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**KEY ELEMENTS OF FORMING FUTURE MILITARY PILOTS' READINESS  
FOR THE INTERACTION DURING THE USE OF COMMON AIRSPACE  
IN THEIR PROFESSIONAL TRAINING**

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The article deals with the phenomena and the peculiarities of formation of future military pilots' professional readiness for professional interaction during the use of joint airspace with other countries. Nowadays the readiness of military aviation pilots to cooperate with their foreign-language counterparts in airspace outside Ukraine is at the forefront of scientific research, as it is the key to successful accomplishment by Ukrainian military pilots of relevant missions and effective cooperation with pilots and Air Traffic Controllers (Forward Air Controllers) from other countries as well as during taking part in joint exercises and peacekeeping operations.

The scientific literature is analyzed and the concept of readiness of a person for an activity and a future pilot's professional readiness for military activity is defined.

It is established that military pilots' readiness for professional interaction while using common airspace ensures the pilot's ability to perform tasks in the common airspace. This kind of readiness is composed of a psychological component; cognitive component; operational component; personality-productive component; and a language component that reflects the cadet's level of foreign language proficiency required for successful completion of their professional tasks.

Increasing the level of the readiness requires from a future military pilot an adequate level of military-specific skills, psychological skills, and English proficiency at NATO STANAG 6001 Level 2 and ICAO Level 4.

It is emphasized that the achievement by future military pilots of high level of readiness for professional interaction while using common airspace is the main task of the Aviation English Department of KhNAFU, which it successfully accomplished in cooperation with the military-special departments of the University and the Department of Military Psychology. For this purpose, a variety of advanced techniques and teaching methods such as simulator training on different types of aircraft (Mi-8, L-39, An-26 simulators) are used in the course of the future military pilots professional training.

**Keywords:** *professional interaction, professional readiness, special military readiness, psychological readiness, language readiness, KhNAFU, ATC.*

**Малихіна Я.А., Брацлавська А.Ю.:** «Ключові елементи формування готовності майбутніх пілотів військової авіації до взаємодії під час використання спільного повітряного простору у процесі професійної підготовки».

У статті розглянуто поняття готовності майбутніх льотчиків військової авіації до професійної взаємодії під час використання спільного з іншими країнами повітряного простору та особливості її формування. На сучасному етапі готовність льотчиків військової авіації до співпраці з іншомовними колегами у повітряному просторі за межами України виходить на передній план наукових досліджень, оскільки вона є запорукою успішного виконання українськими військовими пілотами відповідних завдань та ефективної співпраці з льотчиками і диспетчерами (офіцерами бойового управління) з інших країн світу під час спільних навчань та миротворчих операцій.

Проведено аналіз наукової літератури та визначено поняття «готовність» людини до діяльності та готовності майбутнього військового льотчика до професійної діяльності.

Встановлено, що готовність військових льотчиків до професійної взаємодії під час використання спільного повітряного простору забезпечує здатність льотчика до виконання завдань у спільному повітряному просторі. Доведено, що така готовність має у своєму складі такі компоненти: психологічний компонент; когнітивний компонент; операційно-діяльнісний компонент; особистісно-результативний компонент; та мовний компонент, що відображає рівень володіння курсантом ВЗВО іноземною мовою, необхідний для успішного виконання задач у професійній діяльності.

Виявлено, що підвищення рівня готовності до професійної взаємодії з іноземними колегами вимагає від майбутнього військового льотчика належного рівня військово-спеціальних навичок, психологічних навичок та володіння англійською мовою на рівні 2 за стандартами NATOSTANAG 6001 та рівні 4 за шкалою ICAO.

Наголошуються, що досягнення майбутніми військовими пілотами високого рівня готовності до професійної взаємодії під час використання спільного повітряного простору є основним завданням кафедри авіаційної англійської мови ХНУПС, яке вона успішно виконує у співпраці з військово-спеціальними кафедрами університету та кафедрою військової психології. Для цієї мети використовуються різноманітні новітні технології та методи навчання.

**Ключові слова:** професійна взаємодія, професійна готовність, військово-спеціальна готовність, психологічна готовність, мовна готовність, ХНУПС, УПР.

