

Domestic (National) Public Space Law of the USA. Success and Challenges of our Time

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The author shows the current objective need to approve the principles and specific norms of domestic (national) public space law. The purpose of the article is to prove the expediency of considering the domestic space legislation of the United States, which nowadays consists of ten national laws, to be the comparative basis for the public space law. The author reveals the definition of domestic (national) public space law. The author believes that domestic public space law can successfully resolve the issues of effective and safe use of space by the private sector; the struggle against space debris, the recovery of asteroid or space resources, etc.

Keywords: asteroid, law, space debris, outer space, national public space law, private space companies, satellite

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Introduction

Today, the development of space law and legislation is gaining momentum and becoming more relevant, because after the entry into space of private space companies, international law, which was approved in the middle of the twentieth century, is not able to resolve the challenges facing the world space community. Most private space companies are registered and operate in the USA. Moreover, only the US has such a great number of domestic space laws. The USA reasonably claim the leadership in the field of national space legislation. They practically propose their law-making developments as objective models for comparative borrowing by other states.

One more challenge that is already accepted in the norms of US law is the permit for US citizens to engage in commercial recovery of an asteroid or space resource, which will grant them the right to own, transport, use and dispose of it, in accordance with international obligations of the United States. Also a significant challenge in this area is the necessity of the analysis of the basics of military space law and improvement of legislation on space debris and its utilization.

Based on the concept that modern space law consists of four parts: international public space law, international private space law, domestic (national) public law and domestic (national) private law, let us analyze some definitions.

Domestic (national) public space law is a system of compulsory rules of behavior defined in national high level regulations (laws) which specify and detail the rules of international space law aiming at regulation of public relations between subjects of space administration and persons who render space services, in order to ensure the rights and legitimate interests of space services consumers, public interest of the state and mankind on the whole.

The article pays considerable attention to legal challenges, which face the space sphere of the USA. The core of the study is highlighted regulations concerning successes and shortcomings of the national public space legislation of the United States.

Justification of the need for the development of domestic (national) public space law of the USA

Space law is one of the youngest complex formations of legal matter, which was formed quite recently from historical point of view, namely since the first artificial satellite of Earth entered its orbit. It happened on 4 October 1957. At that moment no state put forward any claims as for the flight of an artificial body over their territory at a considerable height. Thus, the first rule of space law, the instantaneous principle that every sovereign state has the right to launch into outer space any space objects without asking for permission from other countries, was established.

At present space law is experiencing its second heyday. It is connected not only with more modern technologies but mainly with the fact that private business entered the outer space. This challenge is also the leading one as for the formation of the newest space law.

It is impossible to disagree with Harold White, that there are four kinds of law: domestic public, domestic private, international public and international private [White, 2010]. The author has repeatedly emphasized this in his early writings [Halunko, 2019].

Thus, space law consists of: 1) international space law; 2) international private law; 3) domestic (national) public law; and 4) domestic (national) private law. Factors of domestic (national) space public law of the USA will be analyzed and disclosed in the article.

The adoption of international space law began in the 60s of the twentieth century. The development of this law started during the cold war between the first space powers of the USSR and the USA and their allies, which were part of corresponding antagonistic state-political camps: "Western" and Soviet". It was realized on the basis of compromise and mutual benefit. The feature of international public space law of that period was the fact that international space treaties were developed under conditions when space activity was carried out exclusively by state owned companies and at state budget. In practice, the states then had monopoly on the production, launching and transporting into outer space of artificial satellites and astronauts (cosmonauts).

With time the situation in most space powers changed as private space states first carefully, but then widely started running space business. Thus it is necessary to understand that international public space legislation remained unchanged. That is why all hope is for approval of domestic space legislation.

Expanding of the boundaries of international space public law is an objectively complex process. Sovereign states are reluctant to accept new international treaties relating to space

activities, as they give priority to national safety and are reluctant to take any commitments that would limit their capabilities. Accordingly, states tend to oppose the adoption of new international legal regimes or other restrictions that would prohibit them anything. Another problem of international public space law is the fact that the mechanism for monitoring the fulfillment of international agreements is imperfect and difficult to implement. At the same time, the democratic states, as a rule, faithfully fulfill the conditions of international agreements, however non-democratic ones do not. [Blount, 2012].

