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Legal and Organizational-Technical Assurances of Aviation Security

Правові та організаційно-технічні гарантії забезпечення безпеки на авіаційному транспорті

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Abstract

The purpose of this article is to: 1) determine the essence of the conceptual categories related to the assurances of aviation security; 2) establish the state of regulation of aviation security; 3) formulate proposals and recommendations to improve this sphere of activity. Preparing the article a systematic approach was used as a general scientific method, and such methods of scientific knowledge as dialectical, logical-symmetric, system-functional, method of documentary analysis and analytical one were used. The legal and organizational-technical assurances of aviation security are characterized. The author definitions of "aviation security", "aviation vehicle safety", "organizational-technical assurances of security" and "legal security assurances". Modern methods and means of proper compliance with the main components of aviation security in Ukraine and in the world are analyzed. The directions to improve the organizational-technical assurances of aviation security are determined. The most dangerous, according to the author, aviation threats have been identified, perspective directions to overcome them have been suggested. According to the results of the research, the following basic principles of the organization of work on flight safety management, which are aimed at ensuring of aviation security, are identified: systematic;

Анотація

Метою даної статті є: 1) визначення сутності понятійних категорій, що пов'язані із забезпеченням гарантій безпеки на авіаційному транспорті; 2) встановлення стану нормативного регулювання безпеки на авіаційному транспорті; 3) формулювання пропозицій та рекомендацій щодо покращень даної сфери діяльності. При підготовці статті в якості загальнонаукового методу використано системний підхід, а також застосовано такі методи наукового пізнання, як: діалектичний, логіко-симетричний, системно-функціональний, метод документального аналізу та аналітичний метод. Охарактеризовано правові та організаційно-технічні гарантії забезпечення безпеки на авіаційному транспорті. Запропоновано авторське визначення поняття «авіаційна безпека», «безпека авіаційного транспортного засобу», «організаційно-технічні гарантії безпеки» та «правове забезпечення гарантій безпеки». Проаналізовано сучасні методи та засоби належного дотримання основних компонентів авіаційної безпеки в Україні й світі. Визначено напрямки удосконалення організаційно-технічних гарантій забезпечення безпеки на авіаційному транспорті. Встановлено найбільш небезпечні, на думку автора, загрози на авіаційному транспорті, запропоновано перспективні напрямки їх

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proaction; collectivism; awareness; identifying and eliminating causes; adequacy; responsibility.

Key words: aviation security, air transport, assurances of security, legal support, actual threats, air carrier, organizational support, technical support.

Introduction

Recently, both in the Ukrainian and in the world society, the attention to the state of public safety, the security of each of its individual representatives, state sovereignty and borders in general has increased significantly. Significant changes have taken place in the system of state regulation of civil aviation activity, as well as in the structure of management of both the civil aviation industry as a whole and certain aviation entities, which reduced the effectiveness of State oversight of their activity. After the transition to market relations, about 100 airlines of different forms of ownership were formed in Ukraine.

Taking into account the increasing impact of social networks and the media on the social, political, economic and personal views of citizens, as well as increasing globalization and the instant dissemination of information, it is worth noting the increased level of concern of the population about their personal security and the safety of their loved ones. Of course, this without any exception concerns the assurances of aviation security. However, it is known that previously, so close attention of citizens to public safety issues, in particular in the field of air transportation did not exist.

Thus, as a result of increasing public attention to threats of modern aviation security, not all countries in the world have been able to adapt to new standards of day-to-day functioning to meet new challenges and threats in a timely and qualitative manner. Of course, the direct impact on the growth of the audience of people who are actively interested in the issues of safe movement, has ensured the rapid development of the tourism industry worldwide, as well as the increased number of tourist trips by air.

Problems that significantly complicate the normal functioning of the modern sphere of air

подолання. За результатами проведеного дослідження виділені такі основні принципи організації роботи з управління безпекою польотів, які спрямовані на забезпечення безпеки на авіаційному транспорті, як: системність; випередження; колективізм; інформованість; виявлення та усунення причин; адекватність; відповідальність.

Ключові слова: авіаційна безпека, повітряний транспорт, гарантії безпеки, правове забезпечення, актуальні загрози, авіаперевізник, організаційне забезпечення, технічне забезпечення.

transportation, and thus represent a serious threat to global aviation security over the past decades, include such a well-known phenomenon as terrorism.

In addition, it should be noted that from 1998 to 2007 there were 16 accidents, 31 crashes and 76 serious incidents in the field of civil aviation. As a result of the Yak-42 crash at the airport of Thessaloniki (Greece), 74 people died, Yak-42 at the airport of Trabzon (Turkey) - 75 people, An-140 at the airport of Isfahan (Iran) - 48 people. Three accidents of Il-76 and Il-78 transport aircraft have happened.

