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Studying on Legal Liability of Private Enterprises with Commercial Activities in Outer Space

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1. LIABILITY RULES IN CURRENT SPACE LAW

The rules of liability in outer space law are specifically reflected in Article VI of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (referred to as the Outer Space Treaty): Each State as one Party is internationally responsible for its activities (whether governmental departments or non-governmental bodies) in outer space (including the Moon and other celestial bodies) and shall be responsible for ensuring that national activities are carried out in conformity with the provisions of this Treaty¹. The activities of non-governmental bodies in outer space (including the Moon and other celestial bodies) shall be authorized by the States concerned and supervised on a continuous basis. The responsibility for ensuring that the activities of international organizations in outer space, including the Moon and other celestial bodies, are carried out in conformity with the provisions of this Treaty shall be shared by the international organization and by the States Parties to this Treaty participating in the international organization.

According to Article VII: A State as one Party is that conducts a launch or procures the launching of an entity into outer space (including the Moon and other celestial bodies) and the state provides territory or equipment for the launching entity shall be internationally liable for damage caused to another State Party or to its natural or juridical persons by that entity and its component parts on Earth, in the sky, or in outer space (including the Moon and other celestial bodies).

The principle of State responsibility for private activities is established in the Outer Space Treaty, and the Convention on International Liability for Damage Caused by Space Objects (Liability Convention) further applies and improves the relevant provisions of the Outer Space Treaty². The Convention on International Liability for Damage Caused by Space Objects establishes international rules and claims procedures

for liability for damage caused by space objects, and provides for the types of liability for damage caused by outer space activities, the scope of liability, the nature of liability, the constituent elements and the rules for claims. The liability for damage caused by Private Enterprises to the body or health of a natural person or to the property of a state, a natural person, a legal person or an international organization in a place other than the earth's surface shall be borne by the launching state according to its fault or without fault on the earth's surface.

2. DILEMMAS IN THE APPLICATION OF THE RULES ON LIABILITY FOR COMMERCIAL ACTIVITIES IN OUTER SPACE

In International Space Law, Private Enterprises does not have the status of a subject in international Law, and the liability for damage caused by Private Enterprises is the responsibility of the state to which Private Enterprises belongs to. The legislative background of international space law is that it was established during the Cold War to balance the space hegemony between the Soviet Union and the United States, and the need for Private Enterprises to engage in commercial activities in outer space was not considered at the time of its establishment. But nowadays diverse actors are engaged in commercial activities in outer space, and still insisting on the principle of state responsibility for private activities is contrary to the development of commercial activities in outer space. The shortcoming of liability rules in international space law are gradually exposed.

Firstly, under the principle of state responsibility for private activities, the state is the subject of responsibility in international space law, and the damage caused by the Private Enterprises is borne by the launching state. The drawbacks of the principle of state responsibility for private activities are becoming increasingly apparent. For example, the objection to the scope of the "launching State" is an old issue.

Despite the definition of the concept of "launching State" in the Liability Convention, controversy over the concept of "launching State" persists, leading to negative effects in practice³. According to the concept of launch state under the Outer Space Treaty and the Liability Convention, a launch state is a responsible state in a sense, but as international cooperation increases, more and more countries meet the requirements of a launch state, and since international space law is not absolutely enforceable like domestic law, there will be many responsible states passing the buck to each other.

Secondly, with the extensive participation of Private Enterprises in outer space activities and the fact that the cross-border losses caused by Private Enterprises will be fully borne by the countries to which they belong, it will not only be detrimental to the healthy and orderly development of private enterprises, but also invariably increase the financial pressure on the countries⁴. This will be an impact on the absolute state liability system in the outer space liability regime. With the trend of Private Enterprises engaging in more and more commercial activities in outer space, the liability regime determined by international outer space law will inevitably fall into the dilemma of difficult application.

