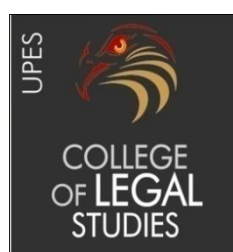


SPACE TOURISM AND THE RESCUE AGREEMENT

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LL.B. (Hons.)/B.B.A., LL.B. (Hons)*



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CERTIFICATE

This is to certify that the research work entitled “**Space Tourism and the Rescue Agreement**” is the work done by **Mahima Singh** under my guidance and supervision for the partial fulfillment of the requirement of B.A., LL.B. (Hons.)/B.B.A., LL.B. (Hons) degree at College of Legal Studies, University of Petroleum and Energy Studies, Dehradun.

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DECLARATION

I declare that the dissertation entitled ““**Space Tourism and the Rescue Agreement**”” is the outcome of my own work conducted under the supervision of Prof .Anuradha Nayak, at College of Legal Studies, University of Petroleum and Energy Studies, Dehradun.

I declare that the dissertation comprises only of my original work and due acknowledgement has been made in the text to all other material used.

Signature & Name of Student

Date

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"My dream is to make space accessible to tens of thousands of people." — Sir Richard Branson, Virgin Galactic

1. INTRODUCTION

Affordable, safe and commercial private human access to space to fulfill the obligation to the advancement of humanity as the Wright Brother's flight, Gagarin's first spaceflight and the Saturn V Moon Rocket that put Aldrin and Armstrong on the Moon¹. The fruitful dispatch of Spaceship one from its mom plane White Knight in October 2004 took after by the second return travel in seven days to height of more than 100Km above ocean level exhibited that the innovation for fleeting human suborbital flight has arrived.²

The accomplishment has immediately grabbed the imagination of general society. Different organizations have begun similar ventures & new industry was introduced. Taking after this achievement of SpaceShipOne, business visionary Richard Branson reported the concurrence with its architects for the development of a bigger commercial vehicle, which will furnish Virgin Galactic travelers with a three and a half hour venture into space for US\$200,000 a seat. It had been accounted for that many individuals have marked for this opportunity.³

Other considerably more recommendations including orbital travel ,hotels, lodgings and different space enterprises has been recommended as business visionaries, researchers and industrialists imagine further esteem added items intended to upgrade the general space tourism experience.⁴

¹ Manfred Lachs, *the Law of Outer Space* Hamilton Publication, 72 (1972).

² Steven Freeland, *Space Tourism and International Law of Outer Space* p.15 2010 Edition

³ The role of United Nations declarations of principles in the progressive development of space law", *Journal of Space Law*, vol. 16, no. 1, 1988

⁴ Jacqui Goddard,"Up, up and Ka-Ching!" in *Newsweek*, 2-2-2008 (February 16th, 2015) [http:// www. Newsweek .com/id/107550](http://www.Newsweek.com/id/107550)

Doubtlessly the possibility of business Space Tourism has caught across the board creative ability. General society view of business space travel has changed from negligible dream to the likelihood and will without a doubt soon get to be reality- much like advancement of air travel. Subsequently huge assets are being coordinated towards the proceeded with progression of Reusable Launch Vehicle innovation, a basic component in an improvement of space tourism industry.⁵

Space tourism is not another thought it came into focus after first arriving on the moon by Apollo 11 in 1967. The thought has been around for a long time, even before the first rocket went into space. Space is a dream destination to individual, till now astronauts are the individuals who are prepared to visit the space and to serve the mission with the normal targets.⁶

Since the dispatch of the first artificial satellite, Sputnik 1 in 1957, the space stadium has advanced to incorporate non-state elements, which are turning into the serious participation in space exercises including investigation into the space tourism market. After that important day in 1957 when the Soviet Union astonished the world by propelling Sputnik I, humanity has been entranced with what lies above. In barely 10 years, that fascination was further touched off when man initially walked at the surface of the moon. By the mid year of 1969, it appeared to be just the matter of time before anybody & everybody would have the capacity to reach to the sky.⁷ Despite the fact that space tourism is still in its infancy, it is assessed that the quantity of space vacationers will to a great extent help inside the following few years. As space vacationer exercises support, mishaps will unavoidably happen, which will offer ascent to lawful inquiries

⁵ Charity Trelease Ryabinkin, "Let There be Flight: It's Time to Reform the Regulation of Commercial Space Travel", (2004) 69 J Air L & Comm 101 at p.103

⁶ Gurunadh Velidi, Harisha Emmadi, Aakanksha Dhar, "Space As A Dream Destination To Mankind: Space Tourism Flight Design With Economical And Technological Feasibility GLEX-2012-14, P.5, p 1, x12416 (accessed on February 3, 2015) http://www.academia.edu/1773308/Space_As_A_Dream_Destination_To_A_Mankind_Space_Tourism_Flight_Design_With_Economical_And_Technological_Feasibility)

⁷ Space Tourism And International Space Laws Business Essay, Space Tourism And Law, ukessays.com /essays/law/space-tourism-and-international-space-laws-law-essay.php (accessed on February 4 th, 2015)

identifying with the obligation of states to save space sightseers in trouble, and the risk for harms. This commitment brings up that the current space bargain administration, which concentrate on the utilization of space by states, is to an expansive degree out of date and that it can't sufficiently manage the remarkable lawful difficulties displayed by the quickly creating space tourism industry. This circumstance is worse by the way that the space legitimate structure is extremely uneven – comprising of arrangements, UN standards and rules, territorial regulations and intergovernmental assentions, and additionally national rules and enactment. Keeping in mind the end goal to guarantee that space tourism is in reality to the benefit of all humankind, clear international legal rules relating to space tourism be formulate, where principles are situated for the approval and supervision of business space exercises and the diversions of states, travelers and private performers are reasonable the extent that this would be possible.⁸ In view of the urgent need to address these legal questions and the resulting lack of time to negotiate a binding legal instrument, it is submitted that, as an interim measure, soft law guidelines should be developed in relation to space tourism in order to provide a framework for the eventual creation of a consolidated and binding legal instrument on all aspects relating to the use and exploration of outer space.⁹

Shockingly, it would be more than forty years prior to the chance to achieve the stars would once again be in the reach of the common individual .Space Tourism is a tourism in which members pay for flights in space.

California multi-tycoon Dennis Tito spent through \$20 Million on space tourism to turn into the first paying visitor in 2001 went on board a Russian Soyuz Capsule, dispatched by the U.S. Organization, Space Adventures Ltd., where he burned through seven days on board the International Space Station. Starting 2010, orbital space tourism opportunities are restricted and expensive, with just the Russian Space Agency giving transport. Space tourism guarantees to wind up multi-billion-dollar-business, and it is positively a test to make a lawful situation for this endeavor. One of the most up to date advancements in

⁸ A. Ferreira-Snyman ,Legal Challenges Relating To The Commercial Use of Outer Space, With Specific Reference To Space Tourism 2014 Volume 17 No 1 ISSN 1727-3781,(accessed on February 3 , 2015) <http://dx.doi.org/10.4314/pej.v17i1.01>

⁹ Ibid

connection to space is the real trick of space tourism. On April 30, 2001 Dennis Tito turned into the first space traveler when he went by the International Space Station (ISS) as a visitor of the Russian Government.¹⁰ At the point when Tito was on the visit, it is doubtlessly not the model for future space tourism. Tito was the visitor of a legislature substance and thusly under a lot of government control.¹¹ Space tourism of the future will most likely be more closely modeled on the global tourist industry in which private companies provide the service of facilitating space travel. This model is displayed in ventures, for example, Virgin Galactic, which is planned for its first flight into space with space travelers on board in 2008. With no less than 100 individuals needed the beginning flight at \$200,000 a ticket, there may be sufficient enthusiasm to make this business wander productive eventually.

According to Steve Attenborough, Virgin's head of astronaut relations, if Virgin can prove that space tourism is "commercially viable," then "potentially there is a wall of money, of private sector money, that will come into the industry and then you could see things develop very quickly."

In the event that Attenborough's expectation is right and Virgin can make a working plan of action then it is conceivable that space tourism could be the greatest change in the space business has gotten since the Cold War advanced the space race of the 1960's with open backing. It could also serve to create the biggest challenges for the legal regime in space since the initial rush of treaties that followed the moon landing. . Those treaties, which created a legal regime amongst state actors in space, could prove hugely inadequate when addressing the new ways in which private citizens could be interacting with each other in frontiers of space. Tourists could be mainly explosive development, since they are not military-esque state actors that have generally been sent to space as the "envoys of mankind,"¹² nor would they even feel forced by the rules and regulations of a

¹⁰ R.Thomas Rankin, Space Tourism: Fanny Packs, Ugly T-Shirts, and the Law in Outer Space, 36 SUFFOLK U.L. REV. 695 (2003).

¹¹ WALL STREET JOURNAL ONLINE,

¹² The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, at Art 5. Jan. 27, 1967, 610 U.N.T.S. 205 [hereinafter OST]

private company with operations in space as an employee of that company might. Their connections would most nearly take after communications of the normal national on earth where wrongdoing and different clashes frequently happen.

We live in a period where the experience of space travel is rapidly turning into a type of private business movement. Space tourism organizations as of now exist and 'offer clients immediate or backhanded involvement with space travel'.

Space is the last outskirts to everyone. So when it is utilized for tourism purposes, the entire measurement is diverse. The lawful angles with respect to space tourism are the main center of dialog. The fundamental question characteristically emerges whether the current Space Laws are sufficient for future space tourism activities.¹³

A landmark part in the ongoing development of humankind's activities in space is the development of technology capable of transporting large number of paying passengers into outer space on a commercial basis. Within the foreseeable future, space will no longer be the sole domain of professionally trained astronauts or the exceptionally wealthy. The prospects for the suborbital and orbital private human access to space give rise to some important legal questions. It will also eventually necessitate the development of an appropriately framed system of legal regulation to deal with these activities. The existing international legal regimes covering air and space activities are not well suited to large –scale commercial access to space.¹⁴

The absence of legitimate clarity speaks to a noteworthy test and must be tended to as quickly as time permits; with a specific end goal to accommodate fitting standard and further support not dishearten such exercises. The proper legal framework& an appropriate balance must be found between the commercial and technological opportunities that will arise and the principles upon which the development of international space law have thus far been based.

¹³ Adhikari, Malay "Space Tourism - Legal Issues and Challenges with Special Reference to India" [2012] NLUDLRS 51; (2012) 1 NLUD Current Developments in Air and Space Law 385 , (accessed on 4th February, 2015) <http://www.commonlii.org/in/journals/NLUDLRS/2012/51.html>

¹⁴ Sandeepa B. Bhat (Editor) , SPACE LAW: In the Era of Commercialization , 2010 Edition ,Steven Freeland , Space tourism and International Law of Outer Space p.15

Dennis Tito was the pioneer in the field of space voyaging and the credit of opening the eyes of the world to the thought of orbital space tourism goes to him as he burned through 20 million dollars to appreciate on his space setting out up to the International Space station.¹⁵ Now several world famous organizations like Sir Richard Branson's Virgin Galactic Armadillo Aerospace, blue origin, Bigelow Aerospace, Xcor Aerospace have also plunged in this field and making progress by heaps and bounds. It is 2 lakhs dollar investment and an adventurous flight of few minutes into the nearest part of outer space.

1.1 Importance of Space Tourism

The significance of space tourism can't be exaggerated, halfway due to the financial benefits it will bring, somewhat in view of the new viewpoints it will give to all future space voyagers, and incompletely as a result of the carrier like working knowledge with reusable space vehicles, and the related economies of size of dispatch operations that will come about. Space tourism speaks to another territory of business endeavor, and can possibly create numerous billions of dollars yearly in incomes, with related profits in job and assessments. There won't just be open doors for employment made straightforwardly by space tourism, additionally by implication in the bolster businesses and at the spaceports. Tourism all in all is one of the biggest divisions of the business world economy, and space tourism will give another fascinating range past the world visit and experience occasion spaces which presently exist.¹⁶

Space tourism will make all space flight in the less risky and much less expensive. One of the purposes behind this is the potential size of the business sector. Today, the entirety of payloads yearly on all dispatch vehicles (government and business, from everywhere throughout the world) adds up to 60–80 dispatches. This number has been consistent for quite a few years. Since there are conceivably a huge number of travelers every year, and

¹⁵ Mukesh Mohan Pandey, the Possibility of Space Tourism in India: Issues and Concerns IOSR Journal of Business and Management. Volume 11, Issue 4 (Jul. - Aug. 2013), PP 32-39 (Sept.6th 2014) https://www.academia.edu/4858206/The_Possibility_of_Space_Tourism_in_India_Issues_and_Concens

¹⁶ “The Wright Stuff: the Century of Effort Behind your Ticket to Space”, Apogee Books (Feb 3rd , 2015) www.elsevier.com/locate/actaastro

a traveler is considered as a payload, space tourism changes the financial system of space flight, and economies of scale start to demonstrate their profit.

Besides, space tourism obliges re-usable space frameworks, thus the presence of the space tourism business empowers the improvement and refinement of this class of vehicle, prompting changes in re-use of use and more carrier like operations. Space vacationers, as well as all clients of space (government, business) will advantage from the preferences that will come about because of the creation and operation of space tourism. It will get to be simpler, less expensive, and more normal to get payloads into space.¹⁷ At last, the voyagers themselves will show a power for helpful change. For a long time since the Moon landings, the overall population has been losing enthusiasm for space flight. Space tourism speaks to an approach to make space individual to them, and in this manner give an inspiration to more open enthusiasm for space all in all. Very few more than 500 individuals have taken after Yuri Gagarin into space amid the most recent 50 years. Before long, with the happening to sub-orbital space tourism, it will be conceivable to fly more than that number in a solitary year, and they will all have the capacity to admire the same experience of America's first man in space, Alan Shepard, who in May 1961 pronounced: "" What a delightful view!." Almost everybody who has been into space has reported that the experience has been changing. To see the bend of the Earth, and the dark sky, and the slender delicate band of our air has quite often brought about an expanded attention to the need to moderate the assets of this planet. To those twenty four men who went to the Moon in '68-72', it additionally underlined the acknowledgment that it will be hard to be sure to make an option home for man, somewhere else in the close planetary system. Anyhow, however hard it will be, humankind will in the end need to secure toeholds somewhere else on other planetary bodies, and regard those bodies as business assets pretty much as humanity has treated Earth up to the present. Space tourism is a crucial building piece that is expected to make that long haul future plausibility. Charles Lindbergh met both Orville Wright and Neil Armstrong inside his lifetime. Burt Rutan met Wernher von Braun and constructed the first model space tourism art, Space Ship One. By helping make this industry thrive, the actively present

¹⁷ Derek Webber, Space tourism: Its history, future and importance *Acta Astronautica* 92 (2013) 138-143 (Feb 3rd, 2015) www.elsevier.com/locate/actaastro

people of this meeting will make conceivable a future in space that none of us can envision today.¹⁸

1.2 Relation of Rescue Agreement and Space Tourists and Legal status of Space Tourists

Article V of the Outer Space Treaty describes astronauts as "envoys of mankind" and obliges states to provide astronauts with "all possible assistance in the event of accident, distress, or emergency landing on the territory of another State party or on the high seas". based on sentiments of humanity, develops and gives further concrete expression to the rescue provisions in the Outer Space Treaty and specifically deals with the rendering of assistance to astronauts in the event of an accident, distress or emergency landing, the prompt and safe return of the astronauts and the return of objects launched into outer space. It should be noted that the title and preamble of the Rescue Agreement refer to "astronauts", while the text of the Agreement employs the broader term "personnel of a spacecraft", which may, include astronauts, space engineers and scientists.

It is risky; nonetheless, that the expressions "space traveler" and "space faculty" in the Rescue Agreement likewise incorporate space voyagers, since neither of these terms is (formally) characterized in any of the space arrangements, nor in any residential laws. At the time of the drafting of the space bargains, space tourism was not yet imagined and the settlements were figured in light of the hobbies particularly of space explorers.¹⁹

This vulnerability prompts the topic of whether states have an obligation to protect space sightseers as travelers (rather than space travelers and work force) on a shuttle. A related inquiry is if the obligation to safeguard applies just to state-supported missions, or to business spaceflights also. With a specific end goal to figure out whether a space

¹⁸ Ram S. Jakhu Et Al., *The NEED FOR AN INTEGRATED REGULATORY REGIME FOR AVIATION AND SPACE: ICAO FOR SPACE 4* (Eur. Space Pol'y Inst. ed., 2011)

¹⁹ Frans G. von der Dunk, *Space for Tourism- Legal Aspects of Private Spaceflight for Tourist Purposes*, Space and Telecommunications Law Program Faculty Publications. Paper 26. International Institute of Air and Space Law, Leiden - The Netherlands (February 4th, 2015) <http://digitalcommons.unl.edu/spacelaw/26>

vacationer falls inside the meaning of a space explorer for legitimate purposes, the accompanying components need to be viewed as: preparing, height and choice.²⁰

The term **space tourism** has been defined as “**any commercial activity offering customers’ direct or indirect experience with space travel**” and a **space tourist** as “**someone who tours or travels into to or through space or to a celestial body for pleasure and recreation**”

It will remain for a long time a risky and costly trip, for which a good physical condition is essential. Even professional astronauts have suffered numerous medical problems related to their stay in outer space, more or less serious depending on the length and distance of the mission, and much is probably still unknown about long term effects of space travel.