**Малыхина Я.А., Брацлавская А.Ю.:** «Ключевые элементы формирования готовности будущих военных летчиков к взаимодействию при использовании общего воздушного пространства в процессе профессиональной подготовки»

В статье рассмотрено понятие профессиональной готовности будущих летчиков военной авиации к профессиональному взаимодействию при использовании общего с другими странами воздушного пространства и особенности её формирования. На современном этапе готовность летчиков военной авиации к сотрудничеству с иноязычными коллегами в воздушном пространстве за пределами Украины выходит на передний план научных исследований, поскольку она является залогом успешного выполнения украинскими военными пилотами соответствующих задач и эффективного сотрудничества с летчиками и диспетчерами (офицерами боевого управления) из других стран мира во время совместных учений и миротворческих операций.

Проведен анализ научной литературы и определено понятие «готовность» человека к деятельности и готовности будущего военного лётчика к профессиональной деятельности.

Установлено, что готовность военных летчиков к профессиональному взаимодействию при использовании общего воздушного пространства обеспечивает способность летчика к выполнению задач в общем воздушном пространстве. Доказано, что такая готовность имеет в своем составе такие компоненты: психологический компонент; когнитивный компонент; операционно-деятельностный компонент; личностно-результативный компонент; и языковой компонент, отражающий уровень владения курсантом ВЗВО иностранным языком, необходимый для успешного выполнения задач в профессиональной деятельности.

Вывявлено, что повышение уровня готовности к профессиональному взаимодействию с иностранными коллегами требует от будущего военного летчика надлежащего уровня военно-специальных навыков, психологических навыков и владения английским языком на уровне 2 по стандартам NATO STANAG 6001 и уровне 4 по шкале ICAO.

Отмечаются, что достижение будущими военными пилотами высокого уровня готовности к профессиональному взаимодействию при использовании общего воздушного пространства является основной задачей кафедры авиационного английского языка ХНУВС, которое она успешно выполняет в сотрудничестве с военно-специальными кафедрами университета и кафедрой военной психологии. Для этой цели используются различные новейшие технологии и методы обучения.

**Ключевые слова:** профессиональное взаимодействие, профессиональная готовность, военно-специальная готовность, психологическая готовность, языковая готовность, ХНУВС, УВД.

**Rationale of the study.** At the present stage of development of the Armed Forces of Ukraine and the Air Force of Ukraine in particular, much attention is paid to the readiness of military pilots to use common with other countries airspace. A

military pilot must perform their duties at an appropriate level, respond adequately to urgent and emergent situations, and cooperate effectively with their partners from other countries during flights outside Ukraine and international military exercises.

Obviously, the effective cooperation of Ukraine with foreign partners depends on the appropriate level of Ukrainian military pilots' professional skills, among which the knowledge of foreign language is of much importance. Graduates of the Air Force higher education institutions must creatively apply their professional skills during joint exercises abroad or in Ukraine and successfully perform their professional activities in a foreign language environment.

The need to involve Ukrainian military specialists in joint exercises, their readiness to successfully use their knowledge in practice and represent Ukraine's interests in the international arena requires, in particular, raising the status of a foreign language as a means of international communication and increasing foreign language proficiency to international standards.

Based on this statement, it is possible to claim the extreme importance of the different types of pilots training in the Air Force higher education institutions, namely, military special, psychological and pedagogical training of future pilots, as well as increasing their level of English as an ICAO language, especially in communication between crew members and air traffic controllers during flight.

"In 1998, in the light of the sad experience of a number of aviation events and incidents directly or indirectly related to the lack of the language competence of pilots and air traffic controllers, the ICAO Assembly formulated Resolution A32-16 urging the ICAO Council to instruct the Air Navigation Commission to consider as a priority the problem of English language proficiency and complete the task of strengthening the relevant statements contained in Annexes 1 and 10, in order to oblige the Contracting States to take measures to ensure that ATC personnel and flight crew members involved in the ensuring and operation of flights in airspace where the use of English is required have sufficient radiotelephone skills in English "[2].

This has led to the adoption of a number of ICAO documents on the use of English. Thus, in March 2003, the ICAO Council approved amendments to Annexes 1, 6, 10, 11 and the document "Rules for Air Navigation Services. Air Traffic Management" on language competence issues in international civil aviation.

In 2004, the first edition of the ICAO Language Implementation Guidelines was published, which included comprehensive information on a number of aspects related to

language training and testing. In 2007 the ICAO Assembly adopted Resolution A36-11 "Knowledge of English for Radiotelephony".

In June 2009, Circular № 318 "Language Testing Criteria for Global Harmonization" and Circular № 23 "Recommendations for Aviation English Language Training Programs" were published.

Given the need to comply with the requirements of ICAO documents in their professional activities, the problem of the pilots' readiness for professional activities in the common airspace comes to the fore as one that needs to be addressed immediately.