In order to solve the disputes arising from Private Enterprises in outer space, the most emergent task is to legalize the qualification of subject of Private Enterprises and other non-governmental organizations involved in outer space activities.

In addition, from the viewpoint of protecting legal interests, the liability stipulated in international space law belongs to tort liability, and the legal interests protected are the body and health of natural persons and the property rights and interests of the state, natural persons and legal persons. International space law roughly regulates the behavior of Private Enterprises engaging in commercial activities in outer space from the scope of public law, and only gives the injured party the right to exercise claims against the injured party from the perspective of tort liability. It can be seen that the legal interests protected are not perfect, and in contrast to domestic private law tort liability, there are blank areas for the protection of the legal interests of damage, for example, there is no clear provision for natural persons causing moral damage in the field of tort, and damage to the environment is not included.

Finally, there is a legislative gap in international space law for civil and commercial disputes arising from private entity companies engaging in commercial activities in outer space. From the viewpoint of dispute subjects, disputes arising from commercial activities of Private Enterprises in outer space are completely controlled by the state, and the right to claim damages is raised by the state, and the liability for compensation is borne by the state. Private Enterprises are not qualified to deal with damage disputes in international space law⁵.

3. TYPES OF LIABILITY IN COMMERCIAL ACTIVITIES IN OUTER SPACE

According to the current space law norms, in international space law, the subject of liability for damage caused by commercial activities in outer space is the state, which then gives rise to state liability. In the domestic space law of each country, some countries give the status of the subject of liability to Private Enterprises, which begin to bear the responsibility for the damage caused by them in the course of commercial activities in outer space.

3.1. State liability

State responsibility refers to the responsibility that a state or an act attributable to a state should bear in the event of a breach of an international obligation⁶. According to the provisions in International Space Law, the responsibility for transboundary damage caused by Private Enterprises engaging in commercial activities in outer space is borne by the state, so the responsibility for damage caused by Private Enterprises engaging in commercial activities in outer space is a kind of state responsibility. Some scholars have divided the state responsibility in space law into two categories, one of which is "state wrongful liability", such like the responsibility arising from the violation of space law treaties by a state. The second is "state liability for damage", i.e., liability for damage caused by unprohibited outer space activities.

(I) State Responsibility for Wrongful Acts

Regardless of the legal system, the breach of obligations under the law will lead to the consequences of liability, and the international legal system is no exception. The Draft Articles on Responsibility for Internationally Wrongful has adopted a dualistic approach to the elements of state's responsibility, which is expressed in terms of whether the conduct is attributable to the state or the state's conducts which are in breaching of international obligation.

State's responsibility for damages caused by commercial activities in outer space is reflected in the specific responsibility of the state for breaches of the obligations established for state parties in the five outer space treaties. Such like the Outer Space Treaties impose an obligation on States to regulate non-State actors within their own States as an obligation of commission. State liability should be incurred when a state fails to meet its corresponding regulatory obligations when Private Enterprises engages in commercial activities in outer space that cause damage.

(II) State Responsibility for Damage

The prevailing opinion holding that State should take the responsibility, because it was supposed to violate international obligations, but the state's act of permitting private entities to engage in commercial activities in outer space does not violate any international obligations, it seems that there is no reason for the state to take responsibility for the damage caused by private entities engaging in commercial activities in outer space, especially when the state has done its regulatory duty according to the constituent elements of international responsibility. While the conduct of private entities conducting commercial activities in outer space is not illegal and does not violate any international obligations. Such reasoning then leads to the result that the benefits resulting from the injurious activity are attributed to the State of origin of the damage, but the consequences of the damage are borne by an innocent third State, which is clearly unconscionable.

Based on the strict liability regime in domestic law, a new form of liability has emerged state liability for damage, such as an international liability for injurious consequences arising from acts not prohibited by international law⁷. This liability regime is an extension and development of the traditional international liability regime. The difference is that the responsibility of a State for a wrongful act presupposes a breach of an international obligation, while the essence of the responsibility of a State for damage is an international obligation⁸.

