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Committee on the Peaceful Uses of Outer Space

Questions on suborbital flights for scientific missions and/or for human transportation

Note by the Secretariat

Addendum

Contents

	<i>Page</i>
II. Replies received from Member States	2
Argentina	2
Hungary	2
Morocco	3
Nicaragua	4
Pakistan	5
Peru	7



II. Replies received from Member States

Argentina

[Original: Spanish]
[1 March 2021]

Question (a). Is there a relationship between plans to establish a system of space traffic management and the definition and delimitation of outer space?

Question (b). Is there a relationship between suborbital flights for scientific missions and/or for human transportation and the definition and delimitation of outer space?

Question (c). Will the legal definition of suborbital flights for scientific missions and/or for human transportation be practically useful for States and other actors with regard to space activities?

Question (d). How could suborbital flights for scientific missions and/or for human transportation be defined?¹

Although the Argentine Republic has not yet conducted missions of this nature, it considers that:

(a) Solutions should be based on consensus in view of the various legal regimes existing to date;

(b) The determination of the nature of a suborbital flight as being a space flight or otherwise would indicate the applicable law and the relevant jurisdiction.

Question (e). Which legislation applies or could be applied to suborbital flights for scientific missions and/or for human transportation?

A legal definition of suborbital flights would make it possible to determine immediately the applicable legal regime and to identify the courts with international jurisdiction to hear related cases.

Given the democratization of the use and exploration of outer space, consensus should be paramount within the framework of international organizations in establishing rules and regulations that ensure the safety and sustainability of the peaceful use, exploration and exploitation of space by nations and thus also the management of traffic and the mitigation of risks posed by space debris, especially in view of the existence of missions involving human transportation.

Hungary

[Original: English]
[2 March 2021]

Question (a). Is there a relationship between plans to establish a system of space traffic management and the definition and delimitation of outer space?

In our opinion, yes. The delimitation is important in order to be clear about which law is applicable and which authority has the power to regulate the traffic of a given object. It should also be highlighted that the objects should be controlled (navigated) given the congested airspace and the amount of debris in outer space.

¹ Argentina submitted a consolidated reply to questions (a)–(d).

Question (b). Is there a relationship between suborbital flights for scientific missions and/or for human transportation and the definition and delimitation of outer space?

Yes, as it is currently unclear whether suborbital flight is a space activity, whether the people travelling on that plane are astronauts and whether it is an activity covered by air law.

Question (c). Will the legal definition of suborbital flights for scientific missions and/or for human transportation be practically useful for States and other actors with regard to space activities?

The concept of suborbital flight is given as flight that does not reach orbital velocity and hence the object does not make at least one orbit around the Earth. Although these flights can reach altitudes of up to 130 km, the spacecraft or aircraft does not orbit around the Earth, or it leaves Earth but falls back to it.

If the spatialist approach is adopted, suborbital flight would be considered a space activity (if the given altitude is exceeded). However, if we take a functional approach, the question is no longer clear at all, as it is debatable what the purpose of the tool is. Thus, we get back to the point where it is not the concept of suborbital flight that is decisive (especially that its conceptual framework is determined by the physics) but what we consider to be space activity.

Question (d). How could suborbital flights for scientific missions and/or for human transportation be defined?

Please see above.

Question (e). Which legislation applies or could be applied to suborbital flights for scientific missions and/or for human transportation?

As the vehicle does not reach orbital velocity and it reaches maximum heights of 130 km for a few minutes, we consider that these activities should be governed by the principles of air law and be under the control of the air navigation service provider. Of course, annex 7 of the Convention on International Civil Aviation should be reviewed.

Question (f). How will the legal definition of suborbital flights for scientific missions and/or for human transportation impact the progressive development of space law?

Should suborbital flights be considered as a space activity, many definitions and institutions of space law should be reviewed. International space law does not currently provide a sufficient basis for a comprehensive regulatory environment. It is no coincidence that the regulation of commercial spaceflight started at the national level (e.g., United States of America, United Kingdom of Great Britain and Northern Ireland and France). Given that this is a global market, it would be desirable for key issues to be regulated at the international level, avoiding divergent national legal regimes. To do this, of course, international space law must also undergo significant development.

Morocco

[Original: French]
[9 March 2021]

Question (a). Is there a relationship between plans to establish a system of space traffic management and the definition and delimitation of outer space?

The issue of space traffic management is closely related to the definition and delimitation of outer space since, in order for it to be possible to determine the regulations that can be applied to space traffic, the area where such traffic occurs must be recognized and delimited.

Question (b). Is there a relationship between suborbital flights for scientific missions and/or for human transportation and the definition and delimitation of outer space?