Thus, despite the objectivity and the need to solve the problems of the research and use of outer space through the expansion of international space law, the probability of this is not great. For example, the international agreement “on activities on Moon and other celestial bodies” of 1984 was not even signed by any leading space power.

Only in cases where the interests of all countries coincide — space powers can reach agreement. However, this is done not by direct (tough) legal regulation, but by soft legal mechanisms of space activities, which aim to bring space parties to the international negotiating table and facilitate inter-state dialogue through more effective mechanisms. One of the main components, where it is possible to realize, is the exchange of information, as near-earth space becomes increasingly congested, which increases the risk of accidents. Sovereign States use space as an essential component of commercial and security infrastructure. In order to avoid banal collisions of satellites, states must have information about artificial satellites and space debris of other states. The sharing of information is equally well established in the international space law regime from the beginning, but it has never been clear how much information should be required for common usage [Blount, 2012].

In order to prevent space conflicts and provide the safety of people on Earth and astronauts on space stations, the space powers have taken the path of developing domestic (national) space legislation. This also refers to the leading space state — the United States. On the contrary, the United States from the very beginning of space exploration carried out this on the basis of high-level legislation — national laws, in contrast to the USSR, which by the time of termination of its existence has not adopted any space law. Some modern leading space powers, such as China, also operate without space laws. Nowadays, in the United States the exploration and use of outer space is carried out on the basis of ten internal space laws, which without any doubt is a record among all space powers. For example, Russia has only two.

Philosophy of the vision of this problem by US scientists is the following: to develop domestic space legislation at such a level of quality, balance and pragmatism that it becomes a model for comparative borrowing by other sovereign states.

So, the USA in the conditions of dynamic development of space technologies, their cheapening, the admission to space activity of the private space companies, without possibility in short term to sign the international space contracts, went on the way of dynamic development of domestic (national) space law which, firstly, has to provide development of the national private space law, secondly, has to become a model for comparative borrowing by other sovereign space powers.

Genesis of legal support of the US space industry

The US space industry has a glorious and one of the world’s longest histories. The United States now ranks first in the world in terms of the number of scientific and space business programs. It launched its first satellite on January 31, 1958, thus becoming the world’s second

power to put an artificial object into earth orbit. In 1961, astronaut Alan Shepard became the first American to fly into space. On February 20, 1962, John Glenn's flight made him the first American to make a full orbital flight around the Earth.

The history of the US space industry has been a territory of success and tragedy. On July 20, 1969 astronaut Neil Armstrong stepped on moon. Six "Apollo" missions were conducted to explore Moon between 1969 and 1972. During the 1960s, unmanned spacecrafts photographed and explored Moon. Since the early 1970s, artificial earth satellites have provided connection and navigation, and space interplanetary spaceships have begun to orbit Mars. In 1977, two "Voyager" spacecrafts were launched with a mission to explore the distant planets of the Solar system, which today have already gone beyond its boundaries. Actually it can be claimed that the "Voyager" spacecrafts are the first artificial objects that, thanks to the mind and will of man, went beyond the Solar system.

In 1981, the glorious and tragic era of Space Shuttle reusability for civilian and military missions began. Over 30 years of exploitation, from 1981 to 2011, five Space Shuttle have made 135 flights including, unfortunately, two terrible accidents in which all crew members were killed [Aerospace, 2019]. Every technology has its time. Despite the fact that the United States was a monopoly in the implementation of real launches of reusable spacecraft, President George Bush ordered NASA to terminate the Space Shuttle program, primarily because of its low profitability [Smith, 2003].

By 1982, the US government has put all civilian and commercial payloads into orbit, and US launch vehicle manufacturers have produced vehicles only under contract to NASA or the Department of defense. Most of the satellites, which they put into orbit, were owned by the United States or foreign government agencies [Canis, 2016].

After the end of flights of reusable space boats with the aim to reduce the cost of the programs of putting cargos and people into space, several American companies began to develop launch vehicles with the help of private funding. At that time, the founder of the space company SpaceX, which is headed by Elon Musk, convincingly proved that this would dramatically reduce the cost of putting small satellites into orbit [Smith, 2003].

As it is now known, he succeeded, although not at the first attempt. In today's conditions, this company already owns not only small and medium-class launch vehicles, but successfully launches medium-and heavy-class missiles with reusable stages of the lower module.