A breach of state wrongful liability is also a breach of an international obligation, so a breach of state damage liability may have two legal consequences, which might cause state wrongful liability and state damage liability. The nature of the liability of Private Enterprises engaging in commercial activities in outer space in international space law is state liability for damage (international liability for injurious consequences arising out of acts not prohibited by international law)⁹. In the event of damage caused by Private Enterprises engaging in commercial activities in outer space, a state may be liable for both of these forms of liability. Firstly, the state shall bear the state wrongful liability for the failure of its own regulatory obligations, and secondly, the state shall bear the international liability for damages incurred by Private Enterprises in the course of its commercial activities in outer space instead.

3.2. LIABILITY OF PRIVATE ENTITY COMPANIES

With the participation of a large number of Private Enterprises in outer space commercial activities, it is unfair and unreasonable that the state should bear all the responsibilities for the damages incurred in the course of their commercial activities in outer space. This approach is too harsh for the state and may lead to the creation of additional conditions for the state to engage in outer space commercial activities by

Private Enterprises, which is not conducive to the development of outer space commercial activities. Establishing the corresponding civil liability for Private Enterprises can promote the development of commercial activities in outer space.

On the one hand, it is conducive to regulating the behavior of Private Enterprises, which is a favorable factor for maintaining the development of commercial activities in outer space. On the other hand, it is conducive to safeguarding the legitimate rights and interests of the injured party, so that the injured party can claim directly against Private Enterprises, which further protects the legitimate rights and interests of the injured party.

At present, the liability of Private Enterprises in outer space commercial activities is mostly stipulated in domestic laws. However, the domestic legislation of each country is not the same, and there are differences in the purpose and adjustment scope of the legislation of each spacefaring country, and the legislation of each country is aimed to protect the interests of the country. Therefore, the domestic space legislation of each spacefaring country does not have wide applicability. The liability of Private Enterprises should be considered at the international level.

International civil rules adjust legal relations for cross-border disputes between private entities of different countries including civil disputes such as damage and contract disputes. Although civil liability is not currently included in space law, it should still be explored in order to improve the liability rules for commercial activities in outer space. Therefore, it can be analyzed by referring to the relevant regulations in other fields. For example, in the case of transboundary environmental damage, the international community has developed international civil liability rules for transboundary environmental damage that can be uniformly applied in some areas in order to facilitate effective recovery by the injured party of transboundary damage and to coordinate liability for damage¹⁰.

International civil liability is assumed mainly in the form of civil compensation, and civil liability has been applied to many areas of international law, such as in the fields of transboundary pollution, nuclear damage, industrial accident damage, and transboundary movement of hazardous wastes, where civil liability conventions have been concluded. The provisions of the Paris Convention on transboundary pollution reflect the principle of "polluter pays", which is based on the same jurisprudence as the principle of „self-responsibility” in private law.

In the field of space law, the regulation of commercial activities of private entities in outer space should also introduce a form of civil liability, whereby private entities bear their own liability for the damage caused by their commercial activities in outer space.

4. FORMS OF LIABILITY FOR DAMAGE TO COMMERCIAL ACTIVITIES IN OUTER SPACE

The study of the forms of liability for damage is how the liability for damage is distributed among different responsible subjects. Different forms of liability are not juxtaposed, but are mutually inclusive.

Liability for damage can be divided into direct liability and indirect liability depending on whether the injured party is equal to the responsible party. Direct liability and

indirect liability are a symmetrical set of concepts based on the different perspectives of liability. In the French Civil Code, the direct and indirect forms of liability are defined in terms of whether tort liability is borne by the perpetrator or by a responsible person with whom the perpetrator has a specific relationship¹¹. Tort liability is assumed by the perpetrator as direct liability, and tort liability is assumed by the person responsible for a specific relationship with the perpetrator as indirect liability, also known as vicarious liability.