Given the many types of suborbital flights, there is a clear relationship in some cases: the craft used for suborbital flights are considered space objects and can reach altitudes of up to 1,500 km, even if such flights are not intended to occupy an orbital position.

Question (c). Will the legal definition of suborbital flights for scientific missions and/or for human transportation be practically useful for States and other actors with regard to space activities?

The legal definition of suborbital flights is of great interest to States, as it will clarify and specify the limits of States' liability. A legal definition could ensure the security of States and other actors for which States are responsible and contribute to better space traffic management. However, such a definition could be seen as restricting commercial activities carried out by private actors.

Question (d). How could suborbital flights for scientific missions and/or for human transportation be defined?

A definition of suborbital flights could take into consideration the following two aspects:

- (a) The altitude at which the flight takes place, since that altitude has a bearing on the type of launch vehicle used and on the risk to space objects in orbit;
- (b) The functional approach, which concerns the purpose of the suborbital flight.

Question (e). Which legislation applies or could be applied to suborbital flights for scientific missions and/or for human transportation?

In the absence of a legal definition of suborbital flights, it is not possible to indicate any specific legislation that could be applied to such flights. However, given the hybrid nature of suborbital flights, it could be proposed, in the present context, to apply either aviation law or space law, as appropriate.

Question (f). How will the legal definition of suborbital flights for scientific missions and/or for human transportation impact the progressive development of space law?

The existence of such a definition would facilitate the establishment of a comprehensive space traffic management system, improve the safety of space activities and preserve the peaceful nature of those activities in accordance with the relevant United Nations treaties.

Nicaragua

[Original: Spanish]
[8 March 2021]

Question (a). Is there a relationship between plans to establish a system of space traffic management and the definition and delimitation of outer space?

There is a relationship between plans to establish a space traffic management system and the definition and delimitation of outer space insofar as space traffic cannot be managed unless outer space is delimited.

Question (b). Is there a relationship between suborbital flights for scientific missions and/or for human transportation and the definition and delimitation of outer space?

It is necessary to define and delimit outer space in such a way as to reflect the various purposes of suborbital flights, whether such flights are for scientific missions, human transportation or other purposes.

Question (c). Will the legal definition of suborbital flights for scientific missions and/or for human transportation be practically useful for States and other actors with regard to space activities?

The legal definition of suborbital flights for scientific missions and/or for human transportation will be practically useful if it establishes the limits and nature of such flights and the liability of States and/or participants for any damage caused by those flights.

Question (d). How could suborbital flights for scientific missions and/or for human transportation be defined?

Suborbital flights could be defined according to their purpose. In general terms, they could be said to refer to a craft's travelling into space and returning to the surface of the Earth without completing an orbit.

Question (e). Which legislation applies or could be applied to suborbital flights for scientific missions and/or for human transportation?

The applicable legislation will depend on international law, treaties, conventions and recommendations issued by specialized international organizations such as the Office for Outer Space Affairs.

Question (f). How will the legal definition of suborbital flights for scientific missions and/or for human transportation impact the progressive development of space law?

It will be necessary to update relevant legislation and make the corresponding adjustments, as necessary, in order to establish definitions and the responsibilities, obligations and rights of States and to avoid ambiguities.

Question (g). Please propose other questions to be considered in the framework of the legal definition of suborbital flights for scientific missions and/or for human transportation.

The legal definition of suborbital flights should encompass aspects related to the authorization of the flight, associated responsibilities, obligations and rights and the categorization of such flights according to their purpose.

Pakistan

[Original: English]
[2 March 2021]

Question (a). Is there a relationship between plans to establish a system of space traffic management and the definition and delimitation of outer space?

Yes, keeping in mind the recent progress and advancements in space technologies and a rapidly increasing trend of space transportation activities and considering that space launch and re-entry vehicles may have to fly over the airspace of one or more countries during space transportation activities, it has become imperative to define the boundary between air and space so that air and space traffic activities can be clearly differentiated. The spatial approach for the establishment of a fixed boundary between air and outer space based on either scientific or technological criteria is difficult because a payload, rocket stage or re-entry module may fly over the airspace of one or more countries during ascent or descent of space transportation activities.

Therefore, for a workable system for space, the purpose of the activity should be defined.

Question (b). Is there a relationship between suborbital flights for scientific missions and/or for human transportation and the definition and delimitation of outer space?

Yes, the scientific payload and/or human transport vehicle may reach outer space and may fly over the airspace of one or more countries during space transportation activities, thus emphasizing the significance of outer space delimitation. States that are planning to conduct and operate suborbital flights would need to know the applicability of air and space laws. Pakistan is of the view that an international agreement or framework may be established to define the registration, authorization and licensing of passage rights for any space activities (aerospace and suborbital) during launch and re-entry from orbit.