Accordingly, what is called Space tourism is more an open door for the upbeat few who are so energetic to go up there that they are willing to acknowledge certain dangers. Despite these perceptions, there give off an impression of being different sorts of conceivable space tourism experience. A large portion of the major legitimate issues connected with the expanding space industry have been tended to, for example, the fitting ward for lawful matters and what behavior is allowed in space. Then again, numerous particular inquiries stay unanswered, for example, how private space faring organizations will be managed, and who will be obligated for any issues or mishaps (i.e. the State, or the Commercial space organization). Also, the degree of individual obligation for those working rockets remains an inquiry. Are the administrators to accept the danger of a clearly and a characteristically hazardous undertaking or if once the obligation is created either against the organization or the client, how is it to be allotted. These are a portion of the inquiries that have developed because of the development of the space tourism as an

²⁰ Mukesh Pandey, the Possibility of Space Tourism in India: Issues and Concerns IOSR Journal of Business and Management. Volume 11, Issue 4 (Jul. - Aug. 2013), PP 32-39www.iosrjournals.org) (Sept. 6th , 2014 ([https:// www. Academia .edu/4858206/ The Possibility_ of Space_ Tourism in_ India Issues_ and_ Concerns](https://www.Academia.edu/4858206/The_Possibility_of_Space_Tourism_in_India_Issues_and_Concerns)

industry. It is expected that when the space tourism industry at last takes off there will be legitimate issues that will need to be tended to first. Throughout the span of mankind's history there has dependably been an in number commute to investigate and to go to new and energizing spots. The most recent decades demonstrate an in number increment in individuals voyaging to the keep going remote regions on earth, scanning for enterprise, fun and amusement. For the traveler of tomorrow, space is the following step.²¹

Over a half-century has passed since Yuri Gagarin made history by being the first person in outer space. Within six years of that milestone, 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 'Outer Space Treaty' or otherwise 'OST')²² was drafted and brought into force under the UN framework. Article V OST requires State Parties to regard astronauts as 'envoys of mankind', stipulating that State Parties shall render to them 'all possible assistance in the event of accident, distress, or emergency landing on the territory of another State Party or on the high seas'. Article VIII OST states that a State Party on whose registry an object is launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body and that ownership over objects launched into outer space is not affected by their presence in outer space or on a celestial body or by their return to Earth.

The UN 'Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space' (the 'Rescue Agreement' or otherwise 'RA')²³, drafted shortly after the Outer Space Treaty, served to expand on Arts V & VIII OST with respect to astronauts and space objects that have landed outside the territory of the state of registry. In the Rescue Agreement the term 'personnel of spacecraft' was used in place of the term 'astronaut' and the description as 'envoy of mankind' was not

²¹ Space Tourism And International Space Laws Business Essay , Space Tourism & Law ukessays.com /essays/law/space-tourism-and-international-space-laws-law-essay.php (accessed on February 4th ,2015)

²²The Outer Space Treaty, Art 5 (accessed 5th February, 2015): http://www.oosa.unvienna.org/oosa/en/SpaceLaw/gares/html/gares_21_2222.html.

²³The Rescue Agreement, 1968(accessed 5th February, 2015): http://www.oosa.unvienna.org/oosa/en/SpaceLaw/gares/html/gares_22_2345.html.

included. This sparks a question as to whether the later-in-time designation intended a broader interpretation of astronaut, i.e. whether mere passengers are covered by the Rescue agreement as personnel of a spacecraft, and therefore entitled to the same treatment and care as a professional astronaut.²⁴ This attempts to address space tourism in respect of the humanitarian ideals of the Rescue Agreement, arguing that space tourists require equivalent protection under the multi-lateral space law treaties, i.e. humans in space, whether on orbital or sub-orbital missions, should be considered as 'astronauts' or 'personnel of spacecraft'; thereby covering them under these agreements.²⁵

1.3 Space Tourism- What does it Involve & What Law Applies?

The term space tourism has been explained as “any commercial activity offering customer’s direct or indirect experience with space travel”²⁶ and Space tourist as “someone who tours or travels into to or through space or to a celestial body for pleasure and /or recreation”.²⁷

It is Crucial to set this concept into its adaptable form or context. Since the 1960’s approximately five hundred persons have gone into outer space. Only a handful of these were tourists .NASA, with the largest astronaut corps worldwide currently has eighty eight active astronauts. The European Space Agency has eight.

With the arrival of space tourism the number of humans in space will enlarge dramatically. However most proposals at present being developed envisage a maximum

²⁴ Daniel Peden, “Commercial Insurance for Private Space Travel A Serious Concern”,(Feb 8th, 2015) <http://www.urinfo.co.uk/commercial-insurance-for-private-space-travel-a-serious-concern/>

²⁵ Patrick Collins, P Collins, May 1996, “The Regulatory Reform Agenda for the Era of Passenger Space Transportation”, Proceedings of 20th ISTS, Paper No 96-f-13, ”,(Feb 8th, 2015) available at [http:// www .spacefuture.com/archive/the_regulatory_reform_ agenda_for_the_era_of_passenger_ space _ transportation .shtml](http://www.spacefuture.com/archive/the_regulatory_reform_agenda_for_the_era_of_passenger_space_transportation.shtml)

²⁶ Stephan Hobe and Jürgen Cloppenburg, “Towards A New Aerospace Convention?- Selected Legal Issues of “Space Tourism” (paper presented at 47th Colloquium of the international Institute of Space Law, 2004) (on file with author)

²⁷ Zeldine Niamah O’ Brien, “Liability for Injury ,Loss or Damage to the space Tourist”(paper presented at 47th Colloquium of the international institute of Space Law (on file with author)

of 4-6 seats for “tourists”. It will remain for a long time a hazardous and expensive trip for which good physical conditions are required. Even trained astronauts have suffered frequent medical troubles connected to their stay in outer space more or a smaller amount of serious depending on the length and distance of the mission and much is most likely still mysterious about long-term effect of space travel.

Therefore what is said to be Space tourism is more an chance for the few who are so excited to go up there that they are enthusiastic to accept certain risks. Notwithstanding this explanation, there come into view to be a variety of types of probable space tourism knowledge.

- **Suborbital** spaceflight which is what the majority current projects will propose covers spaceflights in which orbital velocities are not achieved. Usually this implies rocket flights which are additional or less straight up and down and which achieve an height of 100-200 Km. After engine is shut down a microgravity duration of 3 to 6 minutes in that order is achieved after which the vehicle falls back to earth and re-enters the atmosphere.
- **Orbital** spaceflights, orbital velocity must be achieved for the vehicle to keep flying along the curve of the earth and not fall back to earth. The velocity necessary to wait in an orbit is called Orbital Velocity and depends on the height of the orbit. For a 200 Kilometers circular orbit, the orbital velocity is 28000 Km per hour and it is this enormously elevated speed which makes orbital spaceflight so technically compound and therefore costly.
- **Intercontinental Rocket Transport** implies a journey through a space in order to considerably curtail the travel time from one point on earth to another. It is a thought that has existed for a long time. This idea might be eye-catching for the armed forces as well as for commercial transportation of passengers and goods. Though the technological challenges are vast in terms of the required speed the amount of propellant necessary and the need for a robust thermal protection system for safe re-entry. The base line is that a functional suborbital transport

would necessitate many of the same design features of an orbital vehicle and the cost of transporting a passenger or cargo would be equal to the charge of using an RLV

1.4 Phases of Space Tourism²⁸

Like any other business, once space tourism gets started it will develop progressively. It can be helpful to think of it as going through several phases. Starting with a relatively small-scale and relatively high-priced "pioneering phase", the scale of activity will grow and prices will fall as it matures. Finally it will become a mass-market business, like aviation today.

- **Pioneering phase**

The phrase "space adventure travel" has been suggested by Gordon Woodcock of Boeing, and is a convenient one to describe the first phase. Customers will be relatively few - from hundreds per year to thousands per year; prices will be high, \$50,000 and up

- **Mature phase**

This will see demand growing from thousands of passengers per year to hundreds of thousands per year. Tickets to orbit will cost less and flights will depart from many different airports

- **Mass phase:**

Ticket prices will fall to the equivalent of a few \$ thousand and customers will from hundreds of thousands to millions of passengers per year. Apparently unthinkable to most people in the space industry, even 1 million passengers per year are just 8 hours of

²⁸ Gabriella Catalano Sgrosso, 'Legal Status, Rights and Obligations of the Crew in Space' 163 (1998) 26
Journal of Space Law

aviation! And aviation is still growing fast at today's level of 1 billion passengers per year. So there's no reason to suppose that space travel will ever stop growing.²⁹

It now seems almost unavoidable that commercial space tourism will emerge as a realistic and foreseeable use of outer space within near future. The prospects for both suborbital and orbital space tourism do, however give rise to some conceptually difficult legal questions. Issues of liability, the development of property rights and the legal status of tourists are just some of the countless issues that require careful thought.

These questions are all the more complex given the limitation of the legal regime that has been established for the outer space and its categorization as a *res communis* “**common asset**”- part of the “Common Heritage of Mankind which also raises broader ethical questions about space tourism activities³⁰

²⁹ Ibid

³⁰Sandeepa B. Bhat (Editor) , SPACE LAW: In the Era of Commercialization , 2010 Edition ,Steven Freeland , Space tourism and International Law of Outer Space p.15

2. OVERVIEW OF SPACE TOURISM AND SPACE TOURIST

In the past half-century, access to space was restricted to a chosen few that were considered to have the right capabilities. Today, meeting these guidelines is no more essential in coming to the edge of Earth, as now princely private people can partake in space travel. In principle, with sufficient subsidizing, anybody can achieve space through business spaceflight, and case the title of "space explorer" with capabilities that are no more noteworthy than the first animal that was dispatched into space. With this new contestant in space, would it be advisable for us to still consider space travelers to be 'envoys of humanity', as depicted in Article V of the Outer Space Treaty; and can space voyagers pick up that title? From the Outer Space Treaty, in profiting humankind, should that space traveler be filling in as operators of a State Party; and is the answer dependant on the action to be directed? Next, where do sub-orbital flights fit inside these global space instruments? What's more, does that answer oblige a delimitation of airspace and space? Besides, which approach is required in deciding the suitable legitimate administration?

2.1 Space Tourism –Basic Concept

Space tourism is a splendid beginning stage for other private space exercises. As a method for diversion, it has the forthcoming to acquire financial specialists and devotees, make moment benefit, and establish the framework for more noteworthy exploration and money related backing in other space applications. There can be most likely the perspective of business space tourism flights has caught broad considerations. People in general perception of business space travel has changed from insignificant would like to a plausibility and will soon be a real.³¹

³¹ DR. FRANS G. VON DER DUNK. "Legal aspects of the international space station - Genuine partnership or no genuine partnership: what is the question?", in *The Highways of Air and Outer Space Over Asia* (1992), 109-20.(7th march 2015) [http:// www.esa.int /About_Us /ECSL_ European _Centre _for _SpaceLaw/Dr._Frans_G._von_der_Dunk._Bibliography/%28print%29](http://www.esa.int/About_Us/ECSL_European_Centre_for_SpaceLaw/Dr._Frans_G._von_der_Dunk._Bibliography/%28print%29)

“**Space tourism**” has been defined as “*any commercial activity offering customers direct or indirect experience with space travel*”. The official definition of tourism offered by the World Tourist Organization (WTO) and the U.N. Statistical Committee in 1994 reads thus, “The activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure....”³²

Space tourism can't avoid being tourism in which individuals pay for flights into space. Space Tourism is the term that is come to be used to mean regular people from general society acquiring tickets to go to space and back. Various people find this idea creative. Yet over the span of late years a creating volume of master work has been done on the subject, and its without further ado leave that setting behind business space tourism organizations is a sensible center for business today. It's an unmistakable arrangement of "space travel" which moreover consolidates go in space for work purposes - to date, essentially by government staff. Starting late it has been viewed that, though regulatory space workplaces are not motivated by space tourism, it is a focus of headway of space activities and will help widely in sponsoring the space operations or activity.

A report published by NASA - "General Public Space Travel and Tourism" in March 1998, endorse the idea of space tourism; pointed out that it is going to start sub-orbital flights; that it promises to be a much wider market than space launch. Although space tourism had come up in a number of science fiction stories, it is an amazing fact that in almost none of them, tourism is portrayed as more than a small-scale activity greatly overshadowed by government space missions - military operations, scientific research, defence, etc. That is, government associations completing imposing business model "missions" in space apparently for the profit of the citizen and made an altered picture of what are space exercises, which has overwhelmed the creative energies of researchers and specialists, legislators, the media, and the overall population for a very long while.³³

The price for a flight to the International Space Station is US\$ 20–35 million. The space tourists or the spaceflight participants as called by few, usually sign contracts with third

³² Roger D. Launius & Dennis R. Jenkins, Is it finally Time for Space Tourism? 4 *Astropolitics* 253, 255 (2006).

³³ Space Tourism and Private Space Travel Must be Safe, House Panel Says, SPACE.COM (Dec. 21, 2014, 10:46 AM), <http://www.space.com/14982-private-space-travelrisks-faa.html>.

parties to conduct particular research while in orbit. This helps to minimize the expenses.³⁴

Space tourism explains the view that human passengers will have the opportunity to travel beyond the Earth's atmosphere and experience orbital flights, extended stays in rotating space hotels, and as well participate in research, entertainment and even sports while in outer space.³⁵ At the beginning, it is important to put emphasis on that this conception of space tourism necessitates example shift in how space is perceived. Beyond considering space as a medium of flight akin to the air space (and thus constituting the journey), the concept of space tourism requires that space be seen also as the destination of the journey.³⁶ The main common vehicle infiltrated the circle encompassing the Earth in 1957. From that point forward, the investigation and utilization of space has remained to a great extent inside the area of national governments and expert space travelers. Throughout the span of mankind's history, there has dependably been a powerful urge to investigate and go to new and energizing spots. Space investigation has caught the creative ability of the overall population throughout the previous 50 years; it is just common that individuals from the overall population are starting now to inquire as to whether and when they too may wander into space. To pick up a commonsense comprehension of the expression "Space Tourism", it is vital to part the term into its two parts: space and tourism, and every one of them investigated independently.

“Space tourism” is the concept of tourists flying into the space primarily for sheer enjoyment (Accelteon Partners Inc., 2008). In other words space tourism can be defined

³⁴ Ibid

³⁵ Mukesh Pandey, the Possibility of Space Tourism in India: Issues and Concerns IOSR Journal of Business and Management. Volume 11, Issue 4 (Jul. - Aug. 2013), PP 32-39www.iosrjournals.org) (Sept. 6th , 2014) https://www.academia.edu/4858206/The_Possibility_of_Space_Tourism_in_India_Issues_and_Concerns

³⁶ Patrick Collins, P Collins, May 1996, “The Regulatory Reform Agenda for the Era of Passenger Space Transportation”, Proceedings of 20th ISTS, Paper No 96-f-13, available at http://www.spacefuture.com/archive/the_regulatory_reform_agenda_for_the_era_of_passenger_space_transportation.shtml

as: “A vision of having affordable space transportation system for as many people as possible going to space as space tourists”.³⁷

Space has been defined in many dictionaries as:

- “A boundless three-dimensional extent in which objects and events occur and has relative position and direction.” (**Merriam-Webster dictionary**)
- “The infinite extension of the three-dimensional region in which all matter exists.” (**Free dictionary.com**)
- “The empty area outside the Earth’s atmosphere, where the planets and the stars are.” (**Cambridge Dictionaries**).

The word “**space**” “indulge in any interested individual enthusiasm towards the darkness of the universe. In other words, curiosity gets the better of us humans when we consider the extent and composition of space and one literally tries to see the light beyond this darkness. Although it is said that curiosity kills, it is the same curiosity that drove mankind to reach the heights it has attained so far. Space exploration, aerodynamics, technology, communication, satellites, orbits and the list goes on-and-on are all attributable to human curiosity and enthusiasm for aviation and space exploration and use.”³⁸

Space is a term that can refer to various phenomena in science, mathematics, and communications. In astronomy and cosmology, space is the vast three dimensional regions that begin from where the Earth’s atmosphere ends. Space is usually thought to begin at the lowest altitude at which satellites can maintain orbits for a reasonable time without falling into the Earth’s atmosphere. This is approximately 60 miles (about 100 kilometers) above the surface of the Earth. Although the frontier between the atmosphere and space is not officially defined, it is generally accepted that for all practical purposes space begins at an altitude of about 100 km from the surface of the Earth.

³⁷ Supranote 35

³⁸ Patrick Collins, P Collins, May 1996, “The Regulatory Reform Agenda for the Era of Passenger Space Transportation”, Proceedings of 20th ISTS, Paper No 96-f-13, available at [http:// www.spacefuture.com/archive/the_regulatory_reform_agenda_for_the_era_of_passenger_space_transportation.shtml](http://www.spacefuture.com/archive/the_regulatory_reform_agenda_for_the_era_of_passenger_space_transportation.shtml)

2.2 Tourism

Tourism derives from the word “tour” which means a journey in a circuit. The operative word in that definition is “circuit” and it signifies a return journey to the point of origin. **The United Nations World Tourism Organization (UNWTO) defines tourists as people who “travel to and stay in places outside their usual environment for more than twenty-four (24) hours and not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited”.**³⁹

A “*space tourist*” is a person who travels to and experiences space for adventure and recreation.⁴⁰ In aggregate and substance space tourism indicates to the procurement of offices and administrations that empowers people to get to and experience space for purposes of enterprise and entertainment. In the most recent decade a great deal of gainful work has been carried out here and now we have few space visitors who have paid multi-million dollars to be in the space. Because of the associations like Space Adventures who has masterminded this office on Russian Soyuz vehicle. Be that as it may we see the sub-orbital fragment of space tourism is still in its early stages and seems, by all accounts, to be cutting edge.

³⁹ Burt Helm, Virgin Galactic’s Space Odyssey, 15 October 2004.