4.1. Direct liability and indirect liability of Private Enterprises

(I) Direct liability of Private Enterprises

Direct liability refers to the civil liability of civil subjects for the consequences of damage caused by their own wrongful infringement. According to the “principle of responsibility”, who caused the damage will be responsible for who is responsible for the damage. Direct liability has the following characteristics: Firstly, the responsibility of the actor is the conduct of their own implementation. Secondly, the conduct of the actor caused the damage. Thirdly, the actor is responsible for the act he or she has committed.

In the case of liability for damage caused by Private Enterprises engaged in commercial activities in outer space, the liability of Private Enterprises is direct liability, which is expressed as the responsibility of Private Enterprises for its own liability for damages caused by contractual breach and tort. It is characterized by “own” responsibility for “own acts”, and the general principles of tort liability apply to direct liability. State responsibility is also a direct responsibility, because it arises from the breach of an international obligation by the State or by an act attributable to the State, for which the State is also responsible.

(II) Indirect responsibility of Private Enterprises

Indirect liability refers to the responsibility of a civil subject who has a specific connection with another person and is legally liable for the acts of that person. In terms of form, indirect liability includes vicarious liability, prior payment liability and supplementary liability. In civil law, liability for the acts of others is typical of indirect liability, for example, the responsible person is not the same person as the injured person. Indirect liability arises on the basis of a special tort, and it happens in the context of outer space commerce is one when the State does not commit the injurious act, instead Private Enterprises commit injurious tort and causes the damage. According to the general tort rules, Private Enterprises should take the responsibility, but the Outer Space Treaty provides for the substitution of liability of the state for Private Enterprises. Therefore, the liability of the state for damages under space law in lieu of Private Enterprises is indirect liability. Indirect liability should be constituted with the following three conditions:

(a) The responsible party has a specific relationship with the acting party

The party responsible for indirect liability should have a specific connection with the injured party, which in civil law can be expressed as affiliation, guardianship, employment, etc. In the field of outer space where the State to which Private Enterprises be-

longs is responsible for its injurious acts, the relationship between the private entity company and the State is one of affiliation.

(b) Indirectly liable party has a specific status

The specific status of the indirectly responsible party means that the responsible party has a dominant position in the relationship with the injured party, and this dominant position is the basis for the responsibility of the responsible party to the injured party. As to the legal relationship in outer space between States and Private Enterprises, States are always prevail to Private Enterprises.

(c) Acting party belongs to a specific situation

In the field of civil law, the responsible party should be liable for the damage only if the actor has specific circumstances. For example, the actor is a member of the responsible party, the actor carries out the instructions of the responsible party, or the actor is under the supervision of the responsible party. While in the field of outer space, the reason why the state is liable for the damage caused by Private Enterprises engaging in commercial activities in outer space is that the state has the obligation to regulate Private Enterprises, so Private Enterprises engaging in commercial activities in outer space are more or less under the control of the state.

4.2. Separate liability and joint liability of Private Enterprises

The forms of liability for sole and joint liability are determined by the nature of the injurious act and the number of aggrieved parties. If there is only one liable party, the form of liability is sole liability. If there is more than one responsible party, the form of liability is joint liability¹². Depending on the nature of the damage, joint liability can be divided into joint and several liability, contributory liability and supplementary liability.

(I) Separate liability of Private Enterprises

State liability for private activities under international space law is separate liability. It is manifested in the form of liability of Private Enterprises for tort damages caused in the course of its commercial activities in outer space, which is borne by the state actor alone, and the state is the sole subject of liability.

(II) Joint liability of Private Enterprises

The trend of commercial activities in outer space is becoming more and more intense, and it is the trend of the development of space law to include Private Enterprises as subjects of liability for damage caused by commercial activities in outer space. However, there is a general consensus in the academic community that outer space has a special geographical nature and Private Enterprises cannot be held responsible for all the damages caused by their commercial activities in outer space, and that the state and Private Enterprises should be jointly liable to the damages, but there is a controversy on how to divide the joint liability. In civil law, joint liability can be divided into joint and several liability, contributory liability, and supplementary liability. The following section discusses the division of liability between Private Enterprises and the state based on the three types of joint liability in civil law.