In general the USA plays the leading role in the international space arena. We believe that the basis of current success of US space industry is the orientation to the private sector, when NASA turned from the executor of space programs into their customer. And private space companies on the basis of competition started investing heavily in the development of space technologies. Due to this, the US private space sector is strong and prosperous.

Such success is primarily connected with the pragmatic approach of the US government regarding the investment on the principles of public-private partnership of NASA investments in American private companies according to the law. Many private companies in the US rely on government support in the form of grants or contracts, and the law demonstrates the willingness of the US government to provide ainance to the private space sector.

Government investments, which are given to private space companies through NASA, have become a crucial step in the evolution of commercial space companies. 67 space companies received a total of \$ 7.2 billion in investments from the government between 2000 and 2018. And about 93 percent of those investments went to companies designed to launch rockets. On this list, SpaceX is a Prime example of how early government investments contributed to the

company's success. For example, SpaceX spent \$ 1 billion in its first decade of activity, and nearly half of that money came from NASA government contracts [Grush, 2019].

So, the US space industry is characterized by a glorious and successful history, was built and is being built on the principles of the rule of law, public-private partnership, when NASA, as a representative of the government became the customer and controller of the fulfillment of space services, and private space companies became on the principles of competition successful and effective performers.

Legal challenges facing the US space sector

The US commercial space sector is developing dynamically. It requires new spaceports, the construction of which requires the improvement of domestic legislation, and not so much public as domestic private space law. In the United States today, spaceports are owned by the Federal government and include: the Kennedy science center, Cape Canaveral air force station (both located in Florida) and Vandenberg air force base (in California). The Federal government used these means for its own launches, and also promoted their use for commercial launches. Now the Federal aviation administration (FAA) has received a license to build 10 spaceports in seven States: California, Florida, Texas, Oklahoma, Alaska, Virginia and New Mexico. Additional launch locations are offered in other States. Spaceports are built for a specific manufacturer. Some space companies plan to launch only heavy vertical launch rockets, while others plan to engage in space tourism using cruise launch vehicles.

Regardless of the type of launch vehicles used by space companies, they have a common infrastructure scheme, including access for the delivery of large launch vehicle components; space for the assembling of launch vehicle parts; constructions for receiving and storing fuel and loading it on board the rockets; secure facilities for the storage of cargo, payloads and scientific experiments; workspace for crews, engineers and launch personnel; meteorological equipment for monitoring weather situations prior to the planned launches [Canis, 2016.].

Therefore, the construction of new spaceports is a significant factor in the development of the sphere of launching cargo and people into space, which requires the improvement of national private space law.

The US space launch insurance system is one of the most developed in the world. However, it sometimes fails. This concerns known cases when the accident occurs not during the launch or withdrawal of satellites into earth orbit, but during the preparation of the launch vehicle for launch. Space launches around the world including in the US are risky, statistics prove that three of the 86 commercial launches, that took place in 2015 failed, which destroyed launch vehicles, cargo and spaceports. Taking into account the potential losses, insurance coverage plays an important role in the development of the commercial space industry. World premiums for space insurance in 2015 amounted to more than \$ 700 million, and insurance losses exceeded \$ 600 million in 2014, with major insurers such as American International Group, Munich Re and Allianz competing in the market [Canis, 2016].

Consequently, domestic private space law needs to be improved to ensure reliable insurance of cargo, launch vehicles and spaceport infrastructure in case of an accident or accidental destruction.

A significant factor of engaging up to commercial space and meeting the needs of consumers with a small budget is the sphere of launching of small satellites, in particular for obtaining images of Earth and for Internet networks. Groups of small satellites are called constellations.

Observers say that the demand for information is the driving force for the development and launch of small satellites. Small satellites can be launched as a secondary payload along with the main cargo that is output by the launch vehicle. Accordingly, the cost of the launch may be only a few million dollars. Presently, the demand for launches exceeds the capabilities of space transport companies. This encourages the emergence of new start-ups that hope to succeed in providing broadband, remote images or communications services, such as Firefly space systems in Texas, Ocket Lab in California and OneWeb in Virginia.