⁴⁰ Mukesh Mohan Pandey, the Possibility of Space Tourism in India: Issues and Concerns e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 13, Issue 4 (Jul. - Aug. 2013), PP 32-39 IOSR Journal of Business and Management (IOSR-JBM) www.iosrjournals.org (accessed on February 4th, 2015)

Keeping in view the current scenario regarding the development of space tourism we can foresee three kind of trip:⁴¹

A) Orbital travel with stay at International Space Station (ISS)

B) Sub-orbital travel

C) Point –to–point

A) Orbital travel with stay at ISS: In this type of travel the passenger gets on board of spacecraft and goes in Low Earth Orbit (LEO) stays at ISS for one or two week.

- 2001 Denis Tito American 8 days (Soyuz) 20 Million
- 2002 Mark Shuttle worth South African 11 days (Soyuz) 20 Million
- 2005 Gregory Oslen American 11 days (Soyuz) 20 Million
- 2006 Anousheh Ansari American/ Iranian 12 days (Soyuz) 20 Million
- 2007 Charles Simyoni Hungarian/ American 15 days (Soyuz) 25 Million
- 2009 Guy Laliberte Canadian 11 days (Soyuz) 35 Million
- 2009 Charles Simyoni Hungarian/ American 15 days (Soyuz) 35 Million

B) Sub-orbital travel: In sub-orbital travel the spaceships would take passengers up to space at an altitude of about 62 miles (100 kilometers) -- commonly known as the edge of space -- before returning to Earth. These passengers would get a glimpse of the edge of our planet and the blackness of space while experiencing several minutes of weightlessness (Chow Dennis, 2011).⁴²

C) Point-to-point inter-continental sub-orbital travel: Sub-orbital travel is capable of flights from one part of the world to another in relatively shorter period of time than jet

⁴¹ Mukesh Mohan Pandey, the Possibility of Space Tourism in India: Issues and Concerns IOSR Journal of Business and Management. Volume 11, Issue 4 (Jul. - Aug. 2013), PP 104-139www.iosrjournals.org) (Sept.6th,2014)https://www.academia.edu/4858206/The_Possibility_of_Space_Tourism_in_India_Issues_and_Concerns

⁴² Space Tourism and Private Space Travel Must be Safe, House Panel Says, SPACE.COM (Dec. 21, 2014, 10:46 AM), <http://www.space.com/14982-private-space-travelrisks-faa.html>.

engine powered aircraft⁴³. For instance, Virgin Galactic has mentioned that its“ first sub-orbital vehicle could also be used to make super-fast intercity trips (New Scientist, 2006).⁴⁴If the cost of sub-orbital flights drops significantly, intercity flight may have potential applications for high urgency cargo flights, urgent military responses, or even business or commercial travel where passengers experience the excitement of space while travelling from continent to continent. Thus this trip is going to bring a remarkable change in human life.⁴⁵

Tourism, hence, requires the availability of three distinct elements:-

- (1) A discretionary income available for leisure travel;
- (2) Ample leisure time to spend on both preparations for and taking the trips themselves; and
- (3) An infrastructure supporting tourism that offers accommodations, food and amenities, transportation systems, and attractions to see and do at the place visited.⁴⁶

2.2.1 Advanced Space Tourism

Advanced space tourism will be tourism where spaceflight bound to interplanetary flight like Lunar Tourism. Lunar tourism is visit to moon, which is one of the extravagant and most fascinating visitor destinations. Lunar tourism is picking up consideration since first arriving on the moon on July 20, 1969. Anyway lunar space tourism can't begin until the important offices are developed on the moon. Lunar tourism to the Moon will definitely get to be famous for a few reasons, including experience, science, otherworldly and exploration purposes. Subsequently ten-day to two-week lunar excursions, which are

⁴³ The Role of United Nations declarations of principles in the progressive development of space law”, *Journal of Space Law*, vol. 16, no. 1, 1988.

⁴⁴ Ibid

⁴⁵ Supranote43

⁴⁶ Dr. Frans G. Von Der Dunk, “Passing The Buck to Rogers: International Liability Issues In Private Spaceflight”, 86 *Neb. L. Rev.* (2007), p.400

extremely advantageous for tourism. Lunar tourism gives a stage to the researcher to research on moon and its surroundings.

2.2.2 Dispute over the terminology of “Space Tourists”

Dennis Tito, Mark Shuttleworth, Gregory Olsen, Anousheh Ansari and Richard Garriott have disclosed their craving to be called an option that is other than "space vacationer". The reason agreed was that they completed investigative analyses as a component of their excursion. Garriott has communicated his assessment to be called as "private cosmonaut" or "private space explorer. Tito likes to be known as a "free analyst" and there are numerous wordings proposed by others too. Charles Simonyi is the singular case out of many others who appears to have no issues about calling it "space tourism". On the other hand, it is essential to note here that even the Outer Space Treaty or the other applicable traditions don't give a suitable definition.⁴⁷

NASA and the Russian Federal Space Agency have consented to utilize the expression "spaceflight member" to recognize space explorers from space travelers on missions composed by the two organizations. There is a thought that space tourism has a capability of being blossoming industry that could further the improvement and settlement of space thus a need to settle the complaints on wording.⁴⁸

2.3 Legal Status of Space Tourists

The final challenge of space tourism to the international legal society is the definition and therefore the rights and obligations of space flight participants. The determination of this

⁴⁷ Space Tourism and Private Space Travel Must be Safe, House Panel Says, SPACE.COM (Dec. 21, 2014, 10:46 AM), <http://www.space.com/14982-private-space-travelrisks-faa.html>.

⁴⁸ Space Tourism a Look in the Past and Future Tourism (January 27th, 2015) ukessays.com/essays/tourism/space-tourism-a-look-in-the-past-and-future-tourism-essay.php

inquiry would have a considerable effect on the rights and obligations of such space flight participants. Article V (1) of the Outer Space Treaty ⁴⁹

For the most part, the states practicing locale more than a man have the power to focus the rights and obligations of travelers. Be that as it may, universal law contains various more particular regulations.

Once more, when utilizing the Spaceship One model, it is critical to recognize the airplane and the space vehicle appended to it until division. Before partition, the space vehicle is a piece of the air ship, though after division it may qualify as a space article relying upon the parameters of the mission. On the off chance that a rocket is utilized to dispatch the space case, both items rocket and container are space objects.

While global law and most national laws do not have a general meaning of the expression "work force of a flying machine,"(personnel of spacecraft) it is clear that travelers can't go under this term. Space sightseers are travelers as far as air law, and accordingly, they fall obviously under the order of the airplane commandant. At the point when transportation by the vehicle must be considered as transportation by a space protest, the status of space travelers must be dead set.

The main question is whether the passengers can be considered astronauts, or whether they should be granted a status similar to that of astronauts. It could have a considerable impact on passenger rights and obligations.⁵⁰ Thus, the main implications of the status of an astronaut are obligations in case of emergency, which are further specified in the Rescue Agreement.

⁴⁹ The Treaty on Principles Governing the Activities of the States in the Exploration and the Use of Outer Space, Including the Moon and other Celestial Bodies Art VI Jan 27,1967, 610 U.N.T.S.206(Hereinafter Outer Space Treaty)

⁵⁰The Possibility of Space Tourism in India: Issues and Concerns IOSR Journal of Business and Management. Volume 11, Issue 4 (Jul. - Aug. 2013), PP 32-39www.iosrjournals.org) (Sept. 6th , 2014) (https://www.academia.edu/4858206/The_Possibility_of_Space_Tourism_in_India_Issues_and_Concens

According to the Rescue Agreement, such obligations apply more generally to “personnel of a spacecraft.” Moreover, **Article V** of the Outer Space Treaty confers to astronauts the status of “envoy of mankind.” This seems to be of rather figurative value. The introductory works in UNCOPUOS suggest that states did not assume that any specific legal rights or duties would result from the status as “envoy of mankind.”

The terms "**astronauts**,"⁵¹ "**personnel of a spacecraft**,"⁵² and "**envoy of mankind**,"⁵³ have not yet been defined in international space law. As has been observed, they bear different connotations: "astronaut" has a more explorative or scientific meaning, "personnel" has a more functional meaning, and "envoy of mankind" has a more humanitarian meaning.⁵⁴

Whereas **Article V** of the Outer Space Treaty speaks of "astronauts" and "envoys of mankind." **Article VIII** uses the term “personnel.” It is clear that Article VIII of the Outer Space Treaty was not intended to excuse passengers from the jurisdiction and control of the state of registry. Thus, a broad understanding might seem suitable, counting not only persons involved in the operation of the spacecraft, but also passengers’.

This is in line with the term "personnel" as used in the Rescue Agreement, which clearly aims to include all persons on board.⁵⁵ The term "envoy of mankind" should be

⁵¹ The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies Art. VI opened for signature Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205, available at <http://www.unoosa.org/pdf/publications/STSPACE11E.pdf> [hereinafter Outer Space Treaty].

⁵² Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, opened for signature Apr. 22, 1968, art 2 19 U.S.T. 7570, 672 U.N.T.S. 119, available at <http://www.unoosa.org/pdf/publications/STSPACE11E.pdf> [hereinafter Rescue Agreement].

⁵³ The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies art. V, opened for signature Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205, available at <http://www.unoosa.org/pdf/publications/STSPACE11E.pdf> [hereinafter Outer Space Treaty].

⁵⁴ Ram Jakhu & Raja Bhattacharya, Legal Aspects of Space Tourism, PROCEEDINGS OF THE FORTY-FIFTH COLLOQUIUM ON THE LAW OF OUTER SPACE 112, 129 (2002).

⁵⁵ Stephen Gorove, Legal and Policy Issues of the Aerospace Plane, 16 J. SPACE L. 147, 151 (1988).

understood in the context of the mission of the astronaut, which he or she is supposed to be conducting in the interest of all mankind.⁵⁶

Travelers could along these lines be viewed as "staff" of a space object, with the outcome that the condition of enrollment could practice locale and control over every individual on board the space object. In the event that the faculty of a space article visit the space object of an alternate condition of registry in space, these people ought to go under the purview and control of the condition of enrollment of the went by space object.

Notwithstanding, the perspective has been communicated that just persons that practice certain capacities regarding the operation of the space vehicle can be viewed as "work force." Also, states may not be willing to give human rights and immunities of staff to voyagers on board a suborbital transport vehicle who don't take an interest as experts in a mission or who don't speak to their nations for exploration purposes. The profile of these travelers does not speak with the picture of space explorers that states had as a primary concern when drafting the Rescue Agreement. Besides, the moderately brief time of time that these persons will spend in space can militate against a favored treatment of travelers.

Whether a suborbital vehicle can be viewed as a "space object" relies on upon the profile of the mission. On the off chance that the space vehicle is expected to achieve an elevation which would qualify the article as a "space object," the moment of "launch" was made as the moment of separation. Such elucidation would, be that as it may, bring about a change in the status of travelers at the time of division. It is very alluring to discover an answer which would make the persons on board a vehicle subject to the same legitimate necessities all through the whole adventure.

International space law has not reached a level where the legal status of commander, crew, and passengers are properly defined.⁵⁷ Some aspects of specific space law, in

⁵⁶ G. Lafferranderie, Pour une Charte de l'Astronaute, ANNALS OF AIR & SPACE L.; LEOPOLD PEYREFITrE, DROIT DE L'ESPACE 190 (1993).

⁵⁷ Stephan Gorove, Interpreting Salient Provisions of the Agreement on the Rescue of Astronauts, and Return of Objects Launched in Outer Space, PROCEEDINGS OF THE ELEVENTH COLLOQUIUM ON THE LAW OF OUTER SPACE 93, 93 (1968);

particular the legal documents and papers relating to the International Space Station ("ISS"), do indicate a trend toward the clarification and correction of the astronaut's definition and the status of crew and passengers.⁵⁸ Explicit reference is made to the various types of persons engaged in space travel. For example, in early 2002, the space agency's participating in the ISS project reached an agreement as to who was allowed on the ISS ("the 2002 Agreement").⁵⁹

According to the 2002 Agreement, there are two types of crewmembers:

- Professional astronauts/cosmonauts
- Spaceflight participants

According to the Agreement: A professional astronaut/cosmonaut is an individual who has completed the official selection and has been qualified as such at the space agency of one of the ISS partners and is employed on the staff of the crew office of that agency. Spaceflight participants are individuals (e.g. commercial, scientific and other programs; crewmembers of non-partner space agencies, engineers, scientists, teachers, journalists, filmmakers or tourists) sponsored by one or more partner(s). Normally, this is a temporary assignment that is covered under a short-term contract.

The 2002 Agreement further provides general guidelines for selection, assignment and training of ISS crewmembers and defines certain criteria with regard to the certification of crew flight readiness. Apart from international space law, national laws could specify the way jurisdiction and control shall be exercised on space objects that are on the national registry.⁶⁰ In this respect, it is interesting to refer back to the recent U.S. legislation, which also introduces, as we have seen, the notion of "space flight

⁵⁸ Steve Freeland, Up, Up, and... . Back: The Emergence of Space Tourism and its Impact on the International Law of Outer Space, 6 Cmi. J. INT'L L. 1, 1 (2005).

⁵⁹ Principles Regarding Processes and Criteria for Selection, Assignment, Training and Certification of ISS (Expedition and Visiting) Crewmembers (2002), available at <http://www.spaceref.com/news/viewsr.html?pid=4578>.

⁶⁰ G. Catalano Sgrosso, Legal Status of the Crew in the International Space Station, PROCEEDINGS OF THE FORTY-SECOND COLLOQUIUM ON THE LAW OF OUTER SPACE 35, 37 (1999).

participant." The term is defined as "an individual, who is not crew, carried within a launch vehicle or reentry vehicle."⁶¹

Considering all these viewpoints, it could be contended that travelers taking part in space tourism exercises ought to in fact go under the order of the space flight authority. Then again, they have just minor capacities to satisfy in a space mission, if by any means. Whether they are considered as group or not, their subordinate capacity in space travel ought to be obviously reflected in their status.

2.3.1 Seeking a Legal Definition of Space Tourist

When space law was originally developing, the status of spacecraft passengers presented no challenge as only astronauts and cosmonauts⁶² participated in space flights. The *corpus iuris spatialis in iuri gentium* had no need to provide a definition of space tourists or to clarify their status.⁶³ Hence, an issue now arises regarding the legal status of, rights of, and obligations owed to, commercial passengers. This is because it is unclear whether previously used terms, such as 'astronaut', 'personnel of a space craft', and 'envoy of mankind', may apply to space tourists. Although these terms have not been defined by international space law, they have been included and utilized in key international treaties

⁶¹ The 2002 Agreement 49 U.S.C. § 70102(17) (Supp. 2004).

⁶² Cosmonaut is a Russian loanword originating from the 'space race' to distinguish soviet space travellers from astronauts of other nationalities. Anna Coetzee, 'Russies en Afrikaans se Gemeengede: Internasionale Woorde en Ander Leenwoorde' (2007) 25 Southern African Linguistics and Applied Language Studies 259, 272.

⁶³ Gabriella Catalano Sgrosso, 'Legal Aspects of the Astronaut in Extravehicular Activity and the "Space Tourist"' (Legal and Ethical Framework for Astronauts in Space Sojourns Symposium, Paris, October 2004) <<http://unesdoc.unesco.org/images/0013/001397/139752m.pdf>> accessed 12 December 2010, 57, 63.

and principles on outer space such as the Outer Space Treaty ('OST')⁶⁴ and the Agreement on the Rescue of Astronauts ('Rescue Agreement').⁶⁵

However, the possible inclusion of space tourists under the above terms is further complicated by the fact that the treaties often define these terms in differing ways, resulting in different implications upon their use.⁶⁶ Furthermore, regarding interpretation, international law permits reliance on both the ordinary meaning of words⁶⁷ and the intention of the drafters at the time of preparation. Professor Stephan Hobe tried to bring clarity to the matter by proposing that the term 'astronaut' suggests an explorative or scientific meaning, whereas 'personnel of a spacecraft' suggests a functional meaning.⁶⁸ Dr Manfred Lachs stated that, 'the mission they perform and the risks they incur justify the special standing and legal protection afforded to them'.⁶⁹ A status of a symbolic value⁷⁰ is given to astronauts by the OST, which provides that astronauts shall be regarded as 'envoys of mankind in outer space'.⁷¹ Astronauts are provided 'all possible assistance in the event of accident, distress, or emergency landing on the territory of

⁶⁴ The 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies. The Treaty was opened for signature by three depository governments (Russia, UK, and USA) in January 1967. As of 2011, the Treaty has been ratified by 100 states and signed by 26 others.

⁶⁵ The 1968 Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space has been ratified by 90 states and signed by 24 others. In addition, two international intergovernmental organizations (the European Space Agency and the European Organisation for the Exploitation of Meteorological Satellites) have declared their acceptance of the rights and obligations provided for in the Agreement

⁶⁶ Ram Jakhu and Raja Bhattacharya, 'Legal Aspects of Space Tourism' (Proceedings of the Forty-Fifth Colloquium on the Law of Outer Space, Houston, October 2002) 112, 119.

⁶⁷ The Vienna Convention on the Law of Treaties 1969, Article 31(1) ('A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose').

⁶⁸ Stephan Hobe, 'Legal Aspects of Space Tourism' (2007) 86 Nebraska Law Review 439, 455

⁶⁹ Manfred Lachs, *The Law of Outer Space* (Sijtho. 1972) 72.

⁷⁰ Mohammed Bedjaoui, *International Law: Achievements and Prospects* (Martinus Nijho. Publishers 1991) 964.