(a) Joint and Several Liability of Private Enterprises

Joint and several liability in civil law is a form of liability for joint tort, which means that the injured party requests damages from some or all of two or more jointly liable subjects, and the liability is extinguished after any one of them assumes full responsibility for the damages. The subjects of joint and several liability assume a complete liability for external claims between them.

In the field of commercial activities in outer space, joint and several liability means that the state and Private Enterprises are both the subjects of international liability. The liability for damage caused by Private Enterprises in the course of commercial activities in outer space is shared by Private Enterprises and the state together. The injured party has the right to claim full liability from Private Enterprises, the state or against both actors together, and either the state or Private Enterprises is obliged to assume full liability to the injured party. As for the right of internal recovery of the state against Private Enterprises, there is no clear provision in international space law. In practice, States mostly rely on their national laws to provide for this. Although this approach protects the interests of the injured party to the greatest extent possible, it undoubtedly increases the responsibility of the state.

(b) Contributory Liability of Private Enterprises

In the field of civil law, the basic act of contributory liability refers to the tort of a number of people without fault connection, and there is no subjective intentional contact between the actors, and there is no joint intention or joint negligence. Through summarizing different academic views, actually the contributory liability refers to the liability of each responsible entity to bear its own share to the creditor. In the field of civil law, the scope of contributory liability is limited to the damage caused by the actor's own behavior, and it is not responsible for the scope beyond the damage.

Taking into account the specificity of commercial activities in outer space, the share of liability in the field of space law should be that Private Enterprises is liable for the damage caused by Private Enterprises in the process of engaging in commercial activities in outer space, and the state is liable for the fault of its inadequate supervision, and Private Enterprises are liable for the part of the damage caused by it. On the one hand, the state is not liable when the damage caused by Private Enterprises may have nothing to do with the state. On the other hand, when the State assumes a certain share of liability, the injured party has no more right to claim when Private Enterprises is unable to assume its share of liability, which is not conducive to protecting the rights and interests of the injured party.

(c) Supplementary Liability of Private Enterprises

Supplementary liability is a type of joint liability in the civil field. It is a form of liability in which several actors create several liabilities for different reasons on the same content of payment, and when the directly liable person cannot be identified or the property of the directly liable person is insufficient to bear the liability, the supplementary liable person is liable to the creditor to a certain extent. It is supplement to the insufficient assumption of main liability³³. The application of supplementary liability has the following rules:

1. Competing situations of direct liability and supplementary liability

When there is a competition between direct liability and supplementary liability, the direct liability shall take precedence, and the injured party shall first claim damages from the directly liable person, and after the directly liable person has assumed full liability, the liability for damages shall be extinguished and the supplementary liability shall be extinguished. The directly liable party is not entitled to recover from the supplementary liable party.

The specific application in the case of commercial activities in outer space is that after the occurrence of damage in commercial activities in outer space, Private Enterprises should be liable first, and after Private Enterprises take liability, but the liability still insufficient to satisfy the creditor's claim, the state should take the supplementary liability. Supplementary liability is unreasonable in that it increases the liability of Private Enterprises.

2. Right of recovery of the party with supplementary liability

The existence of a right of recovery for supplementary liability is controversial in the field of civil law, and there are two views in the academic world as to whether there is a right of recovery for supplementary liability. One view is that the nature of supplementary liability is a kind of intermediate liability, and the supplementary liable party has the right to recover from the directly liable party. Another view is that the nature of supplementary liability is a final liability, and the supplementary liable person does not have the right to recover from the directly liable person. For the state to assume supplementary liability for damage caused by Private Enterprises engaged in commercial activities in outer space, the state's supplementary liability is final. Private Enterprises is a direct limit of liability and the extent beyond the limit should be borne by the state.