In view of the above, the purpose of this research was to study comprehensively the issues related to the current state of legal and organizational-technical assurances of aviation security. To this end, the authors analyze the theoretical and practical problematic aspects of legal regulation relating to aviation security. This made it possible to identify inaccuracies, conflicts and legislative gaps in aviation security issues, on the basis of which proposals and recommendations were formed to improve the legal provisions and their enforcement practices pertaining to the subject matter under investigation.

Theoretical framework

In the view of importance of those issues that relate in one way or another to the sphere of aviation security and its proper provision, we can now state that we have a lot of scientific works and researches, the point of which was aimed at a more detailed study of organizational-technical aviation security issues. Of course, except in cases where the purpose of the study is to establish historical information about the functioning of aviation safety rules and standards

in the past, the use of modern sources is still most appropriate.

The analysis of various issues related to the legal and organizational-technical assurances of aviation security is of significant interest both to modern legal science and practice, as this sphere of legal relations significantly influences the image of each country. This is explained by the fact that the ability of the state to protect its airspace is as important as the ability to protect the state borders from unlawful encroachment. Moreover, in the context of the constant growth of transnational crime, this issue is not only national but also an international one.

Among the scientific works dedicated to aviation security, the works of such scientists as T. R. Atamanchuk (2017), V. M. Beschastnyi (2010), A. Bychkov (2008), N. V. Daraganova (2009), I. M. Klusnikov, A. V. Linkov, A. D. Ozuncer, L. J. P. Speijker, J. A. A. M. Stoop, R. Curran (2011), A. O. Sobakar (2011), L. Speijker, X. Lee, Van de Leijgraaf R. (2011), Ye. O. Yatsunskyi (2016), Y. K. Yeryashov (2011) and others should be mentioned.

However, flight safety issues remained and will remain relevant as long as aircraft of various purposes are used, including civil aviation aircraft. Constant improvement of aircraft construction, methods and techniques of their operation, training of crews, problems of airworthiness, survivability of aircraft, and air traffic safety are constantly being reviewed by representatives of operating enterprises and scientific institutions. These processes acutely indicate the problem of the lack of new ways of managing flight safety processes, identifying threats and relevant sources of danger of air transportation, and then continue to become more and more important (Linkov, Karmyzov, 2006; Sobakar, 2011).

Methodology

Nowadays, any research should be based on the use of appropriate scientific methods, the application of which makes it possible to achieve the purpose, to justify the conclusions scientifically, and to propose appropriate ways to solve the problem under study. The methodological basis of this article was the general scientific and special methods of scientific knowledge. Also, writing the article scientific works regarding the issue under the study, as well as the provisions of legal acts were used.

A systematic approach was used as a general scientific method, which provided an opportunity to identify problematic issues regarding the legal and organizational-technical assurances of aviation security.

In addition, the following methods of scientific knowledge were used:

- *the dialectical and logical-symmetric methods* were used analyzing the conceptual apparatus, in particular, determining the essence of such legal definitions as "aviation security", "aviation vehicle safety", "organizational-technical security assurances" and "legal assurances of security". The application of these methods is absolutely necessary, since determining the legal and the organizational-technical assurances of aviation security is impossible without an analysis of the fundamental terms;
- *the system-functional method* of scientific knowledge made it possible to investigate the effectiveness of the legal provision of assurances of aviation security. This issue is quite important and urgent, since the efficiency of the operation of the aviation security system is impossible without its proper, first and foremost, legal support;
- *the method of documentary analysis* and the analytical method were used during the scientific substantiation of theoretical conclusions, in particular, the authors came to a conclusion, the solution of the existing problems in the sphere of aviation security is possible only through comprehensive and multilateral research.

All of these methods are applied in interdependence and interconnection.

Results and discussion

The flight safety of small aircrafts depends on various factors, in particular the existing system of state regulation of civil aviation activity may not take into account the peculiarities of their creation and use, increasing the range of legal entities and individuals involved in their creation and use, increasing the range of use of these aircrafts, the appearance of new classes and categories of aircrafts, etc. Lack of sufficient control leads to the creation and use of aircrafts without official permission, which would set the requirements for flight safety of these aircrafts (Atamanchuk, 2017).

The problem of legal and organizational management is of great theoretical and practical importance for any sphere of the social society. The status of the governing body of such an area of public life as civil aviation depends on the level of the legal and regulatory instrument the importance of the state body in the mechanism of executive power depends. A historical and legal study of the formation of the legal status of a government body in the sphere of civil aviation indicates (based on the number and legal force of acts that influenced and influence its formation) the importance for social production of such sphere as civil aviation (Yeryashov, p. 5, 8). Some regulatory documents relating to aviation will be listed below.