⁷¹ OST (Art 10) Article V.

another State Party or the high seas'.⁷² Similar support is offered by the Rescue Agreement; however, the Rescue Agreement refers to 'personnel of an aircraft' — usually spacecraft crew.⁷³ These terms do not as easily cover space tourists as they cover astronauts: the latter venture into space for the benefit of the public interest rather than for personal pleasure.⁷⁴ Therefore, we can glean from the variations existing within the original meanings that the current commercialization and privatization of space activities was not encompassed in the drafting of either agreement, as it was not foreseen that private entities might participate in such activities.⁷⁵

2.4 Tourists as Astronauts

Without a lawful meaning of 'space tourist', it is vital to assess whether space voyagers fall inside the ambit of the expression "space explorer" and whether customers of space traveler organizations or guests to the International Space Station appreciate the exceptional standing and insurance stood to space explorers..

From a legal standpoint, **defining an astronaut should consist of two main considerations: training and altitude.**⁷⁶

This methodology gives a functional and significant refinement between a visitor and a space traveler. Firstly, different suppliers of space visitor administrations oblige and give preparing to their clients. For example, projects, for example, the Atlas Aerospace Crew Training Program and Project Odyssey give medicinal screening, axis, and cosmonaut or space traveler preparing for planned space visitors. Voyagers undertaking this kind of

⁷² OST (Art 10) Article V.

⁷³ Brian Beck, 'The Next, Small, Step for Mankind: Fixing the Inadequacies of The International Space Law Treaty Regime to Accommodate the Modern Space Flight Industry' (2009) 19 Albany Law Journal of Science and Technology 1, 18.

⁷⁴ Zhao Yun, 'A Legal Regime for Space Tourism: Creating Legal Certainty in Outer Space' (2009) 74 Journal of Air Law and Commerce 959, 979.

⁷⁵ Henri A Wassenbergh, 'The Law of Commercial Space Activities' in Gabriel La. erranderie (ed), Outlook on Space Law Over the Next 30 Years: Essays Published for the 30th Anniversary of the Outer Space Treaty (Kluwer Law International 1997) 173.

⁷⁶ Francis Lyall and Paul B Larsen, Space Law: A Treatise (Ashgate Publishing 2009) 131

preparing are more probable than others to be considered space explorers. Be that as it may, if preparing is thought to be a component of attaining to the status of a space explorer, then an appraisal of the life span and the degree of the preparation might likewise be needed. To delineate, before a space vacationer can visit the International Space Station, they are obliged to have no less than six months of preparing.⁷⁷ Further training is necessary if tourists decide to enjoy additional activities, such as space walks, which are offered by providers such as Space Adventures.⁷⁸ By contrast, Virgin Galactic customers undertake only one week of training⁷⁹ and, in some cases, as few as three days of training.⁸⁰

Regarding the second component, altitude, there is no recognized boundary of space under international space law.⁸¹ Several countries and organizations have, however, suggested various space boundary heights. The United States of America, for example, states that space starts at 80km above sea level⁸² and, accordingly, the Office of Commercial Space Transportation has awarded two astronaut wings to commercial travellers.⁸³ A more common and widely accepted frontier is the Karman line, which

⁷⁷ United Nations Office for Outer Space Affairs, International Astronautical Federation, and International Institute of Space Law, *Highlights in Space 2006: Progress in Space Science, Technology and Applications, International Cooperation and Space Law* (United Nations Publications 2007) 37.

⁷⁸ 'Spacewalk' (Space Adventures) <http://www.spaceadventures.com/index.cfm?fuseaction=orbital.Spacewalk2> accessed at (January 27th, 2015)

⁷⁹ 'Virgin Boss in Space Tourism Bid' (BBC News, 24 September 2004) <http://news.bbc.co.uk/1/hi/sci/tech/3693020.stm> accessed at (January 27th, 2015)

⁸⁰ 'Training' (Virgin Galactic) <<http://www.virgingalactic.com/overview/training/>> accessed 13 January 2015

⁸¹ Gbenga Oduntan, 'the Never Ending Dispute: Legal Theories on the Spatial Demarcation Boundary Plane between Airspace and Outer Space' (2003) 1 *Hertfordshire Law Journal* 64, 64.

⁸² Walter D Reed, 'The Outer Space Treaty: Freedoms – Prohibitions – Duties' (1967) 9(5) *US Air Force JAG Law Review* 26, 29 (defining a pilot astronaut as '[a] pilot who is qualified to operate or control powered vehicles in right above 50 miles from the earth's surface').

⁸³ Henry J Price, 'Fact Sheet – Commercial Space Transportation' (Federal Aviation Administration, 28 June 2010) http://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=11559 accessed 15 January 2015 (noting the significant milestones in commercial human space flight).

marks the edge of space at 100km above sea level.⁸⁴ It is important to note, however, that no limit is universally accepted. At best, the varying ranges simply provide a common reference, which may eventually result in the establishment of a customary international rule.⁸⁵ Therefore, although a demarcation limit exists in practice,⁸⁶ it still remains necessary to establish a legally defined boundary to resolve a number of challenges related to space activities, particularly the challenge of defining an astronaut or rather a space tourist.

On the off chance that business travelers fulfill these necessities of preparing and height, it is conceivable to contend that they hold the status of a space traveler and are qualified for pertinent assurance and invulnerability. Notwithstanding, as noted above, it is hard to focus the degree of preparing vital for a traveler to be considered as 'a man who has gotten expert preparing, for example, that of a space explorer'⁸⁷.

Also, the component of elevation is likewise hard to focus and apply to space travelers because of the uncertain vagueness between worldwide administrations of both air and space law, and a requirement for further lawful illumination on the issue.

On the off chance that business travelers can't be depicted as space explorers, an option way to guarantee their insurance and regulation is to characterize them as 'staff'. While the term is for the most part characterized as 'individuals utilized in an association or occupied with an administration or undertaking' it has no specific definition under worldwide space law. Anyhow, just like the case with the terms talked about over, the absence of a specific definition shows that the OST does not so much avoid travelers and

⁸⁴ Wilson WS Wong and James Fergusson, *Military Space Power: A Guide to the Issues* (Praeger 2010) 16.

⁸⁵ Steven Freeland, 'Up, Up and ... Back: The Emergence of Space Tourism and Its Impact on the International Law of Outer Space' (2005) 6 *Chicago Journal of International Law* 1, 9.

⁸⁶ Stephan Hobe, 'The Legal Regime for Private Space Tourism Activities – An Overview' (2010) 66 *Acta Astronautica* 1593, 1593-94.

⁸⁷ Gabriella Catalano Sgrosso, 'Legal Status, Rights and Obligations of the Crew in Space' (1998) 26 *Journal of Space Law* 163, 166.

non-group persons from the locale and control of the conditions of registry while they are in space.⁸⁸

However, even if a broader view of the term was adopted, and passengers and non-crew persons were deemed 'personnel', it would still be uncertain whether privileges and immunities enjoyed by astronauts would be available for space tourists as it was 'not the intention of the treaty makers to cater for this group'.⁸⁹

⁸⁸ 'Personnel, n', Oxford English Dictionary Online (Oxford University Press 2012) <http://www.oed.com/view/Entry/141512?redirectedFrom=personnel> accessed 6 January 2015

⁸⁹ Lesley Jane Smith and Kay-Uwe Hörl, 'Legal Parameters of Space Tourism' (Proceedings of the Forty-Sixth Colloquium on the Law of Outer Space, Bremen, October 2003) <http://www.webersteinhaus.com/bereiche_de/publikation_downloads/003LegalParameters.pdf> accessed 5 December 2015, 1, 3.

3. THE RESCUE AGREEMENT

3.1 Antecedents

The compassionate idea of rendering help in trouble circumstances has had its inception nearby the 1864 Geneva Red Cross Convention, when the taking an interest state made a presentation tolerating the standard that the injured, the debilitated and the wrecked in war adrift must be dealt with. In this manner this got to be a piece of a different Red Cross tradition of 1906, and still encapsulated in the 1949 Geneva Red Cross Convention (II).

In 1910, the general rule of rendering aid to persons adrift came to be acknowledged in the Brussels Convention for the Unification of Certain Rules of Law Relating to Assistance and Salvage at Sea 1910 and has stayed set up following the time when as a compassionate standard of Maritime Law. The tradition additionally given to reimbursement from the recipient, of sensible costs brought about in rendering help and effecting rescue by the expert and group of a boat rendering such administrations.⁹⁰ The obligation of a state to require the master of a ship of its nationality to respond to distress messages and render assistance at sea is specifically emphasized in the Safety of Life at Sea Convention 1974.⁹¹ The general humanitarian obligation to rescue and render assistance at sea is well ingrained in the law of the sea.⁹²

The rule of salvage and help in misery then came to be joined in the International Air Law, with Article 25 of the Chicago Convention on International Civil Aviation 1944 forcing a commitment on all states gatherings "to give such measures of aid" as may be practicable to any airplane in trouble.

⁹⁰ The convention has now been replaced by the International Convention on Salvage adopted in 1989, in force since 1996

⁹¹ Chapter V, Regulation 10, of the Convention. This convention has superseded the SOLAS 1960, which had replaced the first SOLAS 1948

⁹² The UN Convention on the Law of the Sea 1982 Article 98

In fact, the Space Rescue Agreement 1968 embodies and elaborates on the same humanitarian principle.

3.2 The Context of Space Activities

Space exercises are for the most part perceived to be ultra-dangerous exercises, exercises where there is a lot of probability of risk to hardware and staff, ought to things happen. The innovation included is complex and ceaselessly creating, and the space coliseum is an endless obscure, subject to changing natural conditions. In such a situation worldwide collaboration accept a unique useful significance. The dynamic members in the space exercises need to rely on upon each other for trade of data, and help, when required. Likewise, if the profits of use of space must go to all individuals from the universal group, they too thus must be willing to help the space-faring countries to the degree they can.⁹³

Modern International Law recognizes the principle of international cooperation as a “basic principle” based on the UN Charter. There is a general obligation to cooperate, that too in good faith.⁹⁴

The Rescue Agreement in fact has had a checkered evolution.⁹⁵ The COPUOS (the General Assembly Committee on Peaceful Uses of Outer Space) started to manage it in 1959, yet strayed into considering the general standards representing exercises in space. First and foremost, legitimately the requirement for the general standards was all the more squeezing, with the two super powers gradually setting off a 'space race' sending up one space protest after an alternate to a territory where there was no unmistakable

⁹³ As one of India's eminent space scientists, Professor U. R. Rao used to say: “Space is a great imponderable, next only to human mind.”

⁹⁴ General Assembly Resolution 2625 (XXV) of 24 October 1970, on the Declaration of Principles of International Law Concerning Friendly Relations and Cooperation among States in accordance with the Charter of the United Nations (Friendly Relations Declaration). This declaration has been given a prime of place in Article 2 of the Moon Treaty 1979.

⁹⁵ Roy S. K. Lee, “Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space,” in Nandasiri Jasentuliyana and Roy S. K. Lee, eds., *Manual of Space Law* (Oceana/Sijthoff: Dobbs Ferry/Alphen Aan Den Rijn, 1979), pp. 53-81, at pp. 53-59.

pertinent law. For an alternate, it was the Soviet Union which squeezed for the Rescue Agreement, most likely in light of the fact that its rocket were intended to effect ashore on come back to earth requiring aid from different states if there should be an occurrence of mishaps. Then again, the US shuttle was intended to fall in the ocean, and the United States had various overall following offices. Different states, being simply spectators around then, did not take much enthusiasm for developing the law identifying with 'space rescue and support.

Added to this, there were also other issues to be resolved: Should this special treaty on rescue and assistance be open to all states (both space powers and other non-space powers)? What about provision for disputes settlement? Should international organizations too be allowed to participate in space activities and if so how to associate them with this treaty? Many of these issues became clearer as the Space Treaty came to be finalized in 1967.⁹⁶ The non-space forces demanded illumination of global obligation for harm brought on by articles propelled into space, as they felt they were additionally the reasonable victimized people if things happened on propelling or circling of a space object. For a begin, this came to be managed in the 1963 Declaration on Outer Space (Principle 5), and the Outer Space Treaty 1967 (Article VI), as a general rule of universal obligation regarding national exercises in space. It was later explained in the Space Liability Convention 1971).

3.3 The Space Treaty 1967 and the Principle of Rescue and Assistance

The Space Treaty 1967 is for the most part viewed as the Fundamental Law identifying with space, for it cherishes fundamental standards in the elaboration of which International Space Law has grown over the long run. Huge numbers of the legitimate instruments came to be advanced on the premise of these standards. Thus, ***Articles VIII and V of the Space Treaty contain the general rules applicable to rescue and assistance. Article VIII, last sentence provides*** that space objects or their component

⁹⁶ Roy S. K. Lee, "Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space," in Nandasiri Jasentuliyana and Roy S. K. Lee, eds., *Manual of Space Law* (Oceana/Sijthoff: Dobbs Ferry/Alphen Aan Den Rijn, 1979), pp. 53-81, at pp. 53-59

parts found outside the territorial limits of the state of registry shall be returned to that state by other states, if necessary after clarifying their identity. And **Article V states as follows**:-“States Parties to the Treaty shall regard astronauts as envoys of mankind in outer space and shall render to them all possible assistance in the event of accident, distress, or emergency landing on the territory or another State Party or on the high seas. When astronauts make such a landing, they shall be safely and promptly returned to the State of the registry of their space vehicle.”⁹⁷

“In carrying on activities in outer space and on celestial bodies, the astronauts of one State Party shall render all possible assistance to the astronauts of other States Parties.

“States Parties to the Treaty shall immediately inform the other States Parties to the Treaty or the Secretary-General of the United Nations of any phenomena they discover in outer space, including the Moon and other celestial bodies, which could constitute a danger to the life or health of astronauts.”

The above provisions of the Space Treaty contain four principles:

- Every state has a duty to return to the state of registry, space objects or their component parts found outside the latter’s territorial limits, if necessary after confirming the identity of the object concerned.
- Every state has a duty to render “all possible assistance” to astronauts in the event of an accident, distress or emergency landing on its territory, and on safe landing, to return them to the state to which their space vehicle belongs.
- While in outer space, astronauts of one state have the duty to render all possible assistance to the astronauts of another state.
- Should any state find in outer space anything likely to cause a danger to the life or health of astronauts, it has a duty to inform others or the UN Secretary-General who shall inform others.⁹⁸

⁹⁷ Uwe Apel, “HUMAN FACTORS AND HEALTH IN SPACE TOURISM,” [http // www.space future .com / archive / human_factors_and_health_in_space_tourism.shtml](http://www.spacefuture.com/archive/human_factors_and_health_in_space_tourism.shtml); Martin Voshell, “High Acceleration and the Human Body’, November 28, 2014, <http://cse1.eng.ohio-state.edu/voshell/gforce.pdf>

⁹⁸ Manfred Lachs, *the Law of Outer Space* Hamilton Publication, 72 (1972).

Of these, (1) (2) and (4) are the duties of states, while (3) is a duty cast on individual astronauts. It is interesting to note that here is a treaty concluded by states, but imposing a duty on individuals! It is further important to note that the 1963 Declaration on Outer Space – which was the basis of the 1967 Treaty – contained only the first two principles.⁹⁹

Significantly, the first paragraph in the preamble to the Rescue Agreement 1968 specifically notes “the great importance” of the Space Treaty laying down the above principles.¹⁰⁰ The General Assembly, while adopting the agreement in 1967, did so, “Desiring to give further concrete expression to the rights and obligations containing” in the Space Treaty.¹⁰¹

Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (Rescue Agreement) (1968)

The problem that occurs regarding the Rescue Agreement is the definition of the person that needs to be rescued, because the Rescue Agreement does not include passengers. So, space-tourists may not fall into the scope of the Rescue Agreement and therefore may not take advantage of the rules stipulated there. On the other hand it would be a wrongful interpretation to assume the exclusion of passengers, just because they are not mentioned expressis verbis. This gap stems from the time-period in which the Rescue Agreement was created, when a touristic participation was not even considered¹⁰²

The Rescue Agreement establishes the legal framework for emergency assistance to astronauts, which includes immediate notification of the launching authority as well as

⁹⁹ Rajesh Mirchandani, “Branson unveils space tourism jet,” BBCNews, 28 July 2008

¹⁰⁰ Daniel Peden, “Commercial Insurance for Private Space Travel A Serious Concern”, (Jan 18th .2015) <http://www.urinfo.co.uk /commercial insurance- for-private -space-travel-a-serious-concern/>

¹⁰¹ The preamble to Resolution 2345 (XXII) of 19 December 1967 commending the Rescue Agreement that was annexed to it.

¹⁰² Michael Wollersheim LL.M.Eur. - Attorney at Law -Considerations Towards the Legal Framework of Space Tourism(Feb 17th,2015) http ://www .space future .com/archive /considerations _towards_ the legal _framework_of_space_tourism.shtml

the UN Secretary General. Notification must also be given about any space object which has returned to Earth. It also makes provision for search and rescue operations and the prompt return as well as the recovery of space objects. The launching authority which may be a state is responsible for all costs incurred¹⁰³

This firstly concerned the Rescue Agreement, which elaborated Article V of the Outer Space Treaty. The Rescue Agreement followed the latter's exclusive focus on professional astronauts and even seemed to elaborate it, by referring throughout to "personnel of a spacecraft" as enjoying the rights of being assisted and safely and promptly returned as spelled out by the Agreement. Not entering into the discussion here of the extent to which the "personnel of a spacecraft" of the Rescue Agreement would equate with the "astronauts" of Article V of the Outer Space Treaty, it remains obvious that as such space tourists would seem to fall outside of that category.