The liability between Private Enterprises and the state cannot be simply divided based on the classification of joint liability in civil law, and the special characteristics of commercial activities in outer space should be fully considered. In order to balance the interests between Private Enterprises and the state, as well as to protect the rights and interests of the injured party, the different characteristics of the three types of joint liability can be taken into account. The author believes that it is most appropriate for the state to assume supplementary liability, but there is a prerequisite for the application of such state supplementary liability, i.e., the state will assume supplementary liability only after Private Enterprises assumes the primary and limited liability.

5. CONSTRUCTION OF LIABILITY RULES FOR COMMERCIAL ACTIVITIES IN OUTER SPACE

In view of the rapid development of commercial activities in outer space, the principle of state liability for private activities in international space law has become an obvious shortcoming in solving the problems of damage disputes in commercial activities, and in response to the development trend of commercial activities in outer space, a dual-track system of state liability and private liability should be established. Considering the interests of various aspects and drawing on the legislation of relevant spacefaring countries. Private Enterprises should bear the primary and limited

liability for the damage, and the state should bear the supplementary liability.

5.1. Establishing the primary liability of Private Enterprises

In practice, there is a growing trend of shifting state liability in public law to civil liability in private law. In other areas of cross-border damages (such as environmental torts), whether caused by private individuals or state-owned enterprises, they are more often treated as private law issues to be dealt with, and disputes between states are avoided as much as possible. Transferring the liability of the state to private law liability and not applying interstate remedial procedures allows the injured person to claim directly against the injurer. Replacing state compensation in public law with compensation between the injured person and the injured person in private law.

However, this approach lacks theoretical and logical certification that liability is determined by many factors, including the amount of damages, the degree of control exercised by the responsible state, the rational behavior of the parties and the relative cost of preventing the damage. Further research is needed on how the allocation of liability between private and public law in the field of outer space can be effectively applied in practice.

(1) Sound Civil Liability

The essence of whether state liability under public law or civil liability under private law applies to private entity companies engaging in commercial activities in outer space is discussed in terms of who should be held responsible for the damage caused by Private Enterprises.

First, there is a view that the liability for damage caused by private entities in their commercial activities in outer space is borne by Private Enterprises according to the principle of self-responsibility. The state does not bear the responsibility arising from Private Enterprises's engagement of committing in commercial activities in outer space, and since the state has very weak control over the acts of Private Enterprises, there is no reasonable basis to hold the state responsible, and the harm caused by the acts of engaging in commercial activities in outer space does not directly involve the state's responsibility, and the state's responsibility is only for the negligence responsibility of preventing the harm arising from commercial activities in outer space.

Second, the view was also expressed that the state is internationally liable for the damage caused by Private Enterprises because the state has a control function over the outer space commercial activities engaged in by Private Enterprises, and private activities which are identified as highly dangerous should be authorized or supervised by the state, so the state is considered to be directly involved in the act of transboundary damage, and the state has placed these private activities under its control through licensing and supervision, and the state should be responsible for the activities under its control¹⁴.

Based on the above analysis and demonstration, the application of civil liability should be considered under private law in terms of the damages caused by Private Enterprises when engaging in commercial activities in outer space.

Firstly, the application of civil liability under private law creates an effective incentive for Private Enterprises to take the best preventive measures to reduce the occurrence of damage.

Secondly, Private Enterprises engage in commercial activities in outer space for the purpose of gaining economic benefits, and they should also bear the corresponding legal consequences. Thirdly, most of the disputes arising from commercial activities in outer space are civil and commercial disputes, and the application of civil liability in private law can better achieve the purpose of protecting the relevant legal interests. Thus many spacefaring countries stipulate domestically that Private Enterprises should bear the main responsibility for the damage caused by their commercial activities in outer space.

