

ПОВІТРЯНЕ, КОСМІЧНЕ, ЕКОЛОГІЧНЕ ПРАВО

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LEGAL PRINCIPLES OF ENSURING MENTAL STABILITY OF AIRCREWS OF CIVIL AIRCRAFT

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*The article is aimed at a comprehensive legal analysis of the existing system of means of ensuring mental stability of civilian aircraft crews during the flight mission, determining the measure of influence of institutional instruments on the state of training of crews for the flight task and psychological stability in stressful situations. **Methods of research:** during the work, the main scientific methods of system analysis, formal logic and the method of classifications were used. The system analysis method is used accordingly to determine the current state of legislation in the field of ensuring the psychological stability of civilian aircraft crews. The method of formal logic made it possible to determine scientific views on the categories of legal elements of regulation and admission to the flight mission of civilian aircraft crews. The classification method made it possible to determine ways to further improve institutional techniques regarding the impact on the regulation of mental and psychological stability of civilian aircraft crews. **Results:** the study of the issue of psychological stability of civilian aircrew allows to determine the ways and methods of minimizing the impact of negative factors and risks of the flight task process on the security status of the flight process participants. The results of the study, outlined in this scientific article, allow you to determine further steps in the study of the problems of the legal aspects of the formation and control of psychological stability of civilian aircraft crews. **Discussion:** the problems of mental stability of civilian aircraft crews are applied from the point of view of the development of air law.*

Key words: mental stability; mode; danger; airspace.

Setting the problem and its relevance. The problem of ensuring the mental stability of civilian aircraft crews is part of the legal sphere of air safety.

The problem of mental states has attracted attention for centuries. The role of states in life was noted by scientists of antiquity (Aristotle, Avicenna and others.). The issue of the need to prevent adverse emotional conditions in the XXI century was especially acute.

The scientific and technical revolution, along with the great progressive transformations in society, gave rise to a number of phenomena that led to

an increase in mental stress. This is an acceleration of the pace of life, and a significant increase in the intensity of mental labor, and the associated hypodynamics, explosion of information, urbanization, an environmental problem that has worsened, an unprecedented increase in the number of traffic accidents, an increase in the number of natural disasters, etc. To this should be added the impact of the consequences of world and local wars and an increase in the military threat to the world. As a result, the importance of finding ways to optimize a person's mental state has increased much.

Nowadays (especially thanks to the research of G. Selje), a huge number of works (tens of thousands) on stress have appeared, most of which are aimed at studying the physiological and mental components of mental tension. The problem of stress took one of the leading places in many applied fields of psychology, studying human vital activity in extreme conditions (medical, engineering, military, aviation, space, sports psychology, psychology of art, etc.).

However, despite the number of studies on this problem, the mental mechanisms of emotional stress remain poorly understood. This negatively affects the identification of patterns of mental state management, which, in turn, does not allow practice psychologists to achieve effective results in work. For example, in sports at competitions of highly qualified athletes, there are often cases of disruption of activity due to mental tension.

Professional activity of the pilot is a complex system of intellectual actions. The greatest role is played by such mental processes as observation, control, assessment of the situation. The pilot is characterized by activities in conditions of time deficit and strong emotional tension. The pilot must constantly maintain high vigilance, the ability to get involved in solving unexpectedly difficult tasks. The pilot absolutely needs sharp vision and hearing, a well-developed volumetric collar, impeccable health, resistance to the vestibular apparatus, the ability to quickly switch attention, resistance to monotonous actions, high emotional-volitional resistance, the fastest reaction to both simple and complex incentives.

Analysis of recent research and publications. Today, the scientific and practical expediency of systematization and substantiation of theoretical and methodical principles of studying the problem of mental stability of civilian aircraft crews is increasingly realized. In the dissertations of Ukraine in recent years, the following aspects have been studied: increasing the managerial competence of managers (V.S. Afanasenko, O.V. Boyko, T.M. Matsevko, etc.), increasing the managerial competence of managers (R.P. Vdovichenko, O.I. Zaichenko etc), theory and practice of training future specialists in the air industry for management activities (V.I. Svistun), theoretical and methodo-

logical foundations for the preparation of an engineer at universities for future management activities (O.G. Romanovsky). Analysis of psychological and pedagogical literature (D.V. Gander, V.O. Ponomarenko, P.A. Korchemny, R.M. Makarov, K.K. Platonov, etc.) and recent dissertation studies indicate that the pedagogical aspects of the problem of pilot training in the field of psychology and psychiatry have not yet been the subject of a special study.