Now, small satellites can be launched from aerial launchers: small launch vehicles attached to the wing of a modified aircraft. In particular, the private space company Virgin Galactic, which plans to organize suborbital space flights, believes that this form of satellite launch will significantly reduce the cost of putting small satellites into orbit [Canis, 2016]. However, it is necessary to remember that small satellites are a source of space debris, both in the process of entering earth orbit and as a result of a short period of work. They will appear many of them, and more and more of them will turn from operating small satellites into space debris.

Therefore, a significant factor of domestic space law (both public and private) is the regulation of engaging new space companies into the construction and launch into earth orbit of small satellites and legal mechanisms of preventing their transformation into space debris.

Spacecrafts, ground stations, and some unique components are protected from transfer to undesirable countries by the US export control system. Such equipment is considered to be dual-use items, since even those designed for commercial or civilian purposes, have the potential to be used for the military sector. In the cold war era, these space products were considered munitions. Although after its end (in the 90-ies) there were some diminutions in respect of exports from the United States of dual-use products. However, in 1998, Congress returned regulatory powers to DOS after some satellite designs were unreasonably transferred to China.

At the same time, it should be mentioned that after the return of export control, there was a conflict between the administration of DOS concerning the export control and the manufacturers of space equipment. The satellite industry has claimed that the lengthy licensing process has resulted in a loss of exports, and the aerospace industries Association (AIA) proves that the US share of the global commercial satellite market has declined from 63% before export controls resumed to 30% after it was introduced. Manufacturers of space equipment believe that export control destroys the competitiveness of the United States in the international space market. They propose to weaken export controls, in particular to remove from export control equipment such as diaphragms on electro-optical satellites, which are used for remote sensing of Earth, integrated plasma thrusters, and casing, which is used for construction and infrastructure of space tourism [Canis, 2016].

Therefore, balancing of the effectiveness of export control of space equipment and preventing the reduction of the export potential of American manufacturers of space products are an urgent challenge that must be solved by the domestic public space law of the United States.

Among American experts, there are certain proposals for the reorganization of US military activities in space. Major proposals include: the creation of the Space force, a new branch of the Armed forces under the Secretary of the air Force; the restoration of the US space command; and the creation of the Department of defense space development. The US Department of defense DOD has sked for \$ 14.1 billion for space in 2020. Of this, approximately \$ 72 million will be used for the initial planning of the new space force. Attention is focused on the growing

threat to US national security in space from adversaries, in particular from Russia and China, and to a lesser extent- from North Korea and Iran. These countries are trying to target space systems at the US using stubs, lasers, kinetic guns, and cyberweapon facilities [McInnis & McCall, 2019].

Consequently, objectively in the life of society there is a new plane of human activity — outer space. That led to the fact that next to the triad of warfare on land, in the air and at sea, a new potential element of the conducting of military operations — near space has appeared. This issue requires not only its regulation on the basis of closed (secret) orders of the Ministry of defense, but it is desirable to adopt a framework national law on this issue, where the fundamental principles of military space law are noted.

Today, there are about 2,000 active satellites in earth's near orbit, and that number is increasing. More than 100 governments as well as commercial entities from more than 50 countries control them. In addition, the increase in space activity over the past 60 years has created 23,000 pieces of uncontrolled debris that can damage or destroy a satellite. In addition, tests of anti-satellite weapons by China in 2007 and more recently by India in 2019, have added additional pieces of debris to an already congested space environment [McInnis & McCall, 2019].

Space observers note: firstly, the great danger from orbital debris as an environmental problem; secondly, they perceive space debris as a danger that potentially affects the interests of US national security. This is justified by the fact that space debris is capable of presenting barriers, disabling or even destroying military and reconnaissance satellites. After their collision, more shrapnel will continue to move and cause greater threats. International compliance with mitigation measures is critical. However, many experts believe that mitigation efforts alone are insufficient. For this reason, in their opinion, it is necessary to carry out more effective measures for the removal of space debris from earth's near-earth orbit [Hildreth & Arnold, 2014].

Thus, there is no doubt that the issue of ensuring the prevention of the formation and disposal of existing cosmic garbage should become the leading direction of the national space law of space states, including the United States.

Successes and shortcomings of the US national public space legislation

Unlike the USSR, which was a totalitarian state, and was able to carry out space exploration without national legislation of a high level during its existence until its collapse, the United States is a legal state. Thus, without special laws in any sphere, including in the space industry, it cannot exist. Accordingly, among the space powers, the United States has the most powerful, developed and traditional legislation.