(II) Increase of private liability subjects

Private Enterprises should be added to the scope of liability subjects in space law and be held liable for the damage they cause. According to the principle of self-responsibility, Private Enterprises are responsible for their own actions, which is in line with the legal situation and jurisprudence, and makes Private Enterprises more careful about their actions when engaging in commercial activities in outer space. It also avoids the practice of Private Enterprises seeking other countries to launch outer space objects in order to circumvent the strict laws and regulations of their own countries. The state assumes a complementary and regulatory responsibility to fulfill the state's obligation to ensure the safety of outer space activities. Balance between encouraging Private Enterprises to develop outer space activities and protecting the interests of victims¹⁵.

Placing direct liability on Private Enterprises does not preclude state responsibility. In other transboundary areas, treaties on civil liability for transboundary damage provide for their civil liability without prejudice to the rules of state responsibility set forth in international law. In the field of space law, state liability can also coexist with private liability, and the two are not mutually exclusive.

On the one hand, liability for breach of contract or liability for damage in the course of commercial activities in outer space by Private Enterprises is subject to the primary and limited liability of Private Enterprises. Primary and limited liability means that a range and a reasonable proportion are established in advance, and Private Enterprises are firstly liable within the specified range. The state makes up for any shortfall in compensation by Private Enterprises. After all, the financial resources of Private Enterprises are limited, and it is not conducive to the development of commercial activities in outer space to increase the liability of Private Enterprises, so Private Enterprises should be given protection in the legislation as appropriate. For example, the U.S. domestic space legislation provides for a maximum limit of domestic liability and international liability for damage caused by Private Enterprises engaged in commercial activities in outer space. This provision strikes a balance between holding Private Enterprises liable for damages and promoting the development of commercial activities in outer space.

On the other hand, the state assumes state liability for failure to perform or defective performance of regulatory obligations. State liability here refers to the need for the

state to fulfill its regulatory obligations under international space law and the need for the state to comply with the obligations of each state party as set forth in international space law¹⁶. Establishing state liability for damage caused by commercial activities in outer space is conducive to urging states to regulate Private Enterprises' activities in their own countries and to take preventive measures against potential dangers that may occur. Therefore, two types of direct liability both for Private Enterprises and the state may arise from Private Enterprises engaging in commercial activities in outer space.

5.2. Establishment of State Supplementary Liability

The supplementary liability of the state in the field of outer space commercial activities means that Private Enterprise are the first responsible person for the damage caused by engaging in outer space commercial activities, and the state is responsible for the liability beyond the scope of Private Enterprises' undertaking¹⁷. The reasonableness of the state's supplementary liability lies in the fact that, on the one hand, Private Enterprises are licensed by the state to engage in commercial activities in outer space, and the state can generally estimate the risks of the commercial activities engaged in by Private Enterprises and know the financial status of private entity companies.

Moreover, most of the countries have provided insurance systems to avoid damages and mitigate the supplementary liability borne by the state. On the other hand, for the protection of innocent third parties, there is a high possibility that the commercial activities in outer space may cause damage to innocent third parties, and the state assumes supplementary liability to compensate for the damage caused to third parties in a timely and effective manner. Therefore, each country should stipulate the limit of liability for Private Enterprises, and the state should bear the part that the limit of liability for Private Enterprise is insufficient to compensate.

(1) Clarifying the application of state supplementary liability

The existence of state liability as a kind of supplementary liability for damages caused by Private Enterprises engaging in commercial activities in outer space is beneficial to the protection of the rights and interests of the injured party. The damage caused by Private Enterprises engaging in commercial activities in outer space should originally be borne by Private Enterprises and should not be transferred to the state and the society, but because many outer space activities have the characteristic of "low probability of occurrence and high risk of outcome" for human life or property, once unfortunately serious damage is caused, Private Enterprises cannot bear full responsibility with only. However, due to the "low probability, high risk outcome" nature of many outer space activities for human life or property, in case of unfortunate and serious damage, private entities are sometimes unable to assume full responsibility with their private financial resources alone¹⁸.

