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OFFICER'S SITUATIONAL AWARENESS NATIONAL GUARD OF UKRAINE

Based on the analysis of special scientific literature and regulatory legal acts, it is concluded that the formation of situational awareness of the commander of a unit of the National Guard of Ukraine is a necessary condition for his making a well-founded and effective decision. It is established that situational awareness is a component of human cognitive activity and can be used as a universal model of management in crisis situations. It is substantiated that the use of innovative information technologies, in particular situational awareness systems, such as "Delta", is of great importance for increasing the level of situational awareness.

Keywords: *situational awareness, decision-making, intelligence support, reconnaissance, intelligence information.*

Statement of the problem. Modern military operations take place in a complex, multidimensional environment that is constantly changing, and commanders have less and less time to process information, develop an operation plan, and make a decision based on the analyzed information [1, p. 140]. In this regard, an important component of decision-making by the commander of the National Guard of Ukraine (NGU) is his situational awareness, the ability to correctly and timely understand the content, meaning, significance, circumstances, and conditions of any change in the operational (combat) situation. To do this, it is necessary not only to improve the system of receiving and processing intelligence information, but also to train specialists for NGU units under the new educational program "Intelligence support for the implementation of tasks by units of the National Guard of Ukraine" specialty 254 Support of troops (forces) [2, p. 62].

The introduction of the latest hardware and software in the activities of the NGU units makes it possible to process significant amounts of intelligence information, to provide (distribute) up-to-date information about the situation to authorized users, to accelerate the implementation of the processes of managing forces and intelligence assets, to increase the survivability of troops, the level of self-synchronization of combat operations, the pace of operations and the effectiveness of defeating the enemy [3, p. 95]. According to the Joint Operational Concept of the Defense Forces 2030, early situational awareness is recognized as one of the key elements of the success of the defense forces. Early situational awareness will ensure the formation of a comprehensive understanding of the situation, intentions and actions of the enemy to ensure timely adoption of the necessary decisions. Thanks to early awareness, assessment and forecasting of current and future threats, the defense forces will be able to effectively plan and implement adequate response measures. The key to early situational awareness will be the improvement of technologies for collecting and processing (analyzing) large amounts of information and presenting results in a simple and understandable form [4, p. 11].

Analysis of recent research and publications. The issue of situational awareness of commanders of various levels was considered in the works of E. Burov, V. Grechaninov, A. Lopushansky, K. Mykich, S. Novgorodsky, I. Oksanych and other scientists. However, scientific and technological progress, the development of technical means of intelligence, the development of new software products necessitate further research in this area.

The purpose of the article is to study the meaning and content of situational awareness of an officer of the National Guard of Ukraine in the process of performing service and combat tasks.

Summary of the main material. Situational awareness is an important part of human cognitive activity. It is not surprising that it has always been the subject of research in the scientific fields of psychology, cognitive science, artificial intelligence, decision theory, robotics, and knowledge-based systems theory.

The concept of situational awareness was coined during World War I by pilot and military tactician Oswald Bölke, who argued that "it is important to become aware of the enemy's awareness before the enemy has acquired similar knowledge and invented a way to achieve it". The idea of separating the human operator's understanding of the state of a system from the actual state of the system is the basis for the modern definition of situational awareness. Situational awareness did not receive much attention in the technical and scientific literature until the late 1980's, but has since become a hot topic of research.

The first studies on situational awareness as a component of a decision support system were conducted for military, aviation and other complex human-machine systems to support the activities of operators. In fact, in such systems, the cost of a possible error is very high, and the operator has to take into account a large number of factors.

Situational awareness is a key element in decision support systems. In particular, in most cases, if the situation is correctly assessed, this automatically determines the sequence of actions that need to be initiated. Methods that solve the problem situation identification task allow you to formalize the expert's knowledge about the signs of problem situations, accumulate and reuse experience in making decisions in similar situations. This makes it possible to check the correctness of decisions in a historical perspective, comparing them with similar situations in the past.

The concept of situational awareness was originally associated with the activities of operators of technical systems, and its definitions have reflected this fact. For example, Billings , defined situational awareness as "an abstraction that exists in our minds and describes the phenomena we observe in people working in complex and changing environments". Many authors have defined situational awareness as a person's ability to respond appropriately to important informational factors.

Subsequently, researchers developed a more general definition of situational awareness, which, on the one hand, does not limit its use only to a human agent, and on the other hand, defines the content and process of developing situational awareness. Thus, the classic and generally accepted definition of situational awareness, developed by Ensley, is as follows: "Tracking elements of the environment within certain spatiotemporal boundaries, understanding their meaning and predicting changes in the near future".

Another definition, complementing Ensley's, states that situational awareness is "the continuous acquisition of information from the environment, the integration of this information with prior knowledge to form a coherent picture, and the use of this picture to guide further acquisition of information and predict subsequent events."

The presence of a large number of scientific articles that raised the issue of situational awareness has led to different interpretations of the meaning of this term. Different authors have defined situational awareness as a structured set of data, a process or a product. In order to avoid such ambiguity, it was proposed to use the term "Situation assessment" (situation assessment), and for the product of this process – the term "Situation awareness" (situational awareness) [5, p. 205, 207].

Summarizing the above definitions, we can agree with the authors who, in relation to the decision-making process by a commander, define situational awareness as obtaining a fairly complete and accurate set of information about the situation necessary for decision-making in real time, including the nature and characteristics of the terrain, weather and climatic conditions, data about the enemy and one's own troops, etc. [6, p. 53].

Situational awareness differs from information in that it enables understanding and predicting future situations. It is necessary in the decision-making process to execute a mission under the given circumstances METT-TC (Mission, Enemy, Terrain, Troops, Time, Civil Considerations – Civil Aspect) [7, p. 54]. This gives grounds to consider it as part of human cognitive activity.

Situational awareness is considered as a combination of the two phases of "observation" and "orientation" of the "observation