Acta Astronautica 143 (2018) 406–420

Contents lists available at ScienceDirect

Acta Astronautica

journal homepage: www.elsevier.com/locate/actaastro

Critical issues related to registration of space objects and transparency of space activities

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A B S T R A C T

The main purpose of the 1975 Registration Convention is to achieve transparency in space activities and this objective is motivated by the belief that a mandatory registration system would assist in the identification of space objects launched into outer space. This would also consequently contribute to the application and development of international law governing the exploration and use of outer space. States Parties to the Convention furnish the required information to the United Nations' Register of Space Objects. However, the furnished information is often so general that it may not be as helpful in creating transparency as had been hoped by the drafters of the Convention. While registration of civil satellites has been furnished with some general details, till today, none of the Parties have described the objects as having military functions despite the fact that a large number of such objects do perform military functions as well. In some cases, the best they have done is to indicate that the space objects are for their defense establishments. Moreover, the number of registrations of space objects is declining. This paper addresses the challenges posed by the non-registration of space objects. Particularly, the paper provides some data about the registration and non-registration of satellites and the States that have and have not complied with their legal obligations. It also analyses the specific requirements of the Convention, the reasons for non-registration, new challenges posed by the registration of small satellites and the on-orbit transfer of satellites. Finally, the paper provides some recommendations on how to enhance the registration of space objects, on the monitoring of the implementation of the Registration Convention and consequently how to achieve maximum transparency in space activities.

1. Introduction

The Convention on Registration of Objects Launched into Outer Space (the Convention) [1] was the fourth international space treaty that was drafted by the United Nations Committee on Peaceful Uses of Outer Space (UNCOPUOS). This treaty was adopted by consensus by the United Nations (UN) General Assembly as Resolution 3235 (XXIX) on 12 November 1974. As of early 2017, 63 States have ratified the Convention, while 4 States have signed and 3 international organizations have made declarations accepting the rights and obligations under the Convention [2].

The Registration Convention is an elaboration of two provisions of the 1967 Outer Space Treaty [3], which is the foundational and most adhered to international agreement that laid down fundamental principles for global governance of outer space and space activities. Firstly, Article V of the Outer Space Treaty requires States Parties to safely and promptly return astronauts in distress during an emergency landing to the State of registry of their space vehicle [4]. Secondly, Article VIII entitles and requires the State of registry of an object launched into outer space to "retain jurisdiction and control over such object, and over any personnel thereof" [5]. If such objects or their component parts are found beyond the limits of the State of registry, they must be returned to that State [6]. However, the Outer Space Treaty does not provide a detailed procedure and requirements for registration of space objects. Those lacunae were filled by the Registration Convention.

After 41 years of entry into force of the Registration Convention, it seems appropriate to objectively assess the efficacy of this international instrument which is important for global space governance, particularly from the perspective of its effectiveness in rapidly expanding space activities and space players. This paper examines the achievements of the objectives of the Convention since its coming into force. For this purpose, the paper provides some important and relevant data about the registration and non-registration of satellites and the States that have and have not complied with their legal obligations. It also analyses the specific requirements of the Convention, the reasons for non-registration, new challenges posed by the registration of small satellites and by the on-orbit transfer of satellites. Finally, it provides some recommendations on how to enhance the registration of space objects, on the monitoring of

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https://doi.org/10.1016/j.actaastro.2017.11.042
Received 25 October 2017; Accepted 27 November 2017
Available online 8 December 2017

the implementation of the Registration Convention, and consequently how to achieve maximum transparency in space activities.

2. International obligations relating to the registration of space objects

2.1. Obligations pursuant the UN General Assembly resolution 1721 B (XVI)

It may be recalled that the requirement of the registration of space objects was actually initiated as early as 1961 by the UN General Assembly, in its unanimously adopted Resolution 1721 B (XVI) [7]. This Resolution calls upon States to "promptly" furnish information for the registration of their launchings of objects into orbit or beyond to the UN Secretary-General [8]. It also requires the Secretary-General to maintain a public registry of the information furnished by States [9]. The nature and scope of the required information are not specified. This requirement is applicable to all States, though has been superseded by the detailed obligations imposed by the Registration Convention upon the States Parties to the Convention. The rationale for the registration of space objects is not mentioned in the Resolution. However, given the global geopolitical tension during the Cold War, it can logically be assumed that the need for transparency of space activities would have been the main reason for international registration of space objects.

It is interesting to note that States have been frequently registering their space objects pursuant to this Resolution. The data collected by the beginning of 2017 show that since 1962 (a year after the adoption of the Resolution) 23 States (14 that have subsequently become parties to the Registration Convention and 9 still remain non-parties) [10] have sent on voluntary basis their registration notifications to the UN regarding their respective space objects launched [11]. The United Nations Office for Outer Space Affairs (UNOOSA) has, as of 1 April 2016, registered "nearly 6000 functional and non-functional space objects" under Resolution 1721B (XVI) [12]. Though the Resolution requires States that are launching objects into orbit or beyond to furnish information only for the registration of launchings, some States have been providing data about their space objects that had decayed and those that did not reach their orbits.