Nowadays, the proper safety of civil aircrafts is one of the most important tasks facing the civil aviation industry. It is well known that issues related to flight safety are close to the issues of protecting the most important value in the rule of law and democracy countries, namely human rights to life and health. Considering recent trends in mass civil aviation (such as widespread commissioning of aircrafts equipped with the newest autopilot systems and automatic correlation of the process of aircraft withdrawal from a hazardous situation), it can be emphasized that the air transport industry has received new problems and dangers which need to be solved. It follows that despite the great scientific and technological progress in aviation industry, new improvements and discoveries have both positive and negative sides (Analysis of the flight safety level, 2010).

The major problems, which have arisen in the aviation industry in recent years, were the following: the emergence of a large number of high-tech means and systems on the aviation market. For example, most aircrafts made over the last 5-10 years are equipped with a large number of modern systems which goal is a direct and indirect influence on the course and behavior of the aircraft while flying. These modern systems, made by the best specialists of leading aviation concerns of developed countries, although aimed at creating more comfortable conditions for pilots of the aircraft by facilitating his work due to the automatic "escape" from some dangerous situations, but they also have a number of real and potential threats and dangers. In these cases, it is about very dangerous for the life of the passengers of the plane, as well as its crew threats, which are related to the partial imperfection of the latest high-tech systems, as well as their relative weakness in the face of hacker attacks by criminals and low level of

protection against means of electronic manipulations. In addition, it should be emphasized that along with the rapid improvement of the high-tech component of the aviation industry, the means of committing crimes against the basics of flight safety have also been improved (Regulation on aviation safety management system, 2005).

Therefore, it can be stated that in our time it is possible to observe both the powerful growth of opportunities both for committing various kinds of crimes (including terrorist acts), and for counteracting them from the security services of different states and airport security. Therefore, it should be emphasized that the success in the fight against aviation security crimes is won by those law enforcement agencies that are able to be ahead of the plans and technical capabilities of potential criminals regarding infringing on citizens' rights protected by law. And according to the statistics from reputable and independent sources, law enforcement agencies of such countries as the United States, Israel, Japan, South Korea, and some countries in Western Europe, such as the United Kingdom and France, take effective action against threats to the civil aviation sector (Beschastnyi, 2010).

The 1944 Convention on International Civil Aviation stated that the Governments of the signatory States had agreed on certain principles and arrangements in order that international civil aviation may be developed in a safe and orderly manner.

Regarding the regulation of aviation security, the following requirements of the said Convention should be stated:

- States, establishing rules for their own aircrafts, are obliged to take their safety into account (Article 46);
- in order to ensure flight safety, aircrafts must be required to follow the proposed routes or obtain a special authorization for flights (Article 5);
- air navigation facilities are provided for the purpose of safety and efficiency of air services (Article 15);
- the flight of unmanned aircrafts must be controlled so that there is no danger to civil aircrafts.

As I. M. Kliushnykov, A. G. Yerylkin, V. M. Petrov noted (2015, p. 30), the main components of the system of joint flight safety of unmanned and the manned aircrafts in a single airspace are the regulatory documents, ground

detection and warning of flights of manned and unmanned aircrafts, training system for unmanned aircrafts operators. However, at present, even in the leading countries of the world, no such integrated system has been created. The main international instrument governing the use of unmanned aircrafts in the single airspace of the countries of the world is the circular Cir 328 AN/190 of the International Civil Aviation Organization (ICAO) "Unmanned Aviation Systems" of 15.11.2012. Its requirements are mandatory for anyone using the single airspace. Cir 328 AN/190 stipulates that Unmanned aircrafts are definitely aircraft, so the existing provisions of the Convention on International Civil Aviation, also known as the Chicago Convention are applied to them.

Accordingly, a further challenge is the fact that regulations and standards for civil use of Unmanned Aircraft Systems (UAS) are still under further development. Therefore, it is not yet possible to develop a very detailed concept of operation, and identification of the hazards and causes will – for the moment - have to stay at a relatively high level. Consequently, some general assumptions are to be made regarding the UAS itself and its operation. It is clear that it has to be shown that the current safety level does not decrease (Ozuncer et al., 2011, p. 5). The overall objective is to develop a Unmanned Aircraft Systems (UAS) Safety Risk Management (SRM) framework, supporting regulators and applicants through provision of detailed guidelines for each SRM step to be conducted, including 1) system description, 2) hazard identification, 3) risk analysis, 4) risk assessment, 5) risk treatment. The purpose is that all potential risks of the newly proposed UAS operations are controlled so that the existing safety level does not decrease (Speijker, Lee, Leijgraaf, 2011).