Thus, the article considers the concept of readiness of military pilots for their professional interaction with foreign-speaking colleagues during the use of common airspace and the peculiarities of its formation in future military specialists.

The analysis of works of such known scientists as A. Aleksyuk, A. Bobrov, V. Kraevsky, I. Lerner, O. Leontiev, V. Kan-Kalyk, A. Mudryk, V. Kruchek, T. Lavrukhin, O. Moskalenko, N. Belous, R. Makarov, V. Maryschuk, I. Rudny, V. Shadrykov, V. Ponomarenko and others is carried out and indicates that the problem of readiness of a pilot for professional activity is actual, and therefore, professional training of pilots is of great importance for aviation safety, which includes military special training, aviation psychology, development of communication skills of pilots and foreign language proficiency.

As G. Yelnikova notes, "general-professional and special-professional competencies are modeled on the basis of state standards of specific specialties. However, in each group of competencies the cognitive, functional and personal components of the specialist's ability to perform professional functions are revealed "[8].

It is important to emphasize that formation of military pilots' readiness for professional activities and use of common airspace requires the development of the set of their competencies, but it is the communicative and language competencies that are currently given special attention.

**Problem statement** consists in the definition of the concept of professional readiness of future military pilots to perform tasks and coordinated work in common with other countries airspace and the peculiarities of the formation of this readiness in the graduates of the Air Force higher education institutions.

**Presenting the main material.** In the beginning of the article, it is necessary to see the

understanding of "readiness to do it", which is interpreted in the scientific sources in a different way. For example, S. Maksimenko, describes it as a way of mobilization of the psychological and psychophysiological systems of people, which provide the performing of a particular activity [5], while other scientists, such as Z. Kurland, R. Khmelyuk, A. Semenova emphasize that this is a holistic integrated quality of personality, which characterizes their emotional-cognitive and volitional selectively predictive mobilization at the time of inclusion in the activity a certain direction and arises as a result of human experience, which is based on the formation of a positive attitude to activity, awareness of motives and needs for it, the objectification of its subject and ways of interacting with it [15].

At the same time, O. Shostakovich considers such readiness as a synthesis of personality traits that determine their ability to work. This synthesis includes: active positive attitude to activity, stable intellectual feelings, favorable while other scientists, such as Z. Kurland, R. Khmelyuk, A. Semenova emphasize that this is a holistic integrated quality of personality that characterizes their emotional-cognitive and volitional selectively predictive mobilization at the time of their involvement in a certain type of activity and arises from human experience, which is based on forming a positive attitude to activity, awareness of motives and needs, objectification of its subject and ways of interaction with it [15]; mental state, a certain fund of knowledge, skills, abilities in the relevant field, the ability to perform specific activities [16].

From the point of view of the personality-activity approach, readiness appears as the preparedness of a personality and is considered in connection with formation, development and improvement of mental processes, states and properties necessary for successful performance of activity.

Thus, according to most researchers, readiness for activity is a state of readiness for future activities (situational readiness), and the result of professional training (long-term readiness).

Regarding the readiness for professional activity, despite the differences in the theoretical approaches of scientists, it is considered in all studies as a primary and mandatory condition for the successful completion of any activity.

Analysis of the works of many scientists makes it possible to draw the following conclusions about the disclosure of the essence of professional readiness: it is a mental state, and a set of

personality traits, and the level of professional culture, the integration of which is a "mental neogenesis of personality." Thus, professional readiness is a new level of personal development that is achieved by a person during their studies in higher education; mental neogenesis of the individual, reflecting the professional readiness for activity, is the purpose and result of its formation.

Now let us turn to the concept of readiness for military professional activity. In our opinion, it is very well reflected in the definition of Yu. Lisnichenko, who believes that the cadet's readiness for military professional activity has the following components: motivational (awareness of the importance of the future officers' readiness for professional activity), cognitive (purposefulness of the future officers' cognitive activity in the process of studying professional subjects), operational-activity (readiness to apply acquired skills to perform various types of professional activity), personality-productive personal qualities of the future officers to carry out their professional duties) [12].

As for the readiness for professional activity of military pilots, according to the research by military scientists such as O. Didenko, B. Rayno, it should include values and motivations of professional flying, theoretical, practical and emotional and volitional components, professionally important qualities, etc[6].