Presentation of the main material. The problem of mental states has attracted attention for centuries. The role of states in life was noted by scientists of antiquity (Aristotle, Avicenna and others.). The issue of the need to prevent adverse emotional conditions in the XXI century was especially acute.

The scientific and technical revolution, along with the great progressive transformations in society, gave rise to a number of phenomena that led to an increase in mental stress. This is an acceleration of the pace of life, and a significant increase in the intensity of mental labor, and the associated hypodynamics, explosion of information, urbanization, an environmental problem that has worsened, an unprecedented increase in the number of traffic accidents, an increase in the number of natural disasters, etc. To this should be added the impact of the consequences of world and local wars and an increase in the military threat to the world. As a result, the importance of finding ways to optimize a person's mental state has increased much.

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The pilot, along with the co-pilot, control the movement of the aircraft throughout the flight, responsible for its success and arrival at the final point exactly on schedule. The flight of the aircraft has several stages: takeoff, climb, horizontal flight along the route, descent and landing. At all stages, the flight takes place under the direction of an air traffic control controller, with whom the crew maintains radio communication throughout the flight.

Currently, there are many instruments that help the pilot drive the aircraft: from autopilot, which independently supports a given aircraft course, to radar, which allows the aircraft to board in conditions of complete optical invisibility of the ground. The pilot controls all of these instruments within the availability of his cockpit. At the same time, he constantly analyzes the information coming from the devices, presenting in detail the state and operation of systems and units, the position of the aircraft in space, mentally predicting the behavior of its systems and units. The pilot's activity takes place in conditions of constant tension and readiness for immediate reaction to emergency situations that have arisen [2].

There are few studies that attempt to approach the disclosure of mental mechanisms of tension. The mechanisms of emotional stability (ES) and methods of its increase by mental means are even less studied, whereas the mental state of a person depends on the ES. With a low level of ES, a person suffers more from the damage that mental loads and negative emotions of his performance, reliability of activity, health and simply worldview.

Emotional instability is the result of such forms of human activity that lead to chronic non-renewal of the nervous system (to one degree or another of its exhaustion). The depletion of the nervous system results from excessively strong or prolonged (sometimes constant) mental tension, which is not balanced by a full recovery of strength. At the same time, the emotional perception of reality decreases in the absence of sufficiently large emotional experiences that have a training effect on the psyche. After all, the nervous system is as much trained as muscle strength or physical endurance. It can be maintained in good athletic form, or, on the contrary, it can be systematically shattered [3].

One of the pressing problems in the system of emotional stability and safety of aviation management is the legal mechanism for ensuring the safety of aviation activities, that is, the formalization of admission to the performance of their duties as members of a civilian aircraft.

This mechanism includes several main elements: sources of law, regulations of aviation enterprises, job descriptions and international ICAO rules.

The main effective elements of legal provision of emotional and psychological stability of CPS pilots are: professional training of pilots; retraining and advanced training; regular medical examinations and strict admission to flights.

At the same time, most flight professionals associate emotional control with the innate features of the nervous system: a strong nervous system "iron nerves" - a person who is stable, courageous, weak - unstable, timid. This view is erroneous, since the strength of the nervous system itself is a volatile indicator, it depends on a number of factors.

The weakness of the nervous system is perhaps simply the result of its exhaustion, due to too much mental stress. Therefore, the mental load must be able to dose, maintain an optimal level [4].

The following chain of interaction of activity and nervous system is observed. The content, nature and scope of activity, primarily dependent on the goals of the person, is the cause of a particular emotional state (ES). ES leads to a certain physical state of the nervous system, on which, in turn, the nature of the course of the ES, which go further, as well as the final emotional state, depends.

Professional training of pilots refers to those components of the aviation system, where a large number of hazards are hidden, the timely detection of which constitutes the essence of flight safety management due to the improvement of the training process. In modern conditions, this task becomes especially relevant.