We fully agree with Y. O. Yatsunskyi (2016, p. 97) who stated that the issue of civilian use of unmanned aircrafts today is of acute and urgent importance. This is due to the increase of monitoring areas and the number of civilian objects requiring rapid verification. At the same time, existing means of monitoring do not satisfy consumers of information on certain important indicators, in particular, aviation systems - on economic indicators.

In addition, experts in the area of the organization and ensuring of an adequate level of aviation security note that the reasons for the success of the above countries are several factors. First, all of the countries listed above have leading positions in the rankings on the level of

democracy, economic well-being, quality of education, amount of research spending, quality of life, and the real rule of law. Therefore, these countries can spend much more money on their security (including law enforcement) than any other states. Accordingly, the high level of monetary expenditures on security and defense, combined with the active improvement and use of the latest scientific and technological means in their activity, put the above countries on the top levels not only in the economy and scientific research, but also in the security sector.

Other factors that distinguish these leaders from other countries are their significant experience in countering terrorist threats. It is about that the above-mentioned states experienced a lot of attempts to commit terrorist acts against them, which have been successfully stopped by the law enforcement agencies of these countries, including anti-terrorist units. In this context, the successful release of hostages seized by terrorists at Entebbe Airport in 1976 by Israeli Special Forces Sayeret Matkal or the release of aircraft hostages in a similar situation by the French Special Unit GIGN should be mentioned (Bychkov, 2008).

In addition to the experience of organizing the safe aviation industry, by countering the ever-present threats, there is another component to the success of the above countries. Namely, it consists in the existence of powerful legislative support in these countries, on the norms of which the activity of law enforcement units of the developed countries is based, as well as that they have a clearly set out national and global strategy for combating all crimes against the normal functioning of the aviation industry. Such components are indispensable to support defense capability of Ukraine, and especially in times of opposition to the pro-Russian terrorist groups of the LNR and the DPR. Therefore, in the current socio-political realities, the implementation of a national strategy to counter threats to domestic and world aviation security in Ukraine will certainly face some difficulties. In particular, in order to adopt a similar, large-scale and well-coordinated plan-strategy, it is necessary to ensure its support in the Ukrainian parliament.

Among the first attempts by representatives of the state authorities of independent Ukraine to create and introduce a specific strategy within the country, which will be methods and ways of properly observing the safety and security standards of domestic and world civil aviation, one can name Resolution of the Cabinet of Ministers of Ukraine "On Approving Temporary

Control Rules to Ensure security of civil aviation” of 02.08.1995, No. 592. This legal and regulatory instrument regulated the main part of public legal relations connected with the ensure comprehensive of aviation safety standards until it expires in 2019.

In March 2009, the Government of our country approved the Concept of the State target program for flight safety for the period up to 2015. The adoption of this normative document was based on the fact that safety of flights is a priority of aviation transport activity and an integral component of national security. Civil aviation is actively promoting its products at the market of international carriage of passengers, cargo and other aviation services. According to the Convention on International Civil Aviation, Ukraine, as a member of the International Civil Aviation Organization (ICAO), must adhere to the standards established by this organization, according to which each ICAO member country is obliged to develop and implement a national flight safety program and aviation entities - implement a flight safety management system.

As noted in the said Concept, the Flight Safety Management System is a set of measures to apply a unified approach to Flight Safety Management, which involves optimizing of the organizational structure, sharing responsibilities between public authorities and aviation entities, defining policies and operational procedures regarding ensuring flight safety. Flight safety management is based on a systematic approach to identifying and eliminating sources of danger and carrying out a control of risks to ensure flight safety in order to minimize human losses, material, financial, environmental and social damage.

At the legislative level, such concepts as “aviation security” and “flight safety” were formally defined with the adoption of the Ukrainian Air Code (2011), in particular: aviation security is the protection of civil aviation against acts of unlawful interference provided by a set of measures with involvement of human and material resources (paragraph 2 of Part 1 of Article 1 of the Code); flight safety is a condition in which the risk of injury or damage is limited to an acceptable level (paragraph 21 of Part 1 of Article 1 of the Code).

It should be noted that a somewhat different concept of flight safety is contained in the Aviation Transport Security Regulation (2005). Thus, it states that flight safety is a complex characteristic of air transport and aviation

activity that determines the ability to fly without endangering the life and health of people.