Evidently, there is extensive indecisive to acknowledge this conclusion inside and out, as it may appear to deny space travelers the profits of Articles 1 through 4 specifically of the Rescue Agreement, and endeavors are made to extend the ideas of 'faculty of a shuttle' and "space explorer" to incorporate, as it would turn out, any person in space including space visitors. This would be an error, in any case, because of the fact that general helpful obligations to help individuals in misery don't rely on upon those Articles; they determine – separated from good and moral contemplations – from standard and as a rule additionally systematized general worldwide law.¹⁰⁴ It is a bit much for those general compassionate purposes to translate these Articles as stretching out to space voyagers too. Unexpectedly, ought to space vacationers be permitted to appreciate specifically the rights to sheltered and brief return accommodated by Article 4 with no admonition as to the likelihood of those sightseers by one means or another encroaching national laws? That would appear to be a suggestion which numerous, specifically non-space-faring, states would not especially concur with – however at any rate, sufficient questions may be thrown on the legitimacy of the case that space visitors ought to appreciate the same universal legitimate assurance as faculty or space explorers under the current

¹⁰³ Shaw, M.N. *International Law*. Fifth Edition. Cambridge: Cambridge University Press. 2003. P 479–486. (Jan. 15, 2015) http://www.sao.ac.za/~wgssa/archive/as12/van_wyk.pdf

¹⁰⁴ Manfred Lachs, *the Law of Outer Space* Hamilton Publication, 72 (1972).

arrangements instantly, to warrant a push to by one means or another clear up the matter on the global.¹⁰⁵ With regard to the flight crew, however, things would seem to lie less clear. Both their reasons for going into outer space (professional and being paid to do a job) and the types of their activities there (guiding the vehicle safely in and out of outer space, and in the case of orbital tourism, even guiding it around in outer space) are much closer to those of the 500 or so human beings that have so far entered into outer space. The only major difference, certainly from a legal perspective, is that the latter are in the service of governments or an intergovernmental organization, the former in the service of private commercial companies. In this case, therefore, it would make sense to equate space tourist vehicle crew, certainly the flight deck crew but possibly also any service crew on board, to “personnel of a spacecraft”, hence endowing them with the rights enunciated by the Rescue Agreement.¹⁰⁶

3.4 “Provisional” Nature of the Agreement

Roy S. K. Lee notes the transitional nature of the Rescue Agreement. It was adopted in 1968, at a time when space activities had not advanced as they are now. There were only two space powers, and given the level of technology then, there were a number of failures of space ventures. Space transportation of ‘passengers’ then was only a dream. Thus, participating in the General Assembly debates for the adoption of the Agreement, France argued that the Agreement would apply “only to flights that are experimental and scientific in nature” and that a new treaty would have to be negotiated when such flights may become utilitarian or commercial.¹⁰⁷ Lee observes that this might as well be a correct view, since the Agreement confines itself to the personnel of a spacecraft, and not

¹⁰⁵ Von der Dunk, Frans G., "Space for Tourism? Legal Aspects of Private Spaceflight for Tourist Purposes" (2006). Space and Telecommunications Law Program Faculty Publications. Paper 26. (March 3rd, 2015) <http://digitalcommons.unl.edu/spacelaw/26>

¹⁰⁶ The Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (hereafter Rescue Agreement), London/Moscow/ Washington, done 22 April 1968, entered into force 3 December 1968; Article 1-4 672 UNTS 119; TIAS 6599; 19 UST 7570; UKTS 1969 No. 56; Cmnd. 3786; ATS 1986 No. 8; 7 ILM 151 (1968).

¹⁰⁷ French Delegate, UN doc. A/PV1640, 19 December 1967, cited in Lee, note 10, at p. 54

others.¹⁰⁸ With the modern developments in space technology, space transportation is not far off, as occasional ‘space tourists’ have already appeared on the stage. The viability of aero spacecraft has already been proved to the satisfaction of the space scientists. Space stations and space laboratories have already become realities. The establishment of space colonies, and use of space for industrial production of substances that cannot be efficiently produced on the earth have ceased to be in the realm of fantasy. The Agreement therefore needs to be updated to take into account these imminent developments. Another reason why the Agreement looks rather incomplete is that although the provisions such as Article 5 would engender (and did in the case of Cosmos 954 in 1978) disputes between states, there is no provision in the Agreement for proper settlement of disputes. This may be because of two reasons. One, many of the obligations embodied in the Agreement are tentative obligations heavily reliant on the principle of good faith: the terms like “take all possible steps,”¹⁰⁹ “take such steps as it finds practicable,”¹¹⁰ “those Contracting Parties which are in a position to do so”¹¹¹ and “if necessary, extend assistance”¹¹² would make it difficult to attribute responsibility to a state in question. Two, compulsory settlement of disputes was not politically and readily acceptable those days, and at any rate, the Soviets, who specially needed this Agreement, rarely favoured any compulsory settlement method in international relations, save negotiations and mutual consultation.¹¹³ So were many of the developing countries. It

¹⁰⁸ Ram Jhaku & Raja Bhattacharya, Legal Aspects of Space Tourism, 45 PROC. COLLOQ. L. OUTER SPACE, 112, 119 (2002)

¹⁰⁹ THE AGREEMENT ON THE RESCUE OF ASTRONAUTS, THE RETURN OF ASTRONAUTS AND THE RETURN OF OBJECTS LAUNCHED INTO OUTER SPACE 1968 Article 2, first sentence of the Rescue Agreement.

¹¹⁰ Ibid Article 5(2)

¹¹¹ Ibid Article 3

¹¹² Id. Article 3

¹¹³ Mark J. Sundahl, Note, Unidentified Orbital Debris: The Case for a Market-Share Liability Regime, 24 HASTINGS INT’L & COMP. L. REV. 125, 132 (2000).

was only with great difficulty that a compulsory procedure could be agreed on with regard to the Space Liability Convention 1971.¹¹⁴

¹¹⁴ House Panel Insists on Safety of Private Space Travel, NBC NEWS (Jan 31, 2015, 3:06:39 PM EST), http://www.msnbc.msn.com/id/46811246/ns/technology_and_sciencespace/#.T38-5BzO7JQ.

4. LIABILITY REGIME

The difficulties in applying both air law and space law to a solo space tourism trip as was examined prior are particularly obvious in the context of liability. On the other hand with air law, which has obvious and tried rules on passenger, operator and third party liability, the outer space legal rules relating to obligation are state-orientated and have not yet been interpreted by the courts.¹¹⁵

Article VI of the *Outer Space Treaty* currently sets out the liability regime for outer space by determining that:

States Parties to the Treaty shall bear international responsibility for national activities in space, including the Moon and other celestial bodies, *whether such activities are carried on by governmental agencies or by non-governmental entities*, and for assuring that national activities are carried out in consistency with the provisions set forth in the present Treaty.

The provision furthermore prescribes that:

The actions of non-governmental entities in outer space, including the Moon and other celestial bodies, shall need approval and progressing supervision by the suitable State Party to the Treaty.¹¹⁶

States thus bear liability for their own space activities, as well as for the activities carried out by non-governmental entities that launch space objects from their territories. Adding up, the activities of non-governmental entities must be authorised and constantly supervised by the relevant state. This broader form of responsibility in outer space law differs from the equivalent in international air law, where the state is liable only for the

¹¹⁵ Masson-Zwaan 2008 Proceedings of the International Institute of Space Law 541. Also see Ronan-Heath 2011 Proceedings of the International Institute of Space Law 203. (March 4th, 2015) http://www.saflii.org/za/journals/PER/2014/5.html#_ftn173

¹¹⁶ Mark J. Sundahl, Note, Unidentified Orbital Debris: The Case for a Market-Share Liability Regime, 24 HASTINGS INT'L & COMP. L. REV. 125, 132 (2000).

regulation of the private entity, such as an airline, but not for damage caused by it.¹¹⁷ This provision in the *Outer Space Treaty* is important, as space activities carried out by private entities are speedily increasing.¹¹⁸ According to Freeland, the doctrine in article VI of the *Outer Space Treaty* has already attained the status of customary law, which binds all states.¹¹⁹

There are, on the other hand, a number of doubts with regard to the due-diligence obligations¹²⁰ in article VI. Separately from the deficiency of transparency on the meaning of terms such as "national activities" and "appropriate state party" in the perspective of space tourism¹²¹, it is not clear how states will put into operation their obligations under article VI in a consistent manner.¹²² Some states, for example South Africa,¹²³ approve private space activities by way of a legislative licensing system. In contrast, other states do not explicitly provide for a licensing system in their domestic space legislation and even a major space power, France, has for many years functioned well without such a system.¹²⁴ Supervision mechanisms may, for example, include periodical reviews or audits once a licence has been approved to a private operator. Though, since the importance of the term "continuous supervision" has not been clarified, the method and frequency of supervision is at present also left to the judgment of states.¹²⁵ Likewise, littler nations that are not significant space performing artists may do not have the important ability to legally assess the private space exercises

¹¹⁷ Failat 2012 Irish Law Journal 131 (March 3rd, 2015) http://www.saflii.org/za/journals/PER/2014/5.html#_ftn173

¹¹⁸ Sgrosso International Space Law 110 (March 3rd, 2015) http://www.saflii.org/za/journals/PER/2014/5.html#_ftn173

¹¹⁹ Freeland 2010 Melb J Int'l L 17 (March 3rd, 2015) http://www.saflii.org/za/journals/PER/2014/5.html#_ftn173

¹²⁰ Masson-Zwaan 2008 Proceedings of the International Institute of Space Law 546

¹²¹ Masson-Zwaan 2008 Proceedings of the International Institute of Space Law 542-543.

¹²² Masson-Zwaan 2008 Proceedings of the International Institute of Space Law 543.

¹²³ Space Affairs Act 84 of 1993. Articl 11-14

¹²⁴ Supranote. 94

¹²⁵ Ibid.

concerned.¹²⁶ As a consequence of the varied manner in which states may put into practice the generally-framed obligations in article VI, Masson-Zwaan¹²⁷ stresses the want for the nonstop worldwide harmonisation of domestic space legislation through the UNCOPUOS, as well as on a local level, for example, in Europe and in Africa.¹²⁸

The international liability of a launching state is provided for as follows in **article VII of the *Outer Space Treaty***:

Each State Party to the Treaty that launches or procures the launching of an object into outer space, including the Moon and other celestial bodies, and each State Party from whose territory or facility an object is launched, is *internationally liable* for damage to another State Party to the Treaty or to its natural or juridical persons by such object or its component parts on the earth, in air space or outer space, including the Moon and celestial bodies.¹²⁹

The *Outer Space Treaty* thus makes proviso for both the international accountability and legal responsibility of states for outer space activities. There are, on the other hand, unlike learned opinions on how these terms should be used, and they are still from time to time used interchangeably.¹³⁰

Within international law, state liability refers to a state's liability for an internationally illegal or unlawful act and arises upon a violation of an international responsibility or obligation (an objective fault) in cases where such a contravene is attributable to the state.¹³¹ The domestic law elements for wrongfulness, namely

¹²⁶ Masson-Zwaan 2008 Proceedings of the International Institute of Space Law 543-544

¹²⁷ Masson-Zwaan 2008 Proceedings of the International Institute of Space Law 544.

¹²⁸ Smith Mail and Guardian 13. Ferreira-Snyman 2012CILSA 44-49. (March 3rd, 2015) http://www.saflii.org/za/journals/PER/2014/5.html#_ftn173

¹²⁹ Viikari Environmental Element in Space Law 65; Failat 2012 Irish Law Journal 132.(Feb 4th, 2015) <http://www.nwu.ac.za/sites/www.nwu.ac.za/files/files/pper/issuepages/2014volume17no1/2014%2817%291Ferreira-SnymanART%281%29.pdf>

¹³⁰ Viikari Environmental Element in Space Law 65; Failat 2012 Irish Law Journal 132

¹³¹ Draft Articles on the Responsibility of States for Internationally Wrongful Acts Article 2(Report of the International Law Commission, GA 56th Session, Suppl 10 (A/56/10) 29) (2001).

subjective fault (*culpa*) and damage are consequently not required for a state to incur international responsibility.¹³² A state commits a worldwide wrongful act when it uses or allows its territory to be used in a way that causes destruction to the territory of another state or the persons or the property of that state.¹³³ The remedies for an internationally wrongful act are compensation, fulfilment and non-repetition.¹³⁴

Liability or responsibility, in return, relates to the solution of harm irrespective of whether it has been caused by a infringement of an international rule or not.¹³⁵ The ingredient of harm is thus a requisite decisive factor for international liability.¹³⁶

According to Van der Dunk there is, on the other hand, a biased overlap among the terms "responsibility" and "liability", as an internationally wrongful act by one state can often cause injury to another state, its nationals or its property. States could consequently hypothetically be held guilty for damage at the same time under **articles VI and VII of the Outer Space Treaty**, as well as under the provisions of the *Liability Convention*.

The Liability Convention provides for more comprehensive policy in instances where injury was caused by states as a consequence of their space activities.

Article II of the Convention makes provision for **complete liability** in the occasion of damage caused by a space object "on the surface of the Earth or to aircraft in flight".

¹³² Van der Dunk 1991 Proceedings of the International Institute of Space Law 363(March 6th,2015) http://www.esa.int/About_Us/ECSL_European_Centre_for_Space_Law/Dr._Frans_G._von_der_Dunk._Biography/%28print%29

¹³³ "Liability versus Responsibility in Space Law: Misconception or Misconstruction? In Proceedings of the Thirty-Fourth Colloquium on the Law of Outer Space (1992), 363-71.

¹³⁴ Draft Articles on the Responsibility of States for Internationally Wrongful Acts Articles 30, 31, 34-37 (Report of the International Law Commission, GA 56th Session, Suppl 10 (A/56/10) 29) (2001). See further Van der Dunk 1991 Proceedings of the International Institute of Space Law 364; Dugard International Law 402; Failat 2012 Irish Law Journal 131-132.

¹³⁵ Viikari Environmental Element in Space Law 65 fn 40. (Feb 4th ,2015) [http:// www. Nwu. ac.za /sites /www.nwu.ac.za/files/files/pper/issuepages/2014volume17no1/2014%2817%291Ferreira-SnymanART%281%29.pdf](http://www.Nwu.ac.za/sites/www.nwu.ac.za/files/files/pper/issuepages/2014volume17no1/2014%2817%291Ferreira-SnymanART%281%29.pdf)

¹³⁶ Van der Dunk 1991 Proceedings of the International Institute of Space Law 364.

Article III of the Convention furthermore determines that:

In the event of *damage being caused elsewhere than on the surface of the Earth to a space object of one launching State or to persons or property on board such a space object by a space object of another launching State, the latter shall be liable only if the damage is due to its fault or the fault of persons for whom it is responsible.*¹³⁷

- The *Liability Convention* thus makes provision for a **two-fold liability regime**: in the situation where harm is caused by a space object on the earth or to an aircraft in flight, the state shall sustain absolute objective liability, which is based not on fault but on risk. The presence of injury and the causal relationship between the injury and the space object makes risk and qualifies the victimized person for remuneration. In the event that the harm is brought on in space, obligation might emerge if deficiency is demonstrated from the state or the persons for whom it is dependable.¹³⁸

As opposed to air law, there are no maximum upper limits to the amount of remuneration that the launching state ought to pay on account of harm. It might, in any case, be contended that since space voyagers wilfully acknowledge the risks or dangers of space travel, the risk for harm brought about in the space action ought to be controlled as per the presumption of danger.¹³⁹

¹³⁷ Van der Dunk 1991 Proceedings of the International Institute of Space Law 364 points out that "in cases of transboundary environmental pollution, where the causation of damage or harm through pollution to another state's territory (and not the actual activity causing the harm) was the quintessence of the violation of an international obligation not to do so".

¹³⁸ Sgrosso International Space Law 112 (Feb 4th, 2015) <http://www.nwu.ac.za/sites/www.nwu.ac.za/files/files/p-per/issuepages/2014volume17no1/2014%2817%291Ferreira-SnymanART%281%29.pdf>

¹³⁹ "Legal aspects of the international space station - Genuine partnership or no genuine partnership: what is the question?", in *The Highways of Air and Outer Space Over Asia* (1992), 109-20 (Feb 4th, 2015) http://www.esa.int/About_Us/ECSL_European_Centre_for_Space_Law/Dr._Frans_G._von_der_Dunk._Bibliography/%28print%29

Despite the fact that the Liability Convention does not particularly resound the substance of article VI in regards to non-administrative elements, it might be contended that the launching state must be held obligated for the exercises of private agencies, just like the circumstance in nuclear law, as states will have the capacity to obey the rules to the commitment to utilize space for non-violent purposes just in the event that they expect responsibility for all exercises completed in space.¹⁴⁰

From the above explanation it has been clarified that the Outer Space Treaty and the Liability Convention, because of their state-focused character, don't make provisions for the risk of private entities undertaking space exercises.¹⁴¹ . The obligation regarding such exercises dwells with the launching state, which must approve and constantly manage the space exercises of private elements, and which causes risk for harm created by these exercises.

There are, in any case, exemptions to the obligation of the launching state. The Liability Convention particularly states in article VII that it won't have any significant bearing to harm brought about by the space object of the launching state to

(a) Nationals of that launching state;

(b) Foreign nationals during such time as they are participating in the operation of that space object from the time of its launching or at any stage thereafter until its descent or during such time as they are in the immediate vicinity of a planned launching or recovery area as the result of an invitation by that launching State.