To sum up, based on the scientific research in the system of higher military education, we can conclude that the readiness of future military pilots for their professional activities during the use of common with other countries airspace is a holistic formation, an integrative personality trait that ensures the pilot's ability to perform tasks in common airspace, and has the following components:

- 1) psychological component (psychological readiness of a pilot to perform professional tasks, including in unforeseen and emergency situations, etc.);

- 2) cognitive component (understanding of professional tasks, assessment of their significance, knowledge of solutions, etc.);

- 3) operational component (skills and abilities to control the aircraft, knowledge of the specialty (military special knowledge));

- 4) personal-productive (formation of personal qualities of future military pilots to carry out professional duties);

- 5) language component (level of foreign language proficiency required for successful performance of tasks in professional activities).

It is the knowledge of a foreign language that should ensure the effective professional activity of military pilots and the interaction between military and civil aviation in the common airspace. Drawing on the Order of the State Aviation Service of Ukraine on approval of the Aviation Rules of Ukraine № 565 "Technical requirements and administrative procedures for flight crews of civil aviation", the requirements of the International Civil Aviation Organization ICAO, "Basic principles of language training of personnel in the system of the Ministry of Defense of Ukraine", "Guidelines for language testing in the system of the Ministry of Defense of Ukraine" approved by the Minister of Defense of Ukraine, 08.08.2019, it can be stated that communicative language skills of military pilots become one of the main requirements for their interaction in the common airspace.

It should also be noted that a pilot's knowledge of the language of communication with an ATC or a forward control officer during military operations is an important factor determining the structure of informative interaction between crew members and ATC, a factor influencing the psychological tension within the crew, quality of aircraft control and functional state of a commander. If a commander does not speak a common language with an ATC, this leads to a suboptimal structure of informative communication within the crew and with ATC, as well as to the overloading of communication channels mainly with general information.

"During the flight, the pilot interacts not only with the equipment, but also with other crew members. In the process of such interaction, sometimes the crucial condition for understanding the problems and making the best decision is the possession of accurate, comprehensive and timely information. Here communication skills act as the core, without which, along with many others, flight safety, success in work and achievement of a common goal cannot be guaranteed" [9]. If a commander does not have a sufficient level of knowledge of the common language with ATC, the probability of errors in language communication with ATC increases, the time of passage of messages from the source to the recipient increases. Particularly unfavorable influence of the factor of ignorance by a commander the language of communication with ATC is manifested in difficult (emergency) conditions.

Regarding the choice of language of professional communication, according to the findings of the Aerospace Linguistic Foundation,

which compared 18 languages in its study, English is the most optimal language for radio communication between the crew and ATC. The International Civil Aviation Organization (ICAO) decided in 1947 that international radiotelephone communication between pilots and air traffic controllers should be in English [1].

The main characteristics of such professional language, which is considered to be aviation language are: conciseness (concision), which provides a concise expression of a certain content with a minimum number of language tools, which enhances the content of utterances; clarity, or a clear demarcation of similar linguistic means, which prevents their confusion and non-ambiguity, ie the use of linguistic means with one meaning, which does not allow misinterpretation of utterances.

According to ICAO document 9835, aviation English covers: ICAO Phraseology (standard phraseology of radio communication, clearly defined by ICAO documents); English for specific purposes (professional English, which requires knowledge of aviation terminology); English for general purposes (general English, providing the opportunity to communicate freely on any topic) [2]. This means that future military pilots must be proficient in both professional and general English.

It should be noted that the International Civil Aviation Organization (ICAO) recommends starting to learn aviation English with learning General English, because in order to successfully use professional terminology, a person must first master the basic vocabulary and grammatical structure of the language being studied. Only after obtaining a sufficient level of general language training, a person can begin to learn professional language.

It should be emphasized that the language training of military pilots at the Kharkiv National Air Force University is based on these principles. In the first year of study, cadets study General English and Military English, in the second year the learning of Aviation English begins, which lasts for four years. The training usually ends with a NATO STANAG 6001 level 1 or 2 exam, which is required for military pilots in order to successfully complete their missions in cooperation with NATO forces; and the ICAO exam, where a cadet must obtain a certificate of at least level 4 (operational).

In the course of our work we consider the features of training of future pilots at the Kharkiv National Air Force University. Based on this study, we assume it appropriate to identify certain language skills which a future military pilot needs. These are, first of all, speaking skills, perception of information by ear, ability to conduct dialogue,

natural pace of speech, operation of basic grammar skills and sufficient vocabulary on general, military and aviation topics. This level of proficiency in aviation English allows a pilot to choose the right strategy of behavior in emergency and non-standard situations, to make the right decision related to the priority tasks.