Civil liability is only a limited measure of protection for the injured party. Therefore, no matter how perfect private law remedies are, they cannot replace the role played by public law liability, and the credibility and economic power of the state cannot be matched by Private Enterprises. By giving some enforceability to the State's obligations for damage caused by commercial activities in outer space, the State can be

encouraged to protect the interests of the injured party by enforcing these obligations at different levels, both internationally and domestically. State's responsibility is imposed not only to fulfil the State's own obligations, but also to fulfil the civil liability or obligations of private entities corporations. The application of state supplementary liability can be discussed as follows.

First of all, there is a prerequisite for the application of supplementary liability, the state is liable only for the shortfall after Private Enterprises have assumed the primary limit of liability for damages. In terms of application, the victim should first claim against Private Enterprises.

Secondly, there is a scope of supplementary joint and several liability, and in the field of commercial activities in outer space, it is recommended that countries divide the share of liability of the private entity company versus the liability of the state according to their national circumstances.

Finally, the supplementary liability of the state does not have the practicality of realizing the right of recovery. The supplementary liability of the state is a supplement to the shortfall after the private entity company assumes direct liability, and the exercise of the right of recovery after the state assumes supplementary liability is not in line with practice under the influence of such practical factors as the private entity company no longer has the ability to repay and the encouragement of the development of commercial activities in outer space.

(II) Reconstructing the scope of the launching state

Although the concept of "launching state" is defined in the Liability Convention, the controversy over the concept of "launching state" still exists¹⁹. It is neither feasible nor fair to require the relevant state to assume the liability arising from the commercial activities of private entities in outer space in any case.

The change in ownership of the outer space object, i.e., the original launching State is no longer the current owner of the outer space object. It is against the jurisprudence to hold the registry state and the launching state jointly liable because the original launching state no longer enjoys the benefits of the object and cannot take measures to reduce the risk of its occurrence, and it is obviously unfair to hold the original launching state liable at this time. The author believes that the concept of "launching state" should be reinterpreted to include Private Enterprises in the scope of liability, as they are liable for damages arising from their commercial activities in outer space according to the principle of self-responsibility. Secondly, the concept of "physical connection" is used as the connection point between the state and Private Enterprises, which the elements of "physical jurisdiction and control" is added. The scope of the launching state will be expanded, and the number of liable parties will be increased to protect the interests of the injured party²⁰.

6. CONCLUSION

The absence of liability rules and the excessive freedom given to actors will lead them to pursue economic benefits without considering the consequences of damage. It is not conducive to the sustainable development and use of outer space.

In improving the legal regulation of space, private entities should be added as subjects of liability and the protection of various legal interests of damage should be considered. A dual system of state liability and private liability should be established, with private companies bearing primary and limited liability for damage and the state bearing supplementary liability. The road to the reform of outer space law regulation is difficult and long, and countries should work together to promote the improvement of dispute resolution mechanisms for outer space commercial activities²¹.

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ABSTRACT:

ENG: The development of commercial activities in outer space is changing rapidly, and the increase of commercial activities will inevitably lead to a variety of disputes. However, the unclear basis of claims for damages caused by Private Enterprises engaging in commercial activities in outer space has caused serious obstacles to the development of commercial activities in outer space, and the rules of liability of Private Enterprises engaging in commercial activities in outer space should be re-examined. Considering the special nature of outer space commercial activities and the influence of various realistic factors, as well as the fact that a single subject of liability does not fully guarantee the rights and interests of the injured party. The liability for damages caused by Private Enterprises engaged in commercial activities in outer space should be shared between the state and Private Enterprises. Private Enterprises should bear the responsibility for direct damages occurring in the course of its commercial activities in outer space, and the state should bear supplementary responsibility for damages caused by Private Enterprises.

KEYWORDS:

ENG: Private Enterprises; commercial activities in outer space; liabilities for damages