The space law was codified almost immediately after the US launch of the first artificial Earth satellite. It then included the national Aeronautics and space Act of 1958, on the basis of which the National Aeronautics and space administration (NASA) was created for the needs of research and use of civil space [Space law, 2019].

According to which, US space activities should be conducted in such a way as to contribute to the achievement of the following main objectives: increasing of human knowledge about the atmosphere and outer space; improving of the efficiency of the use of space vehicles; development and operation of space vehicles capable of delivering instruments, equipment and living organisms to outer space; conducting scientific researches to achieve potential

benefits; maintaining the role of the United States as a leader in space science and technology; ensuring of US cooperation with other countries on the peaceful uses of outer space; the most efficient use of scientific and engineering resources, with the close cooperation of all interested institutions, to avoid duplication of effort, facilities and equipment [National Aeronautics, 2004]. It was the world's first national space law.

Thus, the United States was the first to open the era of national (domestic) legislation, thereby approving the first norms of national space law. All other space powers followed this path in the future. In other words, we can consider that the first national (domestic) public space law was practically born in the United States in 1958, by the entry into force of the Law on Aeronautics and space.

The complication of business relations in the space sphere objectively led to the further development of the national space legislation of the United States. In 1984, the Law on commercial space launches was adopted. In which it is proved that private space technology programs have reached a significant level of commercial and economic activity and continue to grow. New and innovative equipment, that can provide entrepreneurs with telecommunications and information services, carry out remote sensing of the Earth, appears. The law noted that private companies should have the right to develop and launch satellites and provide appropriate accompanying services. This, together with the development of commercial launch vehicles, would allow the United States to maintain a competitive position at the international level and enhance the economic well-being of citizens. In general, such capabilities will correspond to the interests of national security and U.S. foreign policy with respect to the peaceful use of outer space [H.R.1011, 1984].

Most appropriately, the mission of this law was revealed by former US President Ronald Wilson Reagan, who said that an important area of activity of the administration is to encourage the private sector to commercial use of outer space. In the past, the state authorities overcomplicated this process. This law should overcome obstacles for interested private companies to invest their capital and efforts in space programs [Stone, 2012].

The analyzed law was amended and supplemented in 1988, which were devoted to the settlement of the issue of compensation of expenses to commercial space companies that used outer space for the benefit of citizens and national security of the United States. The 2004 amendments to this law relate to the legislative regulation of ensuring safe flights with people on board spacecrafts [Space law, 2019].

Consequently, the U.S. commercial space launches Act of 1984 became a leading factor of the successful commercial use of outer space for the benefit of US citizens and national security, at the expense of private business, and served to improve the effectiveness of the international peaceful use of outer space.

The Land Remote Sensing Policy Act of 1992 established a more favourable regime than the 1984 law for right-wing business development in relation to the launch and use of artificial satellites for remote sensing of Earth. This was primarily aimed at further development of the government's Landsat program as the most powerful satellite imagery project. This law, in particular, stipulates that the special central executive authority LPM (Landsat management Program), which represents the interests of NASA and the US Department of defense, is obliged to make agreements with private American companies regarding public financing of this program. In addition, it is in this law that the license conditions and procedures for their implementation regarding private space systems for remote sensing of Earth are established [H.R.6133, 1992].

Thus, the Earth remote sensing Act of 1992 divided the functions of licensing and public financing of Earth remote sensing (LPM) and customers (NASA) and performers in this field, represented by private space companies. This provided a positive, both economic and qualitatively higher technological effect. Civil and military customers of information about Earth, both inside the USA and in the partner countries began to receive more qualitative and with lower cost information about Earth.

When it became necessary for the United States to participate in the launch program for the construction and operation of the International space station, there was an urgent need to settle this issue at the level of the law. Such a law called About commercial space activities was adopted in 1998. Its Purpose is the further commercial development of the space industry, primarily manned Astronautics, the regulation of issues on launching into Earth orbit and returning to Earth of spacecrafts with astronauts on board. The key objectives of this law are to ensure the construction and effective operation of the International space station on the principles of free market and competitiveness, reducing of the cost of this project financing by the government [An Act, 1998].