The information sent under Resolution 1721 B (XVI) is archived in the UN A/AC.105/INF document series rather than the ST/SG/SER.E series, which is used for States with registries.

In 1962, recognizing that the "establishment of [the UN] registry marks another step forward in the direction of open and orderly conduct of outer space activities" [13], the United States (US) became the first country to submit information regarding its 72 space objects under the UN Resolution [14]. It expressed the hope "that comparable information will be made available by others in accordance with resolution 1721 B (XVI), as the value of the registry will depend largely on the co-operation of all concerned" [15]. For the period from 1962 to 1976, the US habitually continued its practice as it forwarded information not only about 4000 launched space objects but also about 1200 objects that had decayed and brief mentions of about 50 objects that did not reach orbits [16]. This initiative and example of the US has been followed by, as noted above, other launching States (as well as those that procured the launches), like the Soviet Union/Russian Federation [17], France, Japan, India, Nigeria, Saudi Arabia, the United Kingdom, Venezuela, and so on. An important example, in this regard, is that of Luxembourg (which is not a Party to the Registration Convention), as it has registered its 116 space objects under the UN Resolution [18]. It is believed that there has been a consistent State practice of registration of space objects pursuant to the UN Resolution 1721 B (XVI), and the States have been doing so believing that it is their legal obligation to comply with the Resolution (*opinio juris)*. Therefore, it is believed that the legal obligation to register space objects in accordance with the Resolution has evolved to become a part of customary international law, which ought to be respected by all space-faring States, irrespective of whether or not they are Parties to the Registration Convention.

2.2. Compliance with obligations under the Registration Convention

2.2.1. Objective and scope of the Registration Convention

The principal objective of the Registration Convention, as stated in its Preamble, is to establish and maintain a publicly accessible and mandatory central register of space objects by the Secretary-General of the United Nations in order to assist in the identification of space objects and to contribute to the application and development of international law governing the exploration and use of outer space [19]. In other words, the Convention aims at achieving transparency in space activities and fosters the effective application of international space law agreements, particularly the Outer Space Treaty, the Rescue and Return Agreement [20] and the Liability Convention [21]. The Registration Convention plays a crucial role in the international space governance, including the maintenance of peace and security. Therefore, full and comprehensive compliance with the Registration Convention by space-faring States is significant.

If a space object is not launched 'into earth orbit or beyond' it would not be required to be registered; e.g. an object sent only on a sub-orbital flight.

Article I of the Convention delineate its scope and application. The Convention requires the registration of a "space object", which is not fully defined in the Convention, except that it "includes component parts of a space object as well as its launch vehicle and parts thereof' [22]. The term is very broad. However, from the perspective of the Registration Convention it should be understood to mean any tangible human-made material or physical object or device, irrespective of its size, shape, composition and purpose (e.g. like a payload or satellite, a launch vehicle or rocket, an astronaut suit, oxygen tank and other life support equipment, etc.) that has been launched into Earth orbit or beyond. The term "space object" is broader in scope than ""satellites". All space objects, including their component parts as well as their launch vehicles and their parts, must be registered irrespective of their ownership, application or purposes, which could be scientific, technical, commercial, military or humanitarian. In practice, it may pose difficulty in determining which component part ought to be registered or otherwise.

Some States (such as the US and France) have interpreted "space object" to include non-functional objects, such as discarded rocket stages and debris, while others (e.g. Russia) consider only payloads. The language also does not make clear whether the verb "launched" includes additional objects created by separation or fragmentation at a later time. For the purpose of international transparency and security of space activities, it would seem that at least inert rocket stages should be registered so that they are not confused with dormant (and potentially hostile) payloads.

2.2.2. The obligation and responsibility to register a space object

The obligation and responsibility to register a space object, domestically and internationally, are placed only on the "launching State" of that space object. The Registration Convention, in line with the provisions of the Outer Space Treaty and the Liability Convention, defines the term "launching State" to mean: (i) a State which launches or procures the launching of a space object; and (ii) a State from whose territory or facility a space object is launched [23]. Obviously, there is a possibility of four launching States with respect to one space object, though in practice the number of concerned launching States could be higher than four. That might create problems in precisely determining which State(s) ought to register a particular space object.

All space activities of private companies are, from the international space law perspective, considered to be those of their States [24]. Therefore, to ensure that the State has knowledge of and oversight over all space activities, States are responsible for registering the space objects belonging to (procured or launched for or by) their non-governmental entities (private companies). The State under such responsibility could