The rise in the industry due to the lack of appropriate government programs is characterized by a constant increase in risks [5].

The intensive development of world civil aviation with a constant increase in the volume of passenger and freight transportation (up to 12-18% per year) is accompanied by the expansion of existing airlines and the emergence of new dynamic ones.

This, in turn, naturally leads to an increase in the need for highly qualified flight personnel [6].

With a total of about 5,000 pilots (as of 2020) in Ukraine, there is a natural outflow of personnel (4-5% per year, which corresponds to 200 pilots) due to a write-off from flight work by age, health and, most importantly, the transition to work in foreign airlines. The situation is aggravated by the fact that these higher and secondary flight training institutions of Ukraine produce a little more than 50-100 pilots per year. So, the annual capacity of all flight training institutions to meet the needs of even one Ukrainian airline, where the annual need is up to 200 pilots.

One of the issues is the decline in the prestige of the pilot profession. At the same time, the requirements for candidates for training not only did not decrease, but also increased somewhat. First of all, this is observed due to the complications of aviation technology (a new generation of computerized aircraft has appeared), the intensity of professional activity, reducing decision time and changing flight dynamics.

The amount of flight training of a commercial pilot in Ukraine reaches about half of the international standard (in accordance with ICAO requirements). As a result, students do not have experience in flying a multi-engine aircraft (due to its absence in some flight training institutions), do not work out actions when flying on asymmetric traction, failures in the functioning of systems or the occurrence of a freelance situation. This leads to the pilots lack of skills in proper interaction and establishment of interpersonal relations (CRM), eliminates the skillful application of control principles in an emergency, information exchange, etc [7].

The second major drawback is that the pilot training process is not properly equipped with modern programs and simulators. This disadvantage manifests itself, as in the absence of the entire spectrum of necessary simulators, and as the tasks they solve. The integrated and procedural simulators available in flight training institutions are physically and morally obsolete and do not meet modern qualification requirements. As educational institutions are equipped with new simulators, it will be possible to significantly reduce the flight by aircraft while increasing the flight on the simulator.

In the context of the question, it should be noted that ICAO standards provide for the "Flight Training Program for Obtaining a Pilot Certificate for a Multi-crew Pilot License-MPL." Qualification requirements for MPL certificate candidates have been adopted by ICAO since 23 November 2006 [8].

Therefore, the improvement of the Air Code of Ukraine, the introduction of ICAO standards in the field of training CPS pilots will increase the level of mental stability and reduce the risks when performing flight tasks by CPS crews.

Conclusions. The level of development of modern civil aviation (CA) puts forward the requirements for the mental state of pilots. Increased emotional stability of CA crew members is one of the leading factors in improving the state of aviation safety.

Emotional resistance is not an innate factor, but can be increased by special training. Pilots themselves, as a rule, realize the experience of fear, know about the once strong affect that is its source. Pilots speak about this clearly, albeit reluctantly, not immediately. The words about fear uttered by the subject himself can be justified by the strongest argument - aviation safety, which he appeals to. The experience of fear, clearly or hidden, is included in the semantic formations of professional experience, which can be preserved in the memory, thought, and actions of the subject. Actualized experience, if moderate, performs a useful function, ensuring the pilot's control and vigilance, readiness to perform the task in a dangerous situation. This type of experience is part of the intended reactions and has a mobilizing character. By encouraging the pilot to think through the possibilities of solving the future dangerous situation, they contribute to faster and more accurate actions, careful control over their implementation.

Civil aviation pilots also have a fear of responsibility for dozens of passengers, which negatively affects the emotional stability of pilots. Analysis of the actions of pilots and navigators in difficult and dangerous flight situations showed that they contain all known types of emotions: affects, situational emotions, feelings and moods. Two opposing aspects stand out in the affect. The affect is situational, since it arises under certain conditions, in re-

sponse to an unexpected impact or its rapid development, it is not the answer to the whole situation, but only a certain stimulus contained in it. However, affect is particularly resistant, biological expediency, congenital and thus goes beyond the situation. It is characterized by a strong experience that can persist after emerging from a dangerous situation. The external components of the affect are individual, in the course of ontogeny, the expression of the affect gradually takes on the form corresponding to the achieved level of culture of the society to which the individual belongs. External expression, entering the mechanism of action of the affect, imposes a certain imprint and its internal structure. Affect can occur when an aircraft meets clouds, in accidents or in air failures, in conflict between crew members, etc.

