jurisdiction and national jurisdiction. Such "national activities" are usually authorized and continuously supervised by licensing systems. There are at least two kinds of license, one for launching activity and one for operating a space object.

B. Launching State- liability

Liability for space activities is usually assured by insurance as a requirement for a license, and this insurance is generally obtained by the person who owns or uses the space object. There is no time limitation for liability borne by relative States. However, the insurance is in effect usually until the completion of the launching when the risk is

³⁴ Article I (b) of the Registration Convention provides that the term space object includes component parts of a space object as well as its launch vehicle and parts thereof.

³⁵ Such information does not appear to constitute the registration by the Russian Federation for such space objects, since objects like TELSTAR-6 are registered by the United States as the State of the companies who operates it.

sufficiently small. In order to promote commercial launch activities, many States established a domestic law under which the Government will pay for damage not covered by such compulsory insurance. Merely manufacturing or remotely controlling space objects does not appear to incur liability under the Liability Convention. These activities are usually carried out based on contracts with the owner or user of space objects or with the operator of a launching site, and the liability for such activities is often reallocated by the contracts among the involved parties.

C. Registration

Generally, the State of the national who owns the launched space object registers it, probably because the State needs to maintain jurisdiction and control over it. Therefore, such a State is automatically categorized as a “launching State” according to Article I(c) of the Registration Convention.

[Part III: Practical problems]

In this part, we will argue practical problems of the existing framework for regulating space activities that we reviewed in previous chapters.

Chapter X. Conflicts of jurisdiction

Our review revealed that more than one State can be involved as the “appropriate State” in Article VI of the OST for a single space activity, which may cause conflicts of jurisdiction. Such problems can be solved by following general procedures for conflict resolution such as consultations.

For the famous Sea Launch case, The U.S. FAA’s Associate Administrator for Commercial Space Transportation (FAA-AST) did require Sea Launch to obtain a launch license for its first test launch in March 1999, in view of the degree of *actual control* of Boeing whose share was 40 % that was leading but less than 51%. In this case, the United States exercised jurisdiction over this project by issuing a license to Sea Launch Co., according to 49 USC Sec.70102. Since such exercise of jurisdiction by the United States conflicted with that of the United Kingdom as the State of nationality of Sea Launch Co., which exercises jurisdiction over space activities by its *nationals* even though outside its territory, they needed consultation. After consultation with the British National Space

Center on the question of both countries’ jurisdiction in May 1999, FAA-AST also licensed the second launch of this multi-partner venture, and did so again for the launch of 12 March 2000.³⁶

Chapter XI. Loopholes of jurisdiction

Domestic regulations to regulate private space activities differ in each State and there are still States who have not entered the space treaties and thus have not accepted the responsibility to authorize and continuingly supervise private space activities. Furthermore, for complicated multinational private space activities, States may not realize they are the appropriate States to bear international responsibility. Therefore, authors point out that there is a possibility of regulation loopholes, similar to the problems of the “flag of convenience,” which may cause a serious accident because of the lack of effective control over the activity.

A. Three kinds of registration

There are three kinds of registration for space activities, which may cause the loopholes of the regulations: registration of the launched space object, registration of the launch facility such as ship and platform, and the registration of the private company engaged in space activities.

The first two registrations establish the quasi-territorial jurisdiction, and the last one establishes personal jurisdiction. The problem is the lack of a *genuine link* between the private entities and the State that exercises jurisdiction over their space activities. Since there are no provisions concerning the meaning of *genuine link* in the context of space activities, general international law will be applicable, which we will review through the argument of the flag of convenience of aircraft and ship.

B. Aircraft

Article 17 of the Chicago Convention of 1944 provides that aircraft have the nationality of the State in which they are registered, without any requirements for

³⁶ The facts of Sea Launch Project in this chapter depends on following articles. Arnel Kerrest, *Launching spacecraft from the Sea and the Outer Space Treaty: The Sea Launch Project*, Air & Space Law. Vol. XXIII. Number 1 (1998); H. Peter van Fenema, *Launch Services*, Proceedings of the 2000 IISL/ECSL Symposium, Legal Aspects of Commercialization of Space Activities, A/AC.105/C.2/2000/CRP.6 (28 March 2000)

granting such registration. Article III bis (c) and (d) provide the obligation of the State to regulate civil aircraft registered in that State and any aircraft operated by an operator *who has a principal place of business or permanent residence in that State*. Such requirements could be the *genuine link* between the aircraft and the State that exercises quasi-territorial jurisdiction over it.