Passage (a), which bars the responsibility of the launching state for harms endured by its own particular nationals, was at first formed with space explorers on board a space vehicle of their condition of nationality at the top of the priority list. Masson-Zwaan, on

¹⁴⁰ "The role of law with respect to future space activities", 12 Space Policy (1996), 5-8. (Feb 4th ,2015) http://www.esa.int/About_Us/ECSL_European_Centre_for_Space_Law/Dr._Frans_G._von_der_Dunk._Biography/%28print%29

¹⁴¹ Masson-Zwaan and Freeland 2010 Acta Astronautica 1604.

the other hand, doubts the fittingness of this procurement for paying space visitors who are nationals of the starting state.¹⁴²

- At a first look it appears that space voyagers would not fall inside the exemption in section (b), as they would ordinarily not be included in the operation of a space vehicle.¹⁴³ The launching state will accordingly still be subject for harm brought about by its space article to a space vacationer. Notwithstanding, as was discussed above, the legitimate status of space sightseers is not generally clear, as some private space voyagers might effectively partake in certain technical, scientific & experimental exercises in the space mission¹⁴⁴In such an example it could be contended that the space vacationer is incorporated in the exemption in passage (b), which implies that the starting state won't be subject for harm endured by the private space voyager. In this respect, Hobe and Cloppenburg are of the feeling that since space travellers put themselves at danger as travellers on a space vehicle, they ought not to profit from the procurements of the Liability Convention. Liabilities should along these lines be defined in terms of domestic laws¹⁴⁵ Because of the eye-catching significance of travellers for the achievement of the business of space tourism industry; the elimination of space voyagers from the safety of the Liability Convention may be criticised. Nonetheless, as private business space transportation develops; state risk for these exercises may get to be progressively inadmissible.¹⁴⁶

¹⁴² Masson-Zwaan 2008 Proceedings of the International Institute of Space Law 544.(March 13rd,2015) <http://www.nwu.ac.za/sites/www.nwu.ac.za/files/files/pper/issuepages/2014volume17no1/2014%2817%291Ferreira-SnymanART%281%29.pdf>

¹⁴³ Freeland 2010 Melb J Int'l L 15. .(March 13rd,2015) <http://www.nwu.ac.za/sites/www.nwu.ac.za/files/files/pper/issuepages/2014volume17no1/2014%2817%291Ferreira-SnymanART%281%29.pdf>

¹⁴⁴ ibid

¹⁴⁵ Hobe and Cloppenburg 2004 Proceedings of the International Institute of Space Law 380. .(March 13rd,2015) <http://www.nwu.ac.za/sites/www.nwu.ac.za/files/files/pper/issuepages/2014volume17no1/2014%2817%291Ferreira-SnymanART%281%29.pdf>

¹⁴⁶ ibid

The establishment of maintenance for harms by a space traveller exhibits a few difficulties. Since lawful action for harms suffered by people can be introduced to the launching state just by another applicable state, space voyagers (or outsiders) themselves can't assert damages under the Liability Convention¹⁴⁷. It is clearly subject to the political will of the state to conduct legal procedures for the individual - a judgment which will regularly be impacted by political consideration. Otherwise, a space tourist may get a claim under relevant domestic laws. Though, there might be definite national legal limitations, for example, provisions in connection to sovereign immunity¹⁴⁸ or capped liability limits¹⁴⁹ which could hinder such a claim. Furthermore, private space tourist operators will in all possibility take account of clauses in the service contract to limit or eliminate their legal responsibility for damages suffered by the space tourist.¹⁵⁰

Because of the increasing number of private space administrators, it is plainly obvious that states would likewise try to eliminate or reject their liability or responsibility for the activities of these private elements. Various domestic system frameworks have officially received space-related enactment. So as to escape the monetary obligation for harms endured by space vacationers; these national laws might in a few cases give that the launching state can recover the amount of damages for which it is globally responsible or has legal responsibility from the private launching operator. A few states as of now oblige private on-screen characters participating in space exercises to repay the state if it gets to be obligated for harms.

Various states likewise as of now oblige privately owned businesses who have dispatch and operational authentications or licenses to get the important protection to cover their

¹⁴⁷ Freeland 2010 Melb J Int'l L 18; Masson-Zwaan 2008 Proceedings of the International Institute of Space Law 540.

¹⁴⁸ Freeland 2010 Melb J Int'l L 18. Also see Masson-Zwaan and Freeland 2010 Acta Astronautica 1605

¹⁴⁹ Dempsey 2011 Proceedings of the International Institute of Space Law 173-174

¹⁵⁰ Frans von der Dunk "Space law in the age of the International Space Station", in *Humans in Outer Space – Interdisciplinary Odysseys* (2009), 148-61

space objects and launch facilities, and additionally third part & product liability.¹⁵¹ Privately owned businesses taking part in space tourism will in this way most likely likewise in future need to gain the important protection to repay or to give insurance to them in situation of claims by states to recoup the harms suffered by space sightseers and outsiders or third parties.¹⁵² It is, however, at this stage doubtful that the existing space insurance industry¹⁵³ will have the capacity or even the willingness to insure space tourism ventures, especially due to the high risks involved. In view of the fact that individuals are already acquiring seats on commercial spaceflights, the urgent need for a new space tourism insurance model in order to assess the unique risks involved and to ensure the payment of compensation is self-evident.

On the other hand, at this stage is confusing that the current space protection industry or insurance industry will have the limit or even the ability to guarantee space tourism ventures, particularly because of the high dangers included. In perspective of the way that people are as of now getting seats on business spaceflights, the pressing requirement for another space tourism protection d space tourism insurance model play with a specific end goal to evaluate the novel dangers included and to guarantee the installment of remuneration is indisputable

From the above talk it is clarified that the current space legal statute does not satisfactorily address the remarkable difficulties identifying with obligation or liability for harms suffered by space vacationers. Risk issues are accordingly progressively controlled in national space enactment, which tragically compounds the universal legitimate instability in this respect. It has consequently been recommended by some commentators that the important provisions of the air law treaties, in the form of

¹⁵¹Frans von der Dunk “A Sleeping Beauty Awakens: The 1968 Rescue Agreement after Forty Years”, 34 *Journal of Space Law* (2008), 411-34

¹⁵² DR. FRANS G. VON DER DUNK. “Space for Tourism? Legal Aspects of Private Spaceflight for Tourist Purposes”, in *Proceedings of the Forty-Ninth Colloquium on the Law of Outer Space* (2007), 18-28.

¹⁵³DR. FRANS G. VON DER DUNK. “Fundamental Provisions for National Space Laws”, in *Meeting international responsibilities and addressing domestic needs* (2006), 91-9

the *Warsaw*,¹⁵⁴ *Montreal*¹⁵⁵ and *Rome*¹⁵⁶ *Conventions*, may be instructive in formulating uniform legal rules relating to liability arising from space tourism activities. Particularly the procurements on carrier liability, passenger liability, limits to liability, and third party liability may give an important system to the making of such a legitimate regime. It ought to be noted, in any case, that because of the one of a kind qualities of and dangers included in space tourism, the air law model can't simply be reached out to space tourism, yet will must be adjusted keeping in mind the end goal to reply to the certain needs of this new space voyaging industry.

4.1 Liability for Death, Injury & Damage¹⁵⁷

In the occasion of any mishaps, there are comprehensively two sorts of obligation issues that become an integral factor to be specific, common risk (civil liability) and criminal risk (criminal liability). Common obligation (civil liability) manages assignment of liability and remuneration issues emerging out of space operations under the appropriate legitimate framework of international and national rules and regulations. Criminal obligation, then again, basically includes the reformatory results of human activities in space operations which are completed in infringement of the law.

¹⁵⁴ Convention for the Unification of Certain Rules relating to International Carriage by Air (1929) (Warsaw Convention).

¹⁵⁵ Convention for the Unification of certain Rules relating to international Carriage by Air (1999) (Montreal Convention)

¹⁵⁶ Convention on Damage caused by Foreign Aircraft to Third Parties on the Surface (1952) (Rome Convention).

¹⁵⁷ The, Office of Aerospace Medicine, *Guidance for Medical Screening of Commercial Aerospace Passengers*, DOT/FAA/AM-06/1, Washington, DC 20591 2006, Final Report.

4.1.1 Civil Liability¹⁵⁸

In connection to civil liability risk, the most huge international space treaties are the 1967 Outer Space Treaty and the 1972 Liability Convention which bring under their umbrellas the whole cluster of issues emerging out of dispatching (counting the endeavored propelling) of space items (which incorporate segment parts of space questions or dispatch vehicles) and relegate obligation to the starting State(s) for harm brought on to an outsider as an outcome of such exercises. They conceal risk issues for both pre-orbital and orbital mischance/harm. The Liability Convention depicts to the launching state outright risk for harm brought on the surface of the Earth and to any air ship in flight (i.e. preorbital harm) and issue obligation for fault liability for damage caused debris is secured under the Liability Convention, however it may not be anything but difficult to choose the Launching State(s) in view of the comprehensive nature in identification of the source of the harming space debris. Then again, any step made to take benefit of the 1978 Registration Convention to allocate liability to the State of registry (which will likewise be the starting State having purview and oversee over the space article concerned) if the space debris creating such harm could be recognized on the base of its registration under this Convention. There has been a continuous attempt from diverse States to achieve national regulatory systems for executing their international responsibilities identifying with obligation emerge out of space exercises. India has confirmed and ratified the 1967 Outer Space Treaty, the 1972 Liability Convention, and the 1978 Registration Convention. Therefore, the Government of India could be considered legitimately responsible under the 1972 Liability Convention to third parties if launch connected damage or harm is created by a space object for which it is the launching State. Then again, India does not have a national space law set up that regresses its worldwide risk into the space organization or private element really captivating in the space action that causes harm; therefore the Government of India would stay subject to pay reward to an outsider and may not be in a position to case

¹⁵⁸*The Convention on International Liability for Damage Caused by Space Objects (the “Liability Convention”); 961 UNTS 187; (opened for signature on 29 March 1972, entered into force for India on 1979*

reimbursement from the substances because of whose activity it was effectively held obligated. One purpose behind the nonappearance of national space law on liability is that commercial space dispatches are led by the Indian Space Research Organization and not by the private division. Nonetheless, when space jump starts are completed from Indian dispatch destinations, India at present gives outsider protection of up to US\$ 100 million. This figure may shift in connection to the normal course of the space dispatch and an evaluation of the imaginable harm a mishap could bring about. Various distinctive countries, in the same path as Australia, Japan, the U.K., Russia, South Africa, South Korea, Sweden, and the U.S., have made progress towards laying out the regular danger of the space associations from their apropos States. It should be perceived that the U.S. has the most dynamic and complex legal organization speaking to hazard matters in association with space activities, including space travel.¹⁵⁹

4.1.2 Criminal Liability¹⁶⁰

In the manner of space tourism, criminal liability may arise in one of two ways. First, it may occur when passengers aboard a space vehicle intended for pre-orbital or orbital destinations commit offences. Secondly, criminal liability may arise when passengers who are availing themselves of, utilizing or staying on board a space station or platform commit an offence. The international legal regime of outer space comprising the five international space treaties do An Interdisciplinary Study on Space Tourism in India not specifically provide for criminal liability. As being what is indicated, in the first situation, direction may be looked for from the changed worldwide flying security instruments embraced basically according to the activities of ICAO. In any case, it should be noticed that they will be fitting to space tourism

¹⁵⁹ Pamela L. Meredith, "Commercial Space Transportation: Risk, Liability and Insurance,"

Abu Dhabi, 16 April 2009 (September 4th, 2015) [http:// www .urinfo .co.uk /commercial insurance for-private-space-travel-a-seriousconcern](http://www.urinfo.co.uk/commercial-insurance-for-private-space-travel-a-seriousconcern)

¹⁶⁰ Damage' is defined to mean loss of life, personal injury or other impairment of health, loss of or damage to property of States or of persons (natural or juridical) or property of international intergovernmental organization

operations just if the vehicles utilized can be ordered as "air ship". These global legitimate instruments while making the unique criminal locale of, and at times a universal obligation upon, the State of registry in appreciation of or emerging out of offenses and different acts which put in risk the wellbeing of common flying, have likewise presented an arrangement of regular ward in worldwide law and allowed specific rights, capacities and privileges to the pilots-in-order which they didn't have prior under universal law. This issue, however, reveals another very important aspect relating to the scope of authority and power to be vested in the leader of a space tourist vehicle. It may be sensible to adopt the same scheme in connection with the application of criminal jurisdiction, liabilities and vesting of authority in the commander, as they basically deal with the handling of misconduct or criminal behavior on the part of passengers in civil aviation. An answer to the second part of the issue, which deals with criminal liability and/or jurisdiction on space stations or platforms may be found in the multilateral agreement between the five Partners States to the International Space Station venture, commonly known as the Inter Governmental Agreement of 1998 (IGA). The 1998 IGA is the first comprehensive legal document dealing with different aspects of space activities. Generally, criminal matters are dealt with under the respective national criminal laws and jurisdictions. However, matters relating to criminal liability and/or jurisdiction over crimes¹⁶¹ occurring on the space station have been given a somewhat uniform treatment under Article 22 of the 1998 IGA. Article 22 not only provides that Partner States "may exercise criminal jurisdiction over personnel in or on any flight component element who are their respective nationals," but also allows other Partner States to act against the perpetrator in certain cases. This means that no perpetrator of a criminal act could break away from prosecution by taking benefit of his/her national criminal legislation or the absence of an extradition treaty. Once this framework is fully implemented, criminal jurisdiction and liability issues in the procedure of space tourism could be easily and appropriately addressed. Since the

¹⁶¹ Melanie Walker, "Suborbital Space Tourism Flights: An Overview of Some Regulatory Issues at The Interface of Air and Space Law" 33, *Journal Of Space Law*, 2007, 375, at 382.

IGA will not be applicable to suborbital and orbital flights that are not in any way related to the ISS, a new international treaty has to be negotiated.

Besides, since India is not gathering to the 1998 IGA, it needs to work out some worldwide game plan to conceal criminal obligation matters in connection with space tourism flights worked under its locale and control or from its region. To run all dangers, including conceivable risk, a protection plan should be taken after. The most created space administration covering space dangers and protection is that of the U.S.

4.2 Safety, Liability and Insurance

Risk guidelines are among the most key concerns as for business action in light of the fact that all gatherings must be mindful of what their responsibilities are , rights and remedies are before captivating in any activity. The quantum of liability can be assigned limited, obliged or unlimited and this would reflect the reality or generally of a top on the measure of damages that can be paid¹⁶². Under the current organization of widespread space law, State liability is the rule. This suggests that a launching State is comprehensively liable to pay for death, mischief, damage or demolition of property persisted by parties as a result of the space activities of the launching State's private components which are contravening international obligations.¹⁶³ A perfect obligation administration for damage and harm relevant to spaceflight transportation vehicles conveying travelers and freight should make procurement for diverse circumstances; (i.e. harm brought on by crashes, harms to outsiders on the surface of the Earth and harm created to travelers)¹⁶⁴

¹⁶² David Their, FAA Predicts Space Tourism will be Worth \$1 Billion in 10 Years, FORBES (Sept. 22, 2014, 11:56 AM), <http://www.forbes.com/sites/davidthier/2012/03/22/faahead-predicts-space-tourism-will-be-worth-1-billion-in-10-years/>.

¹⁶³ Mark J. Sundahl, Note, Unidentified Orbital Debris: The Case for a Market-Share Liability Regime, 24 HASTINGS INT'L & COMP. L. REV. 125, 132 (2000).

¹⁶⁴ Pamela L. Meredith, "Commercial Space Transportation: Risk, Liability and Insurance," Abu Dhabi, 16 April 2009.(6th March, 2015) <http://cas.upes.ac.in/pdf/Research.pdf>

4.3 Insurance for Space Travellers¹⁶⁵

The dangers connected with business spaceflight are prone to be secured by the business protection industry (insurance) once space vehicle plans are concluded, made safe, and operationally tried and true. Unless particularly endorsed by law, space sightseers or travelers (out and out alluded to as spaceflight members in the U.S.) may not be arranged to give up their rights to make legitimate move, the spaceflight administrator in the occasion of a mischance bringing about death or damage. The spaceflight administrator may be stubborn that the spaceflight member gives consent to a waiver of obligation as a major aspect of the spaceflight agreement. Be that as it may, the legitimate legitimacy of such waivers may be tested especially in the results of a mishap a spaceflight participant who suffers death or injury is left without remedy.

4.4 Facilities, Infrastructure and Human Resources¹⁶⁶

The Amenities, framework or infrastructure, human assets needed for a possible space transportation system is an essential piece of the test confronting the improvement of the space tourism industry. In this connection, the key contemplations identify with the necessities for a safe transportation framework (vehicle), suitable spaceports and other related ground base, suitable air and space movement administration frameworks, and the effect of these components on different ranges of human action and on the Earth and space environment. This Chapter examines these issues and depicts a portion of the difficulties, potential arrangements, and circumstances that must be met if the space tourism industry is to be conceivable in India.

5. SPACE TOURISM IN INDIA¹⁶⁷

¹⁶⁵ Freeland, 'Up, Up and ... Back: The Emergence of Space Tourism and Its Impact on the International Law of Outer Space' (n 36) 9.<http://tourism604.blogspot.com/> September 14th 2015

¹⁶⁶ David J Bederman, *The Spirit of International Law* (University of Georgia Press 2002) 84.

Today, space tourism is all that much in its babyhood, with the strong sense of confidence and passion amongst the pioneers raising the industry. Maybe the best inspiration driving the improvement of the business is the draw of a possibly extensive, undiscovered business sector. Ambitious people are hungry to seize hidden benefits, and another space race, at times alluded to as the "Private Space Race", in light of the fact that it happens essentially amongst private area associations and activities, has started. The greater part of these organization are in the business of creating vehicles for space go, with the plan of operating the vehicles for space tourism. On the other hand, there are business firms who expect to give other space tourism items and services, for example, space lodgings, hotels (e.g. Bigelow Aerospace), or making and creating different space tour experiences (e.g. Space Adventures).