So, when once again in the space industry of the United States there was a need to implement the complex space program — the construction and effective operation of the International space station, the relevant law was adopted with the purpose of legal support for this.

The national Aeronautics and space administration authorization Act of 2005 became a concrete plan for the short and medium term prospective concerning exploration and use of outer space. According to this law, the NASA administrator is obliged to ensure the implementation of new space programs, the continuation of implementation of existing ones, the creation of new astronaut space flight programs, programs for the development of US Aeronautics by 2020, the launch of robotic missions to study the moon and other celestial bodies to deepen the scientific understanding of astronomy, astrophysics and other branches of science related to space; to carry out researches for the needs of land users, research of scientific processes of Sun-Earth relationship, operation and development of new programs based on research artificial earth satellites; support of University research in space science; research of microgravity problems [An Act, 2005].

While implementing these programs, NASA is required to: advise and coordinate with other federal agencies, including the National Council for science and technology; work closely with the private space sector to encourage work of entrepreneurs who wish to develop new means to launch satellites, crews or cargo into outer space. As much as possible to involve other countries in NASA programs. As a separate issue should be noted the obligation imposed on NASA for the program of permanent presence of people on the moon, as well as the approval of the preliminary program of Mars exploration [An Act, 2005].

Thus, the United States as a legal state fixes all stages of research and use of outer space in the national norms of high-level law. Space programme planning is no exception to this rule. The law that revealed the directions and specific activities for the development of the US space industry was The Aeronautics and space administration act of 2005, according to which ambitious goals were put onto the space industry, in particular the return to the moon and Mars exploration.

Similar in name and one that clarified and expanded some aspects of the legal regulation of the exploration and use of outer space became the national Aeronautics and space administration Act of 2008 in which Congress tasked NASA with carrying out many missions

to explore and use outer space, maintaining a balance between space sciences, air and space flights. In addition, NASA should take a leadership role in international earth observations and research to solve key problems related to climate change and its impact on Earth's biosphere system and environmental protection. According to this law, NASA should pay significant attention to manned and robotic exploration of the solar system and beyond it, to ensure in this area the leading role in the international coordination of space research. [An Act, 2008].

It should be noted that the analyzed law of 2008 a bit duplicates areas and activities of the space programs identified in the same named national act of 2005. But it played a positive role in specification of the funding of space programs for the period of fiscal years 2009 and 2010. In addition, it is fairly specified certain measures, both exploration and use of outer space for the benefit of US citizens and the world community.

The next and already such, that can be said traditional became the national act of high — level Law About administration of Aeronautics and space authorization of 2010, which was adopted for financing space programs from 2011 to 2013 years and for other goals on specification of trends and concrete research programs and use of outer space in national similar on name laws of 2005 and 2008.

According to which the US Congress has set the following main tasks for NASA: to continue and expand research in the space regions closest to Earth, observing the balance between ensuring the solution of scientific, commercial and national security problems of the USA; to motivate and accelerate the development of technologies and production opportunities for wide application to achieve the economic well-being of the USA; to retain the leadership of the USA in space exploration and related activities; to ensure return on investment and enhance the safety of the ISS operation, to get rid of Russia's monopoly on the means of delivery of crews and cargo to the ISS; to develop additional and alternative transport capabilities for the launch of artificial satellites into low earth orbit; to create a national space and export control system that would protect the national security of the United States and at the same time allow the United States and its aerospace industry to conduct joint programs in the field of space science and technology to compete effectively in the world market [An Act, 2010].

Despite the fact that the commercial space competitiveness act of 2015 was another regulatory act of the US Senate, dedicated to the regulation of commercial space, however, due to the improving conditions and open opportunities for American private companies, it should be considered as a new qualitative step in the legal use of outer space by private space companies. Including the granting of ownership rights to American companies that will extract resources from asteroids [An Act, 2015]. This law, among other things, adopts provisions relating to mining operations on celestial bodies, including the moon and asteroids. According to this law, the President is tasked, through Federal agencies, to promote commercial exploration and commercial recovery of space resources by US citizens on space natural bodies [Smith, 2018].

The most recent national law on Aeronautics and space administration was adopted in 2017. This law comprehensively regulates the creation of an enabling environment for the more intensive development of the commercial space industry by encouraging private sector investment and creating a more stable and predictable regulatory environment for this activity [An Act, 2017].