C. Ships

Article 91.1 of the Convention on the Law of the Sea of 1982 (the “UNLOSC”) provides that the conditions for granting nationality to ships shall be decided by each State. It also provides that there must exist a *genuine link* between the State and the ship, without any requirement for such *genuine link*. This issue has been intensively discussed as the flag-of-convenience problem at UNCTAD, which led to the adoption of the Convention on Conditions for Registration of Ships (the UNCCORS”) in 1986.³⁷ The ownership, management and manning were the main issues in establishing the *genuine link*.

Concerning the ownership, Article 8 of the UNCCORS states that the flag state will provide in domestic laws for *ownership of ships flying its flag with participation by its nationals as owners whose participation should be sufficient to exercise effective jurisdiction and control over the ships*. While the level of such sufficient sharing is basically left to the discretion of each State, it is notable that the UNCTAD Report 34 summarized the equity participation and management requires a *majority equity participation, i.e. more than 50 per cent*.³⁸ As for the management, Article 10 of the UNCCORS provides that it is necessary that the company or subsidiary is *established and/or has its principal place of business within its territory*.

D. Requirements for “genuine link”

Based on these investigations, we may assume a *genuine link* between a private space activity and the appropriate State can be established as follows.

- *Ownership of the launching facility or launched space object by the private entity whose majority is*

shared by its nationals^{39,40}

- *The place of establishment or the principal places of business of such private entity are within its territory*
- *For manned space objects, the nationalities of astronauts can be considered.*

Chapter XII. Equitable sharing of the liability

In order to clarify the meaning of “launching State,” we have to detail the *nationality* concept of the four types of “launching State.”⁴¹ From our previous review, it is reasonable for a State to grant its nationality to private entities who carry out space activities or who own facilities if it can effectively control them through the “*genuine link*.” Based on such understandings, we may assume equitable sharing of liability as follows:

“Under the Liability Convention, a State shall bear liability for space activities over which it can and shall exercise effective control based on territorial jurisdiction, quasi-territorial jurisdiction and personal jurisdiction. Quasi-territorial jurisdiction and personal jurisdiction require the genuine link between the State and private entities who own the facility or launched space object by which genuine link the State can control the launching.”

More than one State can be the launching State for a single joint launch and the State that can exercise controlling power over the space activity will shift phase by phase. Therefore, the risk must be allocated among the involved State. If not, a State from whose territory or facility a space object is launched will continuously be liable even after the launch. Although such arrangements can be realized by the agreement between under Article 5.2 of the Liability Convention, it will be better to introduce certain rules to ensure such agreement for each joint explicitly.

Additionally, in order to clarify the principal liability State for a joint launch, registration system can be utilized since only one launching State can be the State

³⁷ George C. Kasoulides, *Port State Control and Jurisdiction: Evolution of the Port State Regime*, pp.61-93.

³⁸ *ibid.* note. 37., p.88.

³⁹ According to CFR 14/III/Sec. 401.5, the United State can exercise personal jurisdiction for the space activities by private entities with *ownership by United States nationals at least more than 50 percent*.

⁴⁰ It is generally granted that the effective jurisdiction and control are closely related to ownership. *ibid.* note 37., p.90.

⁴¹ Under the second category, a State shall bear liability for space activities pursued by its nationals. Under the fourth category, a State bears liability for the space activities using facilities of its nationality.

of registry. It may be useful to have a rule for a State who actually exercises controlling power over the launched space object, namely the State of its owner, to become the State of Registry, as already shown in most State practices for the UNSG registry. Therefore, if a space object already in orbit is purchased, the registration must be changed to clarify which State has the principal jurisdiction and liability over the object.⁴² Article 92 of the UNLOSC and Article 19 of the Chicago Convention explicitly allow such change of registry for ships or aircraft. Such arrangements are also possible for the launched space object within the existing framework, since there have already been such cases.⁴³

[Part IV. Conclusion of this study]

Chapter XIII. Conclusion

More than 30 years have past since the establishment of the space treaties, and there are opinions that such space treaties cannot properly regulate today's complicated private space activities. However, it appears to be difficult to establish new multinational treaties since it requires the consensus at the UNCOPUOS consisting of States with different stages of technological development and different policies. However, certain recommendations or declarations by the UNGA can be drafted at the UNCOPUOS as a guideline to implement existing space treaties. Such documents should include the points below.