The overall emotional stability of the pilot's psyche depends on the degree of training and preparation, on the level of trust of crew members in colleagues and equipment.

Modern flight facilities are computerized systems capable of solving flight tasks without direct participation of crew members. To increase the emotional stability of pilots, it is also necessary to increase the "degree of trust" in the "intellectual" technical support of the aircraft by pilots. In most abnormal situations, the machine acts much faster and more accurately than a person. However, the pilot himself is not always ready to entrust the machine with his life, the lives of colleagues and passengers.

Thus, to optimize their mental state, a person needs to: in some cases, rebuild their control programs, say, views on mental adjustment methods; in others, change the attitude to certain phenomena of life; thirdly, to master the ability to selectively perceive reality, to distract from stress; fourthly - learn to use arbitrary emotional self-stimulation; fifth, to work on strengthening the will, since negative emotions are generated by internal conflicts associated with powerlessness, poor quality of management of their behaviour; sixth - to improve the ability to analyze life situations, to recognize people, since a bad mood occurs often due to misunderstanding of people, misinterpretation of the motives of their actions, due to the inability to get to

the bottom of the real causes of phenomena, to understand yourself, etc.

The dependence of the mental state on the organization of activities, on the mental methods of self-regulation used by him is studied only occasionally, it is set in its entirety as an independent problem. In the work, we tried to show the dependence of the mental state on personality characteristics, to outline the main directions of promising, from the point of view, research.

The main task is to try to change the existing ideas about the leading role of biological factors in providing emotional stability in order to orient theoretical and practical searches in the direction of widespread use of opportunities inherent in the psyche.

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ПРАВОВІ ЗАСАДИ ЗАБЕЗПЕЧЕННЯ ПСИХІЧНОЇ СТІЙКОСТІ ЕКІПАЖІВ ПОВІТРЯНИХ ЦИВІЛЬНИХ СУДЕН

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Метою статті є комплексний правовий аналіз існуючої системи засобів забезпечення психічної стійкості екіпажів повітряних цивільних суден при виконанні льотного завдання, визначення міри впливу інституціональних інструментів на стан підготовки екіпажів для виконання льотного завдання та психологічної стійкості при стресових ситуаціях. **Методи дослідження:** в ході роботи використано основні наукові методи системного аналізу, формальної логіки та метод класифікацій. Метод системного аналізу застосовано відповідно для визначення сучасного стану законодавства в сфері забезпечення психологічної стійкості екіпажів повітряних цивільних суден. Метод формальної логіки дозволив визначити наукові погляди на категорії правових елементів регулювання та допуску до виконання льотного завдання екіпажів цивільних повітряних суден. Метод класифікацій дозволив визначити шляхи подальшого удосконалення інституціональних прийомів щодо впливу на регулювання психічної та психологічної стійкості екіпажів цивільних повітряних суден. **Результати:** дослідження питання психологічної стійкості екіпажів повітряних цивільних суден дозволяє визначити шляхи і методи мінімізації впливу негативних факторів і ризиків процесу виконання льотного завдання на стан захищеності учасників льотного процесу. Результати дослідження, викладені в даній науковій статті, дозволяють визначити подальші кроки в дослідженні проблем правових аспектів формування та контролю психологічної стійкості екіпажів цивільних повітряних суден. **Обговорення:** проблеми психічної стійкості екіпажів повітряних цивільних суден є прикладними з позиції розвитку повітряного права. Вони є частиною правової сфери забезпечення безпеки польотів. Професійна діяльність пілота є складною системою інтелектуальних дій. Найбільшу роль відіграють такі розумові процеси, як спостереження, контроль, оцінка обстановки.

Професійна підготовка пілотів належить до тих компонентів авіаційної системи, де прихована велика кількість небезпечних факторів, своєчасне виявлення яких становить суть управління безпекою польотів через удосконалення процесу навчання.

Ключові слова: психічна стійкість; режим; безпека; повітряний простір.

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