In the last twenty five years, India's space programmes have achieved several successful missions and accomplishments. Today, the country is independent in space technology as recently verified by the "Chandrayaan-1" programme – encompassing the successful development and testing of a launch vehicle from scratch at a cost less than the cost of developing a passenger jet aircraft. With this extraordinary strength in integrated technology, India is presently in the position to advance further and embark upon new missions. With its huge game changers, especially in the space part, India needs to move from the old period of innovation demonstration to the new era of commercialization by investigating new procedures and innovations for human spaceflight projects and less cost access to space. Space tourism is one such range where India can assume a corner part with its inexpensive yet trustworthy solutions.¹⁶⁷

Space activities in India are developing very rapidly. Even though there is a void of space legislation the activities pertaining to the same are effectively organized under the sponsorship of the Indian Space Research organization (ISRO). The launch of

¹⁶⁷ Mukesh Mohan Pandey, the Possibility of Space Tourism in India: Issues and Concerns IOSR Journal of Business and Management (IOSR-JBM) e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 11, Issue 4 (Jul. - Aug. 2013), PP 32-39, (March 6th, 2015) www.iosrjournals.org

¹⁶⁸ Chow, Dennis. (2011, April 25). Future of space tourism: who is offering what.(March 2nd, 2015) www.space.com

Chandrayan -I is the landmark in the space activities undertaken by India. Space tourism in India has attained a certain level of enthusiasm and glamour in a very early stage. Quite a number of forthcoming space travellers have been evincing keen interest on space travel.¹⁶⁹This is also evidenced by the number of people registered for India's maiden space flight "Virgin Galactic" space flight in the near recent future.

With the space tourism industry gearing up for flight within the next two years, certified space travel agents are also getting ready to pitch the astonishment to potential space tourists Richard Branson's Virgin Galactic, a global commercial space tourism group, has entered the Indian market with an eye on wooing Indians into space.¹⁷⁰ Virgin Galactic has opened its office in New Delhi and will go about as a facilitator for Indians to book tickets to space. The spaceship will be dispatched at tallness 50,000 feet above earth and, on set free from the mother boat, will take a vertical direction at three times the velocity of sound. *Carolyn Wincer, head of space traveler offers of Virgin Galactic*, told the press that about 300 individuals, including four Indians, have purchased tickets to go on the spaceship. *Santhosh George Kulangara, situated in the US, is the first Indian who has buys a ticket to space in the first year of the business operation of this bold attempt.*¹⁷¹Extending good wishes to Virgin Galactic, the statement coming from one of the top officials of Aviation Ministry "I am sure with disposable income increasing among Indians, many will go to space. The courageous strength of Indians will get a further boost by venturing into space via commercial spaceships."¹⁷² These availabilities will promote efficiently the commercial activities under the space organization in India.

5.1 Requirements for Space Tourism Activities in India

¹⁶⁹Raja .M Space tourism lifts off in India, Asia Times, Nov 2, 2007 http://www.atimes.com/atimes/South_Asia/IK02Df03.html (Accessed on 06-10-2014).

¹⁷⁰ ibid

¹⁷¹Sanghita Singh, Keralite to be India's first space tourist,dnaindia,15th march,2007 (March 6th, 2015) <http://www.dnaindia.com/india/report-keralite-to-be-india-s-first-space-tourist-1084939>

¹⁷² Supranote 139

There are definite significant necessities which a fit space system should have and it is true for India also. These necessities are vital for space tourism infrastructure also. The most key requirements a space tourism system has to meet can be summarized as follows:¹⁷³

- The space tourism system has to come up to expectations of space tour participants, namely to the most preferred ones: looking at earth and experience of lightness. The vehicle design should therefore provide a adequate number of windows and adequate interior space to fly around.
- High inclined orbits are favourable, covering a greater proportion of earth's surface.
- Due to medical limitations the speeding up level should be kept lower than 3G.
- Although most participants choose longer space trips, it would be suggested to limit the space tour to several hours in accord to avoid space sickness. There is no general time boundary until space sickness will happen, but it has been shown that in the first hours of space flight the space sickness rate is at low levels.¹⁷⁴
- By decreasing flight time, some space tourists may think to get inadequate service for their money. To pay compensation for this feeling a kind of lavish space camp should be implemented before each space flight. In providing technical information, health monitoring and professional space training, a space camp will make stronger the feeling of becoming a "real astronaut". A great mental momentum in gaining customer's content.¹⁷⁵
- In general, suitable procedures are necessary to proof health conditions of space tourists. Because of the reality that some tourists will be dismissed from space

¹⁷³ Manfred Lachs, *The Law of Outer Space* Hamilton Publication, 72 (1972).

¹⁷⁴ Malay Adhikari, SPACE TOURISM—LEGAL ISSUES AND CHALLENGES WITH SPECIAL REFERENCE TO INDIA(Jan 25th,2015) <http://www.commonlii.org/in/journals/NLUDLRS/2012/51.html>

¹⁷⁵ Cheng Bin, *STUDIES IN INTERNATIONAL SPACE LAW*, Butterworths Publication (2004)

flight because of medical reasons, it would be suggested to accomplish health inspections very wise, best in relation with a space camp.¹⁷⁶

- Most important, it would be crucial to meet the demand price figures. Considering the market surveys, a sufficient demand will be established at ticket prices of \$50,000 or less.

A space tourism vehicle which obviously will meet these requirements has been developed in 1994 by Kawasaki and Fuji Heavy Industries, Japan.¹⁷⁷

Another significant aspect other than infrastructure facility is with respect to licensing and authorization of space objects and human beings properly.¹⁷⁸ The Government ought to take activity in fitting preparing of planned visitors furthermore mindfulness projects ought to be embraced. Nations like US as of now have different national arrangements on approval and supervision of space items and people. An alternate imperative viewpoint is state risk. Concerning the state level arrangement in instances of state risk in ISS, the Intergovernmental Agreement embraced by distinctive countries in 1998 sounds compelling. To go forward the state exercises particularly business exercises in a nation like India, enrollment of such an understanding will be skilled. The best test before India is designating stores for all these aforementioned prerequisites. To meet this test a successful and enforceable national space strategy ought to be established.¹⁷⁹

¹⁷⁶ David Their, FAA Predicts Space Tourism will be Worth \$1 Billion in 10 Years, FORBES (Sept. 22, 2014, 11:56 AM), <http://www.forbes.com/sites/davidthier/2012/03/22/faahead-predicts-space-tourism-will-be-worth-1-billion-in-10-years/>.

¹⁷⁷ Sven Abitzsch, PROSPECTS OF SPACE TOURISM (Feb 5th,2015) http://www.spacefuture.Com/archive/prospects_of_space_tourism.shtml

¹⁷⁸ Robert L Haltermann, 30 November 1996, "Evolution of the Modern Cruise Trade and Its Application to Space Tourism", unpublished, available on STA Website.

¹⁷⁹ Space Tourism – New Economy & Technology for Developing Countries, University Technology MARA Shah Alam, Malaysia, August 2006.(Jan 18th,2015) <http://www.nwu.ac.za/sites/www.nwu.ac.za/files/files/p-per/issuepages/2014volume17no1/2014%2817%291Ferreira-SnymanART%281%29.pdf>

5.2 Need for Domestic Regulations in India

The matters accepted with space exercises of the Government of India are under the general responsibility of the Space Commission (SC), which defines system and approaches to advance the development and use of space science and improvement. There is a need for an arranged National Space Policy (NSP) for making its movements more centered and resourceful, as space has turned into a place that is increasingly utilized by a large group of countries, organizations, and ambitious people, and as space business work past the power of national outskirts. The NSP ought to spotlights on various potential space business exercises like: space assembling; space assets for space and earth; space business parks; satellite and space exchange administrations; travel and excitement (space tourism); R & D in space; space transportation; space framework; space utilities; space solar power ; and so on. In view of this national space arrangement or regulations, the local business for space tourism will extend. This will likewise be strengthen by insurance businesses in India.¹⁸⁰ A detailed project report on the over all aspects of space tourism were prepared.¹⁸¹

As private space travel gets to be less a fantasy without bounds and more a late spring excursion arrangement, global and local law need to develop to oblige the prerequisites of the business. A steady cure accessible to those harmed in space is a need. The threats postured by space trash, completely the consequence of government space exercises; speak to a genuine danger to space flight members. These members must have a gathering in which to bring cases for misfortune and the intends to consider a dependable gathering subject. The arrangement restoration is dire in other sense likewise due to the developing peril of unemployment, financial stagnation, environmental change, instructive and social decay, asset wars and loss of common freedoms which the civilization is confronting today. Keeping in mind the end goal to accomplish the fundamental advance there is a specific requirement for cooperation between those

¹⁸⁰ Patrick Collins, May 1996, "The Regulatory Reform Agenda for the Era of Passenger Space Transportation", Proceedings of 20th ISTS, Paper No 96-f-13.

¹⁸¹ PROF. DR. RAM S. JAKHU, SPACE TOURISM IN INDIA (Jan17th, 2015) [http:// cce.upes.ac.in/CAS/pdf/Research.pdf](http://cce.upes.ac.in/CAS/pdf/Research.pdf)

working in the two fields of common avionics and common space. Regarding India, the step first require is to create the consciousness amongst the common people that how space tourism is important not only for tourism but also for our future interest. As because India is not so much economically developed, so the direct space tourism activity cannot be feasible now.¹⁸² But it may come through creating some 'space parks' where the tourist could enjoy the feelings of outer space on earth itself. They will be interested by this way. Then gradually they will register their name to space flight depending on other factors also. This type initiative will support the whole country in the long run. Finally it is recommended that India requires a separate policy or regulation to promote space tourism.¹⁸³

The Different Space Tourism Projects and Legal Implications

The major feature of space tourism is transportation, which means transportation within outer space and transportation to outer space and back as well. So, there are diverse approaches of space tourism with divergent stages and therefore with diverse legal implications.

- **Earth's surface**

Space tourism begins and closes on earth's surface. These concerns separated from the region of the high oceans that is secured by the law of the ocean (sea) and is indicated in a few provision of space law - sovereign region (territory) of states. So predominantly local law runs this piece of space tourism. In this way, there are a few exceptions by universal (international) space law that obstruct. Just to specify a few: non-stop supervision of non-governmental exercises in space by states, liability for the launching state to register space objects and to clarify the Secretary General of the United Nations, supreme state-liability for harm on the world's surface or to flying machine in flight (Art.

¹⁸² AP, "Private Spaceship makes first flight", the Times of India, Kolkata, 12 October 2010.

¹⁸³ Stephan Hobe & Jürgen Cloppenburg, Towards a New Aerospace Convention? Selected Legal Issues of "Space Tourism", 2004 Proceedings of the Forty-Seventh Colloquium on the Law of Outer Space 377.

II Liability Convention), and the liability to take suggestions if there should arise an occurrence of expected unsafe obstruction from intended space exercises.

- **Residence in orbit - ISS**

One project of space tourism plans to set up a hotel-module connected to the International Space Station ISS. The questions of jurisdiction must be respected under the perception of the ISS Agreement (International Government Agreement on the Space Station), which essentially follows linked-up-principle. Responsible in high opinion of the ISS Agreement could be a builder or subcontractor of a Partner State, a client or client of a Partner State, and a contractor or subcontractor of a client or client of a Partner State. Partner States are empowered to bar by local or domestic law the appropriateness of the Liability Convention concerning the ISS with impact against third parties outsiders.¹⁸⁴

In general:

A difficulty that may turn out to be significant is space debris. In orbit there is a rising possibility of being hit by a piece of debris, which can cause rigorous damage to man and material because these pieces can attain a speed of some thousand kilometers per hour. It is up to the mechanical engineers to solve this query of security, but it is also up to insurances to deal with this. Debris must be well thought-out as well under the aspect of the Liability Convention¹⁸⁵; if the liable state can be recognized, it can be held liable. The other side of the coin is the value of this possible claim, because basically resourceful

¹⁸⁴ Japanese Rocket Society, Spring 1993, The " Special Issue on Space Tourism,, the Journal of Space Technology and Science Vol. 9, No. 1

¹⁸⁵ Joseph S. Imburgia, Space Debris and Its Threat to National Security: A Proposal for a Binding International Agreement to Clean Up the Junk, 44 VAND. J. TRANSNAT'L L. 589, 593 (2012) (quoting MARK WILLIAMSON, SPACE: THE FRAGILE FRONTIER 46 (2006)).(Oct 25th, 2015)<http://orbitaldebris.jsc.nasa.gov/faqs.html#3>.

tools for law-enforcement do not really exist ex lege since dispute settlement is almost up to good-will of the parties concerned.¹⁸⁶

- **Outer space**

An important provision is Art. VIII Outer Space Treaty, that says that a state party to the contract on whose registry an item launched into space is passed, keep hold of jurisdiction and control over such item, and over any personnel thereof while in space or on a celestial body. Here state and private diversions are influenced also. It is pass that this provision implies the national law, and therefore as a result principles of natural private international law, is applicable on space objects. This compares with the link-up-principle that can be found in air- and ocean law. Remarkable in respect to space tourism is just that the above mentioned provision clearly does not cover up passengers, but only personnel.¹⁸⁷

- **Residence on celestial bodies¹⁸⁸**

This stage is fundamentally managed by the aforementioned Moon Agreement. Further provisions can be found in the Outer Space Treaty; on the other hand these are somewhat wide and uncertain. Conclusively the essential principles of space law, in the same way as the freedom principle and the common heritage principle, are fully relevant. Another part is of the environmental(ecological) and moral (ethical) kind, in light of the fact that lasting builds or settlements with respect to heavenly bodies will need to manage climate conditions that are fairly not the same as earth. The part of terraforming - to build an

¹⁸⁶ P Collins, 2002, "Towards Space Tourism: The Challenge for British Space Policy, Journal of the British Interplanetary Society, Vol 55, pp 149-159;(Feb 4th , 2015) also downloadable from www.spacefuture.com/archive/towards_space_tourism_the_challenge_for_british_space_policy.shtml

¹⁸⁷ Papers from the International Symposium on Space Tourism, Bremen, Germany; March 20-22, 1997

¹⁸⁸ G Harry Stine, October 1997, " Living in Space: A Handbook for Work and Exploration Beyond the Earth's Atmosphere", M Evans and Co. Inc, New York

earth-like air and environment on a outer space body - is separated from specialized challenges to a lesser extent a lawful issue, however just a moral query.

5.3 Issue of Authorization and Supervision in Space Tourism

Authorization of space tourism activities are decided by the national authorities in according to relevant legal provisions of air & space law. In some cases, air law will likely be applied to the aircraft and the close space vehicle prior to separation if an air launch is undertaken.¹⁸⁹ On the other hand, space law may be suitable to the partitioned suborbital vehicle by means of rocket impetus for push, and to the two space items utilized when a space case is dispatched by a rocket. Under both universal and national air law, an airplane will need authorization. Since air law contains comprehensive and exhaustive guidelines or policy, approval or sanction in this situation does not raise further obstacles. The same can't be said for space law. After parting, the suborbital vehicle will have a need of approval as per global or international and national space law. In the event that the space tourism exercises are directed by method for a space capsule dispatched by a rocket, approval will likewise be important for both vehicles included. After detachment, the suborbital vehicle needs approval as indicated by International and National space law.

By virtue of **Article VI¹⁹⁰ of the Outer Space Treaty**, states are obliged to authorize and to continuously manage their national space activities. This obligation can best be complied with by enacting national space legislation, if possible with a licensing regime for private activities in outer space, including certification of space vehicles.

The most important necessities for the licensing of any space activity carrying space flight participants include the following¹⁹¹:

¹⁸⁹ Roger D. Launius & Dennis R. Jenkins, Is it Finally Time for Space Tourism? 4 *Astropolitics* 253, 255 (2006) (Feb 6th, 2015) <http://www.spaceref.com/news/viewsr.html?pid=4578>.

¹⁹⁰ Dr. Frans G. Von Der Dunk, "Passing The Buck to Rogers: International Liability Issues In Private Spaceflight", 86 *Neb. L. Rev.* (2007), p.400.

¹⁹¹ *Ibid.*

- (1) Composed data on the commitments the responsibility of the licensee towards the space flight member,
- (2) Written informed assent by the space flight participant,
- (3) Physical examination,
- (4) Training, and
- (5) Safety measures requirements.

With respect to approval of space flights including space travelers, it can be outlined that international space law does not have a particular set of laws. Also, most national space enactment likewise neglects to give particular regulations; the late U.S. regulations give some base necessities and consider the expanding dominance of space tourism exercises.

5.4 The Registration of the Aircrafts/ Space Objects Carrying Tourists

The aircraft utilized as a part of an air launch, and also the space vehicle before dispatching, would need to be registered as per air law. Interestingly, the space vehicle utilized as a part of an air dispatch, and additionally both space items utilized when a space case is propelled by a rocket, must be enrolled or registered as per space law.

Particularly, enrollment must be in accordance to the Registration Convention and national space laws. Though, the Registration Convention¹⁹² does have loopholes in light of a clear decrease in the registration of space objects¹⁹³. For that reason, the UNCOPUOS (UN Committee on the Peaceful Uses of Outer Space) Working Group on the Practice of States and International Organizations in Registering Space Objects has considered changing the Registration Convention to formulate it more efficient in registering space objects. Its purpose is to “give confidence to States to stick to the Registration Convention, improve the application and improve the effectiveness of the

¹⁹² Gabriele Wohl, “Outer Space, Inc.: Transmitting Business, Ethics, And Policy “Across, The Universe” 111 W. Va. L. Rev., (2008), p.311.