It should be accentuated that the formation of language competence of military pilots and their readiness to interact in common with other countries airspace requires pedagogical technologies that are innovative and take into account the sequence and stages of training of future military pilots.

At the first stage of such future military pilots' readiness formation there is an adaptation to conditions of education at the Air Force higher education institutions, acquisition of knowledge on general military training. At the second stage there is an integration of simulator training and other types of training, which forms in cadets simple skills and abilities of piloting on simulators, and also there is an initial formation of foreign language communicative competence.

At the third stage, cadets develop complex skills and abilities to pilot aircraft, gain experience in real flights. In addition, an individual program of further classes with each cadet with the use of appropriate formative exercises within the course of flight training, creating psychological tension during classes, formation of an idea of the impact of accidents in flight on the psyche of a pilot.

At the fourth stage there is an improvement of the acquired military-professional and special competences, foreign language communicative competence, their consolidation and formation of the set standard of the graduate capable to carry out tasks in the common airspace.

Now it can be assumed that in the first stage of training (1-st year) it is advisable to teach General English, while military and aviation English should be taught from the second stage of training.

According to the above, it should be stressed that simulator training is extremely important for future pilots, during such training theoretical knowledge is consolidated, relevant exercises and basic elements of operating the cockpit equipment and various systems are practiced, as well as the certain sequence of actions in case of emergencies and competence in the English language.

That is why the Aviation English Department of the Kharkiv National Air Force University together with the Department of Psychology at the Faculty of Flight Training conducts practical classes on simulators for the cadets of the correspondent specialties. In such

classes, in addition to traditional, problem-solving teaching methods are used. Emergency situations such as fires, engine(s) failure, failure of vital systems, etc. are practiced on the simulators of Mi-8 or L-39 aircraft. Cadets should analyze the situations as soon as possible and suggest solutions to the problems, based on the knowledge gained.

It is important to specify that for such classes, KhNAFU has modern computer simulators, which provide not only free control of the aircraft, but also the simulation of various deviations and emergencies, as well as the ability to conduct a full radio exchange between the pilot and the ATC in English.

In addition, to increase the level of difficulty, cadets are offered complex tasks. The essence and structure of such tasks is considered in the article by Ya.Malykhina. She points out that "at the present stage innovative learning technologies use various methods that activate students' independent work, involve them into the problem-solving processes, research, cooperation, taking into account individual needs and opportunities. New models of learning are built in the educational and research, research, educational and game forms, etc " [13].

Such a training complex at KhNAFU provides complicated flight conditions such as sequential or simultaneous introduction of two or more failures of aircraft equipment or systems, as well as simulations of accidents and crashes of combat aircraft which occurred in real flight practice.

Cadets must find the pilot's erroneous actions, justify possible ways out of the situation. After that, the route, flight conditions, etc. are reproduced on the simulator of an airplane or a helicopter, using the phraseology of radio exchange and aviation English in communication with ATC (forward controller) [14].

As a rule, the classes are attended by a pilot-instructor, an ATC in the role of an instructor and a teacher of Aviation English, who together form in the cadets various aspects of professional readiness.

**Conclusions.** Based on, we may draw the following conclusions. Having conducted the theoretical analysis, we found out that the readiness of military pilots for professional interaction in the use of common airspace is a holistic formation, an integrative personality trait, a system of qualities that ensure the pilot's ability to perform tasks in common airspace.

It comprises a psychological component (psychological readiness of the pilot to perform

professional tasks, including actions in unforeseen and emergency situations, etc.); cognitive component (understanding of professional tasks, assessment of their significance, knowledge of solutions, etc.); operational and activity component (skills and abilities of aircraft control, knowledge of the specialty (military special knowledge)); personal-productive component (formation of personal qualities of future military pilots before carrying out professional duties); and language component (level of foreign language proficiency required for successful completion of tasks in professional activity).

The level of development of each of these components in a cadet of the university determines the quality and efficiency of military flight tasks performance and the interoperability with foreign-speaking colleagues during joint exercises.

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The training of military pilots at KhNAFU is carried out consistently and in stages, with the involvement of innovative technologies and it must meet NATO STANAG 6001 and ICAO standards. This result is the goal of the Aviation English Department at the Kharkiv National Air Force University, which together with the Departments of the Flight Training Faculty and the Department of Psychology provides future pilots with the qualitative practical piloting and language training based on traditional and problem-based learning methods, distance learning and other activities.

**Prospects for further research.** Identify the issues of development of scientific and methodological tools and the introduction of mechanisms to ensure high readiness of military pilots for professional cooperation in the use of common airspace.

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