We find Chapter 513 of this law, devoted to commercial research and extraction (use) of natural space resources from outer space, interesting. In this chapter the categorical apparatus

is spelled out, namely: it is determined that an asteroid resource means a space resource found on or within one asteroid. Moreover, it is written that the space resource is an abiotic (inanimate) resource that is located in outer space. According to the fair opinion of scientists and US legislators, space resources are divided into water and minerals [An Act, 2017].

We pay special attention to the categorical definition of the understanding of ownership rights for asteroid and other space resources. In the national Aeronautics and space authorization administration Act of 2017, it is prescribed that a US citizen who is engaged in commercial recovery of an asteroid or space resource according to the analyzed Chapter has the right for any asteroid or space resource, including the right to own, transport, use and selling of an asteroid resource or a space resource obtained in accordance with applicable law, including international obligations of the United States [An Act, 2017].

So, the United States as a legal space power from the very beginning of the exploration and use of outer space has relied on high-level regulations — national laws. The next feature of the development of the national (domestic) public space law of the United States is that the national space laws from the very beginning of space exploration stimulated the attraction of private investment and private companies to space activities. In the latest Aeronautics and space authorization administration Act 2017 in practice, the right of US citizens, who are engaged in the development of asteroids and space resources, to own, to use and dispose the extracted useful resources from them was secured.

Organizational and legal support of the us space sector

Organizational and legal support of the space industry is carried out by both the legislative and Executive authorities of the United States. Federal laws are passed by the US Congress. But the leading role in the organizational support of the exploration and use of outer space is played by NASA, which carries out the overall management, planning, administration and coordination of all activities in these areas.

The NASA office is headed by an administrator who is accountable to the President of the United States for all aspects of the Agency's activities, including the creation and formulation of strategic priorities, ensuring the successful implementation of space policy and the effectiveness of programs. The administrator performs all necessary functions to administer NASA operations in accordance with the law. He has the legal status of senior adviser on space Sciences of the President of the United States. The administrator has in subordination the deputy, associate administrator, chief of staff, etc. [Subject, 2010].

In addition to NASA, the public administration of space activities is provided by federal agencies, which are entrusted with a variety of regulatory functions. The most important federal agencies are: the FAA's Office of Commercial Space Transportation, whose mission is to protect the public, property, national security, and foreign policy interests of the United States during commercial space launches, and to encourage and facilitate commercial space transportation [Office, 2019].

The Department of Commerce (DoC) is responsible for promoting US commercial interests in both domestic and international markets. In particular, it is engaged in supporting space activities to ensure economic growth, development and competitiveness of the United States in the world market [Department, 2019].

The national oceanic and atmospheric administration (NOAA) uses commercial imaging satellites to improve weather forecasting and environmental data collection. The Bureau of

industry and security (DOC) oversees the export and licensing of strategic technologies, including nearly seventy items of space equipment industry components. The Federal communications Commission licenses commercial satellite radio frequencies and determines the placement of satellites in geostationary orbit.

At the same time, it should be mentioned that according to American scientists, the current structure of public administration of the space industry may require changes over time if the commercial space industry grows. Private space firms can take more responsibility for launching of government satellites (including military satellites), offering space flights to tourists, mining asteroids and the moon, and attempting to explore and even populate Mars [Blount, 2012].

Consequently, the legal support of the space industry is carried out by the US Congress, which adopts federal laws to regulate this sphere. The main organizational burden for the planning, administration and coordination of all activities in the exploration and use of outer space is laid on NASA. Which is assisted in this activity by such public administration entities as the Office of commercial space transport, the Department of Commerce, the National oceanic and atmospheric administration, the Bureau of industry and security, the Federal communications Commission, etc.

Conclusion

The article reveals the scientific understanding of the domestic public space law based on the analysis of national laws and practical activities of the US public administration. In the process of research, specific measures were formed that can be solved by the current national space law of the United States in favour of citizens and humanity as a whole. The directions of improvement of the domestic public space legislation of the USA were offered. However, in one article it is impossible to disclose all the issues, so such important topics as the problem of legal resolution of the conflict between the United States and other space powers in the first place with China concerning counteraction to proliferation of space debris, the legal aspects of the destruction by states of their satellites and the building of a foundation for military space law — will be disclosed in subsequent publications.

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