Question (c). Will the legal definition of suborbital flights for scientific missions and/or for human transportation be practically useful for States and other actors with regard to space activities?

The legal definition of suborbital flights for scientific missions and/or for human transportation will be practically useful in terms of distinguishing them from flights intended for the development and testing of the delivery or placement of a weapons system. A legal definition would also assist in developing the relevant legal regime and/or guidelines for suborbital flights.

Question (d). How could suborbital flights for scientific missions and/or for human transportation be defined?

A flight in which a spacecraft reaches outer space, but its trajectory intersects the atmosphere or surface of the Earth, so that it will not complete one orbital revolution or reach escape velocity, is termed suborbital spaceflight. Its definition for scientific missions and/or for human transportation should encompass the aspect of peaceful purposes of the scientific payload. No weapons of mass destruction should be a payload or part of it or any other object that can pose a threat to existing space assets or to Earth and its atmosphere. There is a need for a legal definition of suborbital flights; however, further segregation between suborbital flights for scientific missions and human space flights may be based on criteria that may include the following:

- (a) Open declaration by the suborbital flight owner regarding purpose, payload and complete flight path of suborbital flight;
- (b) Assessment and declaration by the suborbital flight owner regarding safety and environmental and other effects of suborbital flight on other States;
- (c) Rights and obligations of the suborbital flight owner;
- (d) Rights and obligations of other States affected by suborbital flights.

Question (e). Which legislation applies or could be applied to suborbital flights for scientific missions and/or for human transportation?

Pakistan believes that the contribution of both the air and space sectors is essential in establishing a legal framework for suborbital flights, including its definition and relation with the definition and delimitation of outer space and the type of legislation (air laws or space treaties) applied to these missions, in order to find an all-encompassing solution to this issue. The overarching role of the Office for Outer Space Affairs and the International Civil Aviation Organization would be significant in this regard.

Question (f). How will the legal definition of suborbital flights for scientific missions and/or for human transportation impact the progressive development of space law?

The legal definition of suborbital flights for scientific missions and/or for human transportation will assist in the preparation of a legally binding instrument on the

prevention of an arms race in outer space, including on the prevention of the placement of weapons in outer space.

Question (g). Please propose other questions to be considered in the framework of the legal definition of suborbital flights for scientific missions and/or for human transportation.

The following questions are proposed for consideration in the subject framework:

- (a) Which factors related to the safety of suborbital flights can be included in the framework?
- (b) What are the liability provisions in case of damage caused by suborbital flights?
- (c) What will be the mechanism to manage suborbital flights for either human transportation or scientific missions?

Peru

[Original: Spanish]
[4 March 2021]

Question (a). Is there a relationship between plans to establish a system of space traffic management and the definition and delimitation of outer space?

Any system of space traffic management must clearly establish the boundaries within which the vehicles to be monitored will travel. It will be difficult to establish a system for that purpose if outer space is not delimited.

Question (b). Is there a relationship between suborbital flights for scientific missions and/or for human transportation and the definition and delimitation of outer space?

The differences between the laws applicable to airspace and to outer space, and the fact that technology now offers the possibility of so-called suborbital flights (which would be better referred to as “non-orbital travel”), which enable vehicles to travel in both the space used by air traffic and that used by objects in orbit, show that there is a clear relationship between such flights and the delimitation of the spaces in which they operate.

Question (c). Will the legal definition of suborbital flights for scientific missions and/or for human transportation be practically useful for States and other actors with regard to space activities?

It would be of more practical use to delimit outer space and airspace, which would mean that the legislation applicable to a vehicle that is able to travel through both spaces would depend on the location of that vehicle rather than its nature.

Question (d). How could suborbital flights for scientific missions and/or for human transportation be defined?

It would be more appropriate to refer to such flights as “non-orbital travel” since the associated technology, unlike that used in aircraft, does not employ lift as a fundamental means of movement. Furthermore, the term “suborbital” suggests travel at an altitude below the altitudes at which it is possible to orbit the Earth, whereas the concept of non-orbital travel is closer to the idea of not reaching the state of equilibrium referred to as “in orbit”, regardless of the principles applied or technologies used or the length of the journey.

Question (e). Which legislation applies or could be applied to suborbital flights for scientific missions and/or for human transportation?

As indicated in the response to question (c), the applicable legislation would depend on the location of a vehicle, and more than one law might be applicable.

Question (f). How will the legal definition of suborbital flights for scientific missions and/or for human transportation impact the progressive development of space law?

As indicated in the response to question (d), the delimitation of outer space is of great importance for the harmonization of aviation and space law.

Question (g). Please propose other questions to be considered in the framework of the legal definition of suborbital flights for scientific missions and/or for human transportation.

No other questions are proposed.