As we can see, in the Air Code of Ukraine (2001) flight safety is determined by the state and in Regulation (2005) by the complex characteristic of activity. However, it should be borne in mind that flight safety must necessarily be provided with the appropriate legal requirements, which should be laid down in regulations and reflect the necessary rules, guidelines, instructions, etc., the implementation of which ensures the ability to fly without threat to life and health. In addition, we believe that an integral part of flight safety is the management of aviation safety, which involves the preparation, adoption and implementation of management decisions regarding carrying out of organizational, technical and other measures aimed at ensuring safety, protection of human health and the environment.

According to the research, A. O. Sobakar (2011, p. 936) proposed to understand the safety of flights on aviation transport as a state of security of elements (subjects) of the aviation transport system acting to meet the needs of the society in aviation works and transportation, which provides timely detection, prevention and neutralization of real and potential threats to flight safety, and in their presence or occurrence eliminates the possibility of their damage.

Continuing our study, let us pay attention to the Law of Ukraine “The State Security Program for Civil Aviation” (21 March, 2017), which tasks were a combination of all known at that time, generally accepted rules of maintaining good order and safety at aircrafts and at airports, in the norms of one strategy.

However, despite the importance of “taking the first steps” in the field of aviation security, which consisted of adopting the above legal acts, it was only the beginning of the fight against current challenges and threats. First of all, special attention should be paid to the fact that the mentioned legal acts, although they had some positive changes in the sphere of organization and ensuring of safety standards, however, their content is far from perfect. In particular, the resolution mentioned above has lost its force recently, because, firstly, it was of a temporary nature, which means that sooner or later it should be replaced by a more perfect legal act, and secondly, it was based on partially outdated principles and standards.

It should be emphasized that the above legal acts, as well as any other legal acts, have been adopted at some time, and in their legal regulations reflect only those social realities (including threats, challenges, state of technology) that took place at the time of their adoption. And this in turn means that with the inevitable and one hundred percent emergence of new tools, methods and technologies, concerning which usually new legal relationships will emerge, past legal acts will be unable to exert their regulatory influence on newly created legal relations, and therefore they are no longer will be able to cover, by their own rules, the full spectrum of that sphere of public relations which they were intended to cover.

Almost the only means of gradually losing relevance by normative legal acts, that is, their "obsolescence", should be considered the procedure of adopting new, more advanced legal acts to replace old ones, which are no longer able to fully regulate legal relations in a particular field (in our case, it is a field of ensuring and organization of aviation security). Ideally, the processes of adjusting of current legislation governing a particular legal relationship should be systematic. This is due to the rapid development of the modern high-tech sector, through which almost always new and increasingly sophisticated systems and technical devices are emerging, creating a new impact on the safety of air transport studied in this article, and therefore creating new ones not covered by the old legal act, legal relations.

Thus, it is stated that in order to maintain the effective and inclusive functioning of the national system of legislation in the state, legal acts must either be replaced by new ones, or old acts of legislation must be amended in due time. In addition, the content of the amendments, or the content of a new legal act, must include recent social trends at the time of the adoption of these amendments or acts. This is how the legislature is exercised in the most powerful, developed and democratic countries in the world (the USA, Canada, EU member states) (Daraganova, 2009).

Conclusions

The concept of "aviation security", although interpreted as a state in which there is no or almost no danger, or the threat of danger to individuals and aircrafts, as well as related to them material and technical equipment during the flight, staying in the airport area, etc., but does not reflect: first, all available threats; second, measures and methods of counteracting

them. For example, examining the issue of legal assurances of aviation security, it can be established that any legal regulation, as far as it is perfect and up-to-date, would still not be able to prevent the danger for entities, in any way related with aviation. That is why, summarizing all of the above in this article, and forming it into a coherent final conclusion, it should be noted that the solution of the current aviation security problems can only be complex and multilateral. This study gives us an opportunity to distinguish the following basic principles of the organization of work on flight safety management, which are aimed at ensuring of aviation security: systematic - involves activities that should be systematic, continuous and orderly in nature, covering all elements of the system; being ahead - involves activities that are proactive, aimed at timely identification and elimination of negative factors that can lead to aviation events; collectivism – includes the involvement of all employees of the enterprise into the security work in accordance with their functional responsibilities; awareness - involves an activity based on the maximum awareness of every employee about the dangerous factors; identifying and eliminating of causes - involves carrying out preventive work aimed at eliminating identified deficiencies; adequacy - the compliance of security measures with real and potential threats; responsibility – includes the awareness of each employee of his responsibility for specific issues that determine aviation security.

In addition, the legislative regulation of the use of unmanned aviation systems is a very relevant and important issue for Ukraine today, as developed countries of the European Union have already introduced guidelines and rules for their use.

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