A. Clarification of the interpretation

Ambiguities in Space treaties may lead to the lack of adequate regulation for private space activities since it is often difficult for involved States to know whether it is an "appropriate State" to bear responsibility or a "launching State" to bear international liability over multinational private space activities. If the subjects to bear liability are clarified, it may lead to adequate regulations of private space activities in the long run since they will try to avoid the damage for which they

⁴² *ibid.* note 13 (William B. Wirin), pp.113-115. Although article II.2 of the Registration Convention allows agreements among the parties with regard to the jurisdiction and control over launched space object, such change will be useful to avoid confusion.

⁴³ The registration of the UK registered Hong Kong satellites have modified when Hong Kong returned to China. *ibid.* note 4, p.8.

bear liability.

Therefore, the first puzzle to solve is the linkage between the responsibility of authorization and continuing supervision over private space activities under Article 6 of the OST and liability for them under the Liability Convention. As many authors' opinions and facts above have indicated, a coherent interpretation between such responsibility and liability can be accepted since they are closely interrelated.

The second puzzle is the nationality concept of space activities, especially the meaning of the "procurement" of the launch. As we noted, international liability for damage caused by certain space activities should be borne by States who exercise *effective control* over them. Such effective control can be realized through a *genuine link* with the private entity who owns the launching facility or launched space objects. Establishment or at least principal place for business, or the majority equity sharing of the private entity by its nationals is required for such a *genuine link*.

The final and easier puzzle is the registry. As we suggested, the State of the owner of the launched space object usually becomes the State of registry in order to exercise effective control over it and thus becomes liable for the result of the space activity, which should be encouraged to make the principal liability State clearer.

Consequently, the framework for responsibility, liability and registration explained below is recommended based on the clarification of the existing space treaties and State practices.

"Each State has the responsibility to exercise effective control over the space activities within its territory and over the launching facility or launched space objects owned by a private entity that has been established or has principal places in its territory, or with a majority sharing by its nationals, and thus bears liability for the damage caused by them. In case of joint launching, the State of owners of the launched space object shall register the launched space object."

Such coherent understanding should be developed as a common basis by a specific document.

B. Equitable sharing of liability

As we indicated, the existing framework may lead to an inadequate sharing of liability since the launching

State does not shift flexibly depending on the actual exercise of effective control by involved Parties. Such problems can be solved by reallocating liability with agreements among the Parties under Article 5.2 of the Liability Convention on a case-by-case basis. However, certain guidelines to realize the adequate allocation of liability for each joint space activity, which must be based on the principle of the effective control, will be needed since such reallocation of risk can be omitted.

C. The problem of non-parties of the space treaties

There 95 Parties to the OST as February 1, 1999 82 to the Liability Convention (including two international organizations), and 42 to the Registration Convention (including two international organizations). Unlike air law and maritime law, space activities are based on the doctrine of freedom,⁴⁴ States can thus pursue space activities without becoming Parties of such basic agreements.

Consequently, there is a risk that a State may intentionally remains as a non-Party of space treaties in order to avoid legal responsibility and liability provided by them, considering international competition with other space faring States. In order to avoid such cases, non-parties should be encouraged to become members of space treaties when they or their nationals obtain the ability to conduct space activities.

D. The harmonization of domestic laws/Licensing

The ultimate measure to avoid loopholes of the regulation for private space activities is to harmonize domestic regulations.⁴⁵

In general, States fundamentally desire to avoid serious accidents in national space activities by setting regulations. The lack of domestic regulations can work both ways: as an advantage for competition among space-faring States, and as a disadvantage since private space entities need certain support by the State to share liability. However, the enforcement of the harmonization of domestic regulations appears to be difficult. Therefore, certain recommendations to show the desirable requirements to admit domestic licenses

for space activities could be the practical solution. Such requirements should include effective measures for safety, assurance for liability under the Liability Convention such as compulsory insurance, and the consideration to protect the space environment.

⁴⁴ Article II of the Outer Space Treaty provides that outer space is not subject to national appropriation by claim of sovereignty.

⁴⁵ Frans G. Von der Dunk aimed at such ultimate objective throughout his publication *Private Enterprises and Public Interest in the European 'Space Cape'*.