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DETERMINATION OF THE BASIC REQUIREMENTS FOR THE MANAGEMENT SYSTEM OF MILITARY FORMATIONS OF THE NATIONAL GUARD OF UKRAINE DURING THE PERFORMANCE OF COMBAT TASKS, TAKING INTO ACCOUNT THE INFLUENCE OF MODERN MEANS OF ARMED STRUGGLE

The article identifies problems that affect the management system of the military units of the operational assignment of the National Guard of Ukraine during the execution of combat missions in Russia's war with Ukraine. Analysis of the problems of the application of these military units indicates that information and management aspects are considered first during their performance of assigned combat missions. It was established that without determining the most priority requirements for the management system and a rational sequence of measures to achieve them, timely creation and effective functioning is impossible. Analysis of the operating conditions of the management system of military units of operational assignment showed that during the execution of operational tasks, the management process is affected by dynamism and maneuverability of hostilities, the destructive power of high-precision weapons used, the probability of large losses in personnel and equipment, technical equipment of control points, training of officials of control bodies and other factors. The experience of conducting military operations requires early determination of the most important requirements for the management system and a set of measures for the purpose of timely recovery and functioning during the battle (operation).

Keywords: *operation, operational military units of the National Guard of Ukraine, control system, control points, communication hub, air attack means, unmanned aerial vehicles, attack unmanned aerial vehicles, tactical aviation, cruise missiles.*

Formulation of the problem. The analysis of the functioning of the management system of the military unit of the operational assignment of the National Guard of Ukraine in the conditions of Russia's war with Ukraine showed that the quality of management processes is affected by the dynamism and maneuverability of combat operations, the destructive power of the used high-precision weapons, losses in personnel and equipment, the technical equipment of control points, preparedness of officials of management bodies, etc. Therefore, success in military operations was achieved only by that military unit that had an effective management system that ensured continuous, operational, high-quality, stable and covert management of subordinate units, had comprehensively prepared management bodies that are able to ensure the adoption of well-founded decisions and plans in difficult conditions of conducting hostilities and the influence of the enemy on the control system.

Fulfillment of these requirements for the management system should be considered in relation and dependence in order to determine the most important of them, as well as the rational sequence of implementation of measures to achieve them.

This is one of the main problematic tasks during the study of ways of timely restoration and improvement of the disrupted management of troops (forces), assessment of the effectiveness of the management system.

Analysis of recent research and publications. The process of identifying and assessing the significance of factors influencing the effectiveness of operations (combat actions) is addressed in a certain number of publications [1, 2, 3]. Thus, the authors of the paper [1] analyzed and classified the factors that determine the effectiveness of the rear support of troops in modern conditions using the method of expert evaluation. In the source [2], using the method of expert evaluation, the authors ranked

the factors affecting the composition of a group of troops, which is created to repel aggression. The most significant interest from the presented issues is in the work [3], where ranking and identification of the most significant factors influencing the composition and strength of the National Guard of Ukraine groups created to perform defense tasks are conducted. Thus, the carried out analysis [1, 2, 3] proved that the issue of determining the priority requirements for the effective functioning of the management system of military units of the operational assignment of the National Guard of Ukraine and the rational sequence of measures to achieve them during combat missions remains neglected. In addition, there are no developed approaches to distinguishing the set of more significant requirements for the management system, which must be taken into account in the first place.

The purpose of the article. The method of determining the most important requirements for the management system and the rational sequence of measures to achieve them is proposed on the basis of mathematical and statistical methods of expert evaluations [4, 5].

Research results. The analysis of the performance of operational tasks by the military units of the operational assignment of the National Guard of Ukraine during Russia's war with Ukraine shows that without reliable protection of the military formation management system in modern conditions and in the future, it is impossible to count on the success of the assigned combat tasks.

So, for example, during offensive actions, the enemy significantly disrupted the control system of the military formations of the Armed Forces and the National Guard, using electronic warfare equipment, aviation and cruise missiles at command posts and communication nodes. Violating the system of control of troops and weapons, the enemy won dominance in the air, took the initiative for successful conduct of hostilities.

At this time, according to the plans of the command of the armed forces of the Russian Federation, it is proposed to increase the effectiveness of suppressing the control points of military formations by 2,0-2,5 times. For this purpose, ways and methods of revealing the main elements of battle formations, including control systems, are being developed, followed by their fire and electronic suppression [6]. To solve these tasks, forces and means of space, radio, radio engineering and special intelligence may be involved.

To defeat the open control points of military

formations can be engaged a long-range artillery to a depth of up to 30 km, salvo rockets to a depth of 40 km, helicopters to a depth of 60 km, operational-tactical missiles to a depth of 120 km, tactical aircraft to a depth of 300 km. According to the forces and means, the control points of the National Guard formations (associations) can be applied to 30–35 % of the existing artillery and missile systems. In general, the ground means of defeat can strike up to 20–30 % of the control points of military formations, which are in the first echelon battle formations of the united group of troops, which will lead to a disruption of control and a significant decrease in the effectiveness of the control system as a whole.

Control points of the tactical link, their communication hubs, which include a large number of command and staff and special vehicles located in limited areas, can become objects of attack drones, as well as high-precision self-guided missiles, aviation ammunition, and field artillery. All this significantly increases the effectiveness of the impact and reduces the time of striking the objects of control systems [7].

Based on the above, it can be concluded that with the comprehensive application of all means of defeat, the total losses of the command posts of the National Guard military formations in the main types of combat can be 60–80 %, and the work of electronic warfare can be suppressed and disrupted up to 35–40 % all radio-electronic means of the control system. This can reduce the effectiveness of its functioning by 2,5-3,0 times, and ultimately lead to the disruption of the execution of combat tasks assigned to military units.

The analysis of the operating conditions of the control system showed that the processes of managing troops (forces) are affected by the high dynamism and maneuverability of combat operations, the destructive power of the weapons used, the probability of large losses in personnel and equipment, the technical equipment of control points, the preparedness of officials of control bodies, etc. Success in these conditions can be achieved only by the side that has an effective management system, comprehensively prepared management bodies, capable of ensuring the adoption of well-founded decisions and plans, capable of ensuring continuous, operational, high-quality, stable and covert management of troops in the difficult conditions of conducting hostilities during the influence of the enemy on the control system and the possibility of serious violations in it. Fulfillment of these requirements should be considered in their relationship and dependence. This is one of the main tasks in researching ways to

improve the management of troops (forces), evaluating the functioning of the management system.

Management requirements can be general or partial in nature [8]. Requirements of a general nature relate to management as a whole and are related to the structure and technical equipment of management systems, forms of organization and methods of management activity, use of means of communication and automation for the implementation of management functions. These requirements include continuity, efficiency, quality, stability, and secrecy of management.

Partial requirements refer to individual aspects of management, which usually follow from the general ones. For example, the stability of management involves ensuring the secrecy and security of control points and means, the reliability of their work, etc.

During the analysis of management requirements, it is necessary to strive to identify their totality, interconnection and subordination. Only under these conditions, it is possible to establish a system of the most important requirements and criteria for evaluating the effectiveness of their implementation.

The general structure of the main requirements for the management of troops (forces) and directions for ensuring their implementation are shown in Figure 1.

The article proposes a method of determining the composition and importance of the requirements for the management system of the military formation of

the National Guard and its stealth in the main types of combat, which was carried out on the basis of mathematical and statistical methods of expert evaluations [9].

To obtain independent expert evaluations, 16 experts were interviewed, in their capacity as brigade commanders, battalion commanders of operational brigades, chiefs of the main command posts of brigades, scientists, and trainees of the National Academy of the National Guard of Ukraine [9].

Processing of information received from experts was carried out in the following sequence.

1. The matrix "experts-requirements" is compiled, which presents the evaluations of requirements received from each expert. The results of the assessments are shown in Table 1.

2. The relative importance of w_{ij} is determined ($i = 1, 2, \dots, 5$ – the conditional number of the requirement, $j = 1, 2, \dots, 16$ – the conditional number of the expert) of all requirements separately for each expert x_{ij} by dependence:

$$w_{ij} = \frac{x_{ij}}{\sum_1^{16} x_{ij}} \quad (1)$$

The results are shown in Table 2.

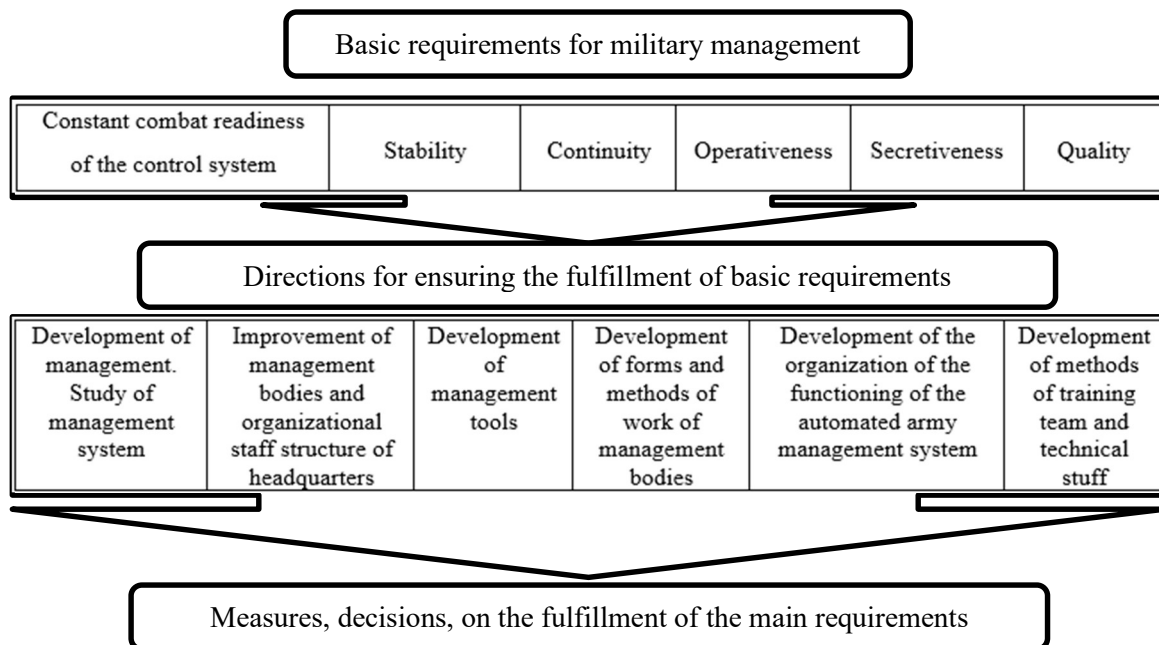


Figure 1 – The general structure of the main requirements for the management system of military units of operational assignment and directions for ensuring their implementation

Table 1 – Expert assessment of the requirements for the anti-aircraft unit management system

Expert	Continuity	Operativeness	Quality	Vitality	Secretiveness
1	1,0	1,0	1,0	0,80	0,90
2	0,9	1,0	0,8	0,70	0,80
3	1,0	1,0	0,9	0,85	0,75
4	1,0	1,0	0,9	1,00	0,80
5	1,0	1,0	0,8	0,85	0,60
6	1,0	0,9	0,9	1,00	0,90
7	1,0	0,9	0,8	1,00	1,00
8	0,8	0,6	0,2	0,20	0,30
9	1,0	0,9	0,9	0,85	0,80
10	0,7	0,7	0,6	0,30	0,90
11	0,9	0,8	0,8	0,60	0,70
12	1,0	1,0	0,9	0,80	0,50
13	1,0	1,0	1,0	0,90	0,90
14	1,0	1,0	0,7	0,80	1,00
15	1,0	0,9	0,5	1,00	1,00
16	1,0	0,8	0,9	0,60	0,70

Table 2 – Standardized assessments of the requirements of experts

Expert	Continuity	Operativeness	Quality	Vitality	Secretiveness
1	0,19	0,19	0,19	0,15	0,17
2	0,19	0,21	0,17	0,15	0,17
3	0,19	0,19	0,17	0,16	0,14
4	0,17	0,17	0,17	0,17	0,14
5	0,19	0,19	0,15	0,18	0,12
6	0,17	0,16	0,16	0,18	0,17
7	0,18	0,16	0,14	0,18	0,18
8	0,31	0,22	0,08	0,08	0,11
9	0,19	0,17	0,17	0,16	0,15
10	0,17	0,17	0,14	0,07	0,21
11	0,22	0,10	0,21	0,15	0,18
12	0,19	0,19	0,17	0,15	0,17
13	0,17	0,17	0,17	0,16	0,16
14	0,19	0,19	0,13	0,15	0,19
15	0,20	0,18	0,10	0,20	0,20
16	0,22	0,18	0,20	0,13	0,16

Table 3 – Average assessment of requirements and their distribution by importance

Requirement	Average score	Significance of the requirement
Continuity	0,27	1,0
Operativeness	0,25	2,0
Quality	0,23	3,0
Stability	0,16	4,5
Secretiveness	0,16	4,5

3. The average rating (Table 3) given by all experts to each requirement is calculated, according to the dependence:

$$w_{ij} = \frac{\sum_{i=1}^5 X_{ij}}{5}. \quad (2)$$

On the basis of this assessment, places were assigned to the importance of requirements: continuity, efficiency, quality, stability, secrecy.

The analysis of experts' opinions showed the priority of requirements for the stability and secrecy of the management system in relation to other requirements and the need for comprehensive consideration of all management requirements.

The requirements of secrecy and continuity of control are closely related, since continuous control can be carried out only with stable operation of the control system, including when its elements are moved during hostilities.

Continuity of management of units of the National Guard of Ukraine presupposes the presence of the command and headquarters of a permanent opportunity to receive data on the position, state and nature of actions of subordinate, covering and interacting units (parts), to continuously influence the course of hostilities [10, 11].

The secrecy of the troop management system implies the ability of the command and control bodies to perform their functions quite effectively in any environment, including in conditions of active influence of the enemy on the management system.

The enemy, in order to disrupt the continuity of management, will first of all seek to defeat the command points of our troops. Therefore, the requirement of survivability of control points, which consists in their ability to perform their functions under fire and radio-electronic influence of the enemy on control points and means, becomes important.

Conclusions

Thus, when investigating the dependence of the effectiveness of the management system of an operational brigade on its survivability, it is necessary to take into account the dialectical unity of all requirements for the management of troops, for which it is necessary:

– choose such an indicator that would allow taking into account the influence of each of the requirements for the management system;

– take into account the "weight" of each of the requirements on the overall effectiveness of the management system;

– when studying the conditions of conducting hostilities, focus on those that affect the secrecy of the management system.

Promising areas for further scientific research. The proposed method makes it possible to determine the priority requirements for the management system and the rational sequence of measures to achieve them on the basis of mathematical and statistical methods of expert evaluations. A promising direction of further scientific research can be taking into account the requirements for the management system in order to identify their totality, interconnection and subordination. Only under these conditions it is possible to establish a system of the most important requirements and criteria for evaluating the effectiveness of their implementation.

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ВИЗНАЧЕННЯ ОСНОВНИХ ВИМОГ ДО СИСТЕМИ УПРАВЛІННЯ ВІЙСЬКОВИХ ФОРМУВАНЬ НАЦІОНАЛЬНОЇ ГВАРДІЇ УКРАЇНИ ПІД ЧАС ВИКОНАННЯ БОЙОВИХ ЗАВДАНЬ З УРАХУВАННЯМ ВПЛИВУ СУЧАСНИХ ЗАСОБІВ ЗБРОЙНОЇ БОРОТЬБИ

Визначено проблеми, які впливають на систему управління військових частин оперативного призначення Національної гвардії України під час виконання бойових завдань у війні Росії проти України. Аналіз проблематики застосування зазначених військових частин свідчить про те, що під час виконання ними бойових завдань за призначенням інформаційно-управлінські аспекти розглядаються у першу чергу. Установлено, що без визначення найбільш пріоритетних вимог щодо системи управління і раціональної послідовності виконання заходів для їхнього досягнення неможливі її своєчасне створення й ефективне функціонування. Аналіз умов функціонування системи управління військових частин оперативного призначення показав, що під час виконання оперативних завдань на процес управління впливають такі фактори, як динамічність і маневреність бойових дій, руйнівна сила застосованої високоточної зброї, імовірність великих втрат в особовому складі і техніці, технічна оснащеність пунктів управління, підготовка посадових осіб органів управління та ін. Вплив цих факторів на вимоги функціонування системи управління неможливо визначити тільки за допомогою математичних моделей та аналітичних розрахунків. Успіх у цих умовах може одержати лише та сторона, яка має ефективну систему управління, всебічно підготовлені органи управління, здатні забезпечити прийняття обґрунтованих рішень і планів, спроможні забезпечити безперервне, оперативне, якісне, стійке і скрите управління військами у складних умовах ведення бойових дій під час впливу противника на систему управління і можливості серйозних порушень у ній. Виконання цих вимог має розглядатися в їхньому взаємозв'язку і залежності. Це одне з головних завдань у дослідженні шляхів удосконалення управління військами (силами) та оцінюванні функціонування системи управління. Досвід ведення бойових дій показує, що необхідно завчасно визначати найважливіші вимоги щодо системи управління і комплексу заходів з метою своєчасного відновлення її функціонування у ході бою (операції).

Ключові слова: операція, військові частини оперативного призначення Національної гвардії України, система управління, пункти управління, вузол зв'язку, засоби повітряного нападу, безпілотні літальні апарати, ударні безпілотні літальні апарати, тактична авіація, крилаті ракети.

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