¹⁹³ Melanie Walker, “Suborbital Space Tourism Flights: An Overview of Some Regulatory Issues at the Interface of Air and Space Law” 33, *Journal of Space Law*, 2007, 375, at 382.

Convention and support in developing and strengthening national legislative norms connecting to the registration of objects launched into outer space.”¹⁹⁴ By way of increased space tourism activities happening on more of a regular basis, categorization of space vehicles used as space objects would definitely necessitate the efficiency of the Registration Convention.¹⁹⁵

5.5 Government’s Incentive to Facilitate the Development of Space Tourism in India

India has turned into one of the significant space controls on the planet especially in the period since the Successful dispatch of the Chandrayan – I. The Indian space segment is being opened up for private participants and the country has started commercializing certain advancements and services internationally. The privatization and commercialization of space advances in India make it basic for the Government of India to embrace developed public policies; to sanction suitable national space laws and regulations; and, to command and empower the Director General of Civil Aviation to energize and direct space tourism.¹⁹⁶ All the more essentially, the Government of India should show authority in this field.¹⁹⁷ Essentially, this would necessitate that the Department of Space/ Planning Commission/Ministry of Finance/ Ministry of Tourism/Ministry of Civil Aviation and the Prime Minister's Office will all require to deal with reality and consent to encourage the foundation of such a modern and creative industry. Just as, some recognized State governments should also participate in this process since ground services will be found within their separate territory. Especially,

¹⁹⁴ Steven Fawkes, “Space tourism and carbon dioxide emissions,” *The Space Review*, 19 February 2007.

¹⁹⁵ Patrick Collins, *May 1996*, “*The Regulatory Reform Agenda for the Era of Passenger Space Transportation*”, *Proceedings of 20th ISTS, Paper No 96-f-13*.

¹⁹⁶ Jay P Penn and Charles A Lindley, " Requirements and design for space tourist transportation", The Aerospace Corporation, 2350 E. El Segundo Blvd., El Segundo, California 90245-4691, unpublished.

¹⁹⁷ (Anon), 7 April 1997, " Studies claim space tourism feasible", *Aviation Week and Space Technology*, April 7, 1997; page 58

with a specific end goal to attract private investment into the industry, the government ought to give tax cuts and appropriations to innovative work during their introductory stages. This would empower the industry to create occupation and improve India's worldwide strength as an innovative, quick emerging country over the long haul.

The Indian Institute of Space Technology, Thiruvananthapuram in Kerala initiated in 2007 ought to be energized and sufficiently upheld in its push to help in the advancement of the proper HR and basic space technologies for what's to come.¹⁹⁸

5.5.1 Recognize Space Tourism as Key Goal¹⁹⁹

Despite the fact that space tourism industry on top of the scale depicted above may be hard to acknowledge, there is no best alternative. Current government space exercises are not most imperative towards new commercial exercises - just to proceed with utilization of taxpayer's funds with no fiscal benefits. Space agencies' distributed 30-year situations are totally clear about this: they incorporate an accumulation of exercises that is of interest neither to the business world nor the overall population, yet to the organizations themselves.

So it is currently event for space agencies to "do what needs to be done" and perceive that space tourism a legitimate point of space development, as well as it is the key target, and what is new, the stand out that is going to deliver riches from space in the anticipated future. Repeating public recognition of this by solid figures will have a valuable financial power in itself not slightest in serving to educate the venture world. It will likewise permit the numerous organizations which take delivery of agreement from space offices to work straightforwardly on space tourism without hesitation of "offending" the agencies and consequently taking a chance with the loss of their agreement - a grave issue in

¹⁹⁸ Stephan Hobe & Jürgen Cloppenburg, Towards a New Aerospace Convention? Selected Legal Issues of "Space Tourism", 2004 Proceedings of the Forty-Seventh Colloquium on the Law of Outer Space 377.

¹⁹⁹Patrick Collins Space Activities, Space Tourism and Economic Growth Proceedings of Second ISST. (March 3rd,2015) [http://www.spacefuture.com /archive/space_activities_ space_tourism_and_ economic _growth.shtml](http://www.spacefuture.com/archive/space_activities_space_tourism_and_economic_growth.shtml)

perspective of the agencies' monopolistic position these days. This acknowledgement ought to incorporate the modifying of space agencies' situations of future space exercises which at present show just exercises in view of citizen financial support or tax-paying support to incorporate traveler activity, orbital hotels, and other business exercises.

In this connection it must not be forgotten that it is a fundamental feature of financial markets that they react *in anticipation to events*.²⁰⁰ The current value of monetary claims such as bonds and shares is judged by expectations about the future performance of the company or organization that issued them. As a result the well-known understanding, certified recognition, and public recognition that the above projections are realistic, likely to be financially gainful and advantageous to the rest of the financial system on condition that a highly attractive new source of economic growth, will have a extremely favorable effect instantly.

As a result, recognized acknowledgement in speeches and policy statements by government and business leaders of the legality of this potentially very cost-effective result of space investment would not only add to a great extent to its reliability, which is means to raise the investment funds wanted to take in these projects, but could also help out to create the financial hopefulness that will in return help out to inspire the developments in question.²⁰¹

It could likewise contribute significantly to break off & shallow negativity that is across the board today in the wealthier nations.²⁰² This negativity mistakes the present financial dislocations caused by over-capacity and insufficient innovation for basic financial problems facing humanity. Up till now the fact is that humans have lately determined the

²⁰⁰ David Their, FAA Predicts Space Tourism will be Worth \$1 Billion in 10 Years, FORBES (Oct. 22, 2014, 11:56 AM), <http://www.forbes.com/sites/davidthier/2012/03/22/faahead-predicts-space-tourism-will-be-worth-1-billion-in-10-years>

²⁰¹ C Hoffman, 2003, "The Right Stuff", Wired, Cover Story, July, pp 134-145.

²⁰² Orbital Debris Frequently Asked Questions, NASA ORBITAL DEBRIS PROGRAM OFFICE (Mar7th, 2015), <http://orbitaldebris.jsc.nasa.gov/faqs.html#3>.

leading political clash of the 20th century - whether democracy or dictatorship is preferable - and humans' "space future" is now attracting us ahead into the next immense era of world economy. But unluckily the customary cold-war approach that is main in the space industry is standing in the way, and thereby protecting us from facilitating from the financial opportunities that are available.

Until this condition changes, the world financial system will carry on to propose a insufficient range of behavior to keep everybody profitably employed.²⁰³The sooner that political leaders face this actuality - that revising the priorities of the space agencies to which they give such huge quantities of taxpayers' wealth every year could have these deeply beneficial consequences - the better for financial development and so for human interests all the way through the world²⁰⁴

6. ISSUES AND CONCERNS²⁰⁵

At this basis of time, it is still too close to the starting to paint a complete portrayal of the condition of space tourism in India. In the event that put into practice, any push to put all in all a strategy for success for the conduct of space tourism in India will be confronted with a mixed bag of barriers. Given underneath are the real obstructions, which need to be tended to for the start-up of space tourism in India.

²⁰³ D North, 2003, "X-Prize Competition is More Than a Race to Space", Aviation Week & Space Technology, Editorial, Vol 158, No 16, p 78.

²⁰⁴ D Webber, February 2003, "Public Space Markets - What We Know and What We Don't Know", STAIF 2003; (Feb 4th, 2015)also downloadable from www.spacefuture.com/archive/public_space_markets_what_we_know_and_what_we_dont_know.shtml

²⁰⁵ Michael Wollersheim, "Considerations Towards the Legal Framework of Space Tourism", 2nd International Symposium on Space Tourism, Bremen, April 21-23 1999.(Feb6th, 2015) http://www.robertgoehlich.de/downloads/pub_journal11_Hurdles_and_Hopes%20%28Goehlich,%202014%29.pdf

- **A Strong legislation intended for Space Tourism**

For the reason of starting of space tourism in India, a law is needed. The law would manage a few subjects' viz. essential registration of spacecraft, nationality, stamping, condition of space equipment, air commend ability/space excellence, medical norms, authorizing of space staff and security safeguard measure for dispatching and so on. Aside from it enactment is important for contribution of private bodies in space tourism. The private parties (other than Government bodies) can be entrusted with different activities in connection with space tourism. The position of the Government in the institution of a new industry is to help out its private sector to expand and encourage the development of domestic economies. Though Government role includes legal liability for authorizing and supervising private space activities, the space industry have up till now to grow commercially. By the way the prices per ticket for trips in space would mainly be reliant on efficiencies of private industry and nonstop progress with technology development.²⁰⁶

- **Accessibility of Appropriate Space Vehicles**

By explanation, a way of transport that can be used in the conduct of space tourism is one that can safely carry passengers to a height higher than 100 km above the surface of the Earth. This is believed to the altitude at which space begins, implication that the passengers can practice weightlessness. At present, the global space tourism industry is at the beginning stage of emerging different kinds of vehicles able of transporting human passengers into sub-orbit. There is not in reality a fully developed, with promise of safe and dedicated spacecraft capable of being used to offer space travel to human passengers on a commercial basis. This factor alone creates a lot of doubt when one attempts to calculate the achievability of the space tourism sector.²⁰⁷

²⁰⁶ Freeland Steven, *SPACE LAW IN THE ERA OF COMMERCIALISATION*, Oxford Publication (2010).

²⁰⁷ Cheng Bin, *STUDIES IN INTERNATIONAL SPACE LAW*, Butterworths Publication (2004).

- **Public Interest**

To some degree however be lacking in of public interest in space activities can be illustrate to the absence of awareness about commercial space activities in the perspective of free time and travel/tourism. Recently, the huge bulk of Indians only think about space“ in relation with cyberspace“ since that is the point of view from which space activities is most noticeable: the use of space has the greatest impact on the current national security situation and how the government is dealing with it. Nowadays, upwardly mobile, mostly unmarried professionals in the 25-35 age groups who may not as yet be HNIs but are on the other hand earning very high salaries are quite likely to perform experiment with new things such as space tourism. Also, people’s interest in space activities can be positive with the help of media. Things like reality shows in which the champion gets a free ticket for suborbital travel could further develop the attention of the public in space. In adding those, things like awarding frequent flyer points exchangeable for free space travel could also attract space tourists. Before now, Virgin Galactic is offering such promotions.²⁰⁸

- **The Green Factor**

Space tourism operators need documenting carbon dioxide emissions resulting from flights & sustaining operations in a holistic way. The primary calculation shows that a typical suborbital flight by way of expertise similar to that of the Bristol Space-planes Ascender will produce three tonnes of carbon dioxide per flight per passenger. This is equal to a London to Singapore return flight in a conventional aircraft. Bristol Space-planes has declared that its suborbital flights will generate emissions equivalent to a London to New York business class flight. It is attention-grabbing to look at the special effects of scaling up the suborbital space tourism industry. A recent study published by Futron predicts that there will be up to 852 flights a year out of the Newn Mexico spaceport. If on global basis, it has been assumed that there would be 3,000 flights a year

²⁰⁸ Manfred Lachs, *The Law of Outer Space* Hamilton Publication, 72 (1972).

with 6 passengers on each flight and 3 tonnes of emissions per passenger, the total emissions per annum will be 54,000 tonnes. By means of evaluation, this is equal to the emissions produced from 5 days of continuous operation of a 500MW gas-fired power station, or from 3 days of electricity utilization if UK consumers leave their electrical items such as TVs on standby. In contrast, British Airways produced 16,132,000 tonnes of emissions in 2005 mainly from its flight operations.

A computation of the carbon dioxide emissions from an orbital trip to the ISS on a Soyuz launcher suggests that the emissions are 143 tonnes per passenger. Clearly, any scaling up of orbital tourism will not use Soyuz technology. It is mesmerizing to note that the global space tourism industry already acknowledged the environmental impact of its operations & taking steps to lessen them. Virgin Galactic for example has stated that its space-plane will use renewable energy and may even be a net energy producer, a feature which could make it “carbon negative”.²⁰⁹

²⁰⁹ The Role of United Nations Declarations of Principles in the Progressive Development of Space Law, *Journal of Space Law*, vol. 16, 10(1988).

7. CONCLUSION

As private space travel gets to be less a daydream without limits and more a summer get-away arrangement (summer vacation), universal and local law need to advance to suit the necessities of the industry. A predictable cure accessible to those harmed in space is a need. The risks postured by space trash, practically completely the aftereffect of government space exercises; speak to a genuine danger to space flight members. These members must have a forum in which they can bring cases for misfortune and intends to make the responsible party liable or alleged party liable. The guidelines re-establishment is important in other sense additionally in view of the developing risk of unemployment, monetary stagnation, environmental change, educational and cultural decay, asset wars and loss of common freedoms which the progress or civilization is confronting today. Keeping in mind the end goal to attain to the essential advance there is a specific requirement for joint effort between those working in the two fields of civil aviation and civil space.

Concerning, the step first require is to make the awareness amongst the regular individuals that how space tourism is vital not just for tourism additionally for our future investment. As in light of the fact that India is not really financially grown, so the direct space tourism movement can't be achievable presently.²¹⁰In any case it may deliver making some 'space parks' the place the visitor could appreciate the emotions of space on earth itself. They will be attracted or fascinated by the same way. At that point steadily they will enroll their name to space flight depending on different variables too. This sort activity will boost the entire nation in the long run. It is suggested that India obliges a different approach or regulation to advance space tourism.²¹¹

Space tourism essentially contains inter alia parts of space transportation, kept an eye on space flight, and commercialization of space. Identified with existing space law

²¹⁰ S. Houston Lay and H.J. Taubenfeld, *The Law relating to Activities of Man in Space*(Chicago, 1970), p.134

²¹¹ Roger D. Launius & Dennis R. Jenkins, *Is it finally Time for Space Tourism 4 Astropolitics* 253, 255 (2006).

settlements there are a requirement for a universal agreement to prevent space tourism and other business extends in space from extreme conflicts with these treaties. The methodology of universal space law needs to be profoundly rethought and re-characterized to empower private undertakings to (straightforwardly) perform space exercises like space tourism. Overall space tourism must be performed by private endeavors under the administration of states, which arises clashes that can be ignored. In my view it is clear, that neither perfect air law nor unmodified space law could tackle the current issues with space tourism. The most attractive clarification could be a separating stage-to-stage framework, that makes e.g. air law appropriate in air space and space law for space, or an entirely reason situated framework, or a totally new enactment that joins all these components in a particularly for the needs of business utilization outlined legitimate code.²¹² The current space law administration is not able to tolerate the emerging space tourism industry as 'the foundation or backbone of international space law is so inflexible it couldn't be possible be a stabile premise for space tourism'.²¹³ This report has laid out the deficiencies of the current structure and has upheld for another universal tradition, one which is devoted exclusively to the regulation of business space travel, in this way taking out vulnerabilities. Such a uniform instrument ought to consider the provisions of the officially existing air law administration and consider the administration as a model, especially concerning issues of liability and obligations. The formation of a complete lawful strategy in this respect is a key component of the general development of the commercial aspects of space. On this ground, financial movement in space needs to be joined by the parallel execution of a lawful framework through which these exercises will be controlled by a international organization, with a perspective to increasing effective support as a one-sided framework. The concept of space tourism holds a bold and promising future. If the technological and legal issues can be worked out, then space tourism can be a way to advance space technology with the help of the

²¹² Michel Bourely, "Legal Problems Posed by the Commercialization of Data Collection by the ERS-I", *Journal of Space Law*, vol, 16 No. 2, (1988), p 129

²¹³ David J Bederman, *the Spirit of International Law* (University of Georgia Press 2002) 84.

private companies and it can also help to improve the outlook of the public by attracting their interest.²¹⁴

The Rescue Agreement is a turning point in the improvement of International Space Law when all is said in general and treaty law on space specifically. It speaks to the interface between the principle of mankind (humanity) and the standard of international cooperation. Given the third-five years of development of International Space Law since its appropriation, one may think that it valuable to audit and upgrade the Agreement regarding the substances of space transportation, furthermore other developing employments of space, including space stations, space research facilities, and space industrialization. The essential standard of inquiry, salvage and recovery will stay applicable to any space of human action, not simply space. The basic principle of search, rescue and recovery will remain relevant to any space of human activity, not just outer space.²¹⁵

It has been seen that there is presence of demand for space tourism in India. At present the supply remains the major limit in both sub-orbital and orbital trip. The constraint of supply will be removed in due course of time with the technological advancement. What is need of hour in connection to space tourism in India is to enact appropriate national space laws and regulations which encourages and assists this new industry. Especially, keeping in mind the end goal to pull in private ventures into the division, the legislature ought to give tax cuts and endowments to innovative work in any event amid the introductory stages. The development of space tourism would empower to produce occupation furthermore upgrade India's worldwide validity as an innovative, quick creating country over the long haul.²¹⁶

²¹⁴ Gurunadh Velidi, Ugur Guven, "Usage of Nuclear Reactors in Space Applications: Space Propulsion and Space Power Concepts", *Journal of Applied Mechanics and Materials*, 110-116(2012) 2252-2259.

²¹⁵ Genta, Giancarlo and Rycroft, Michael, *Space the final frontier*; United kingdom: Cambridge University Press, 2003, pp, 26-35

²¹⁶ Mukesh Mohan Pandey, the Possibility of Space Tourism in India: Issues and Concerns *IOSR Journal of Business and Management*. Volume 11, Issue 4 (Jul. - Aug. 2013), PP 32-39 www.iosrjournals.org (Sept.6th2014) https://www.academia.edu/4858206/The_Possibility_of_Space_Tourism_in_India_Issues_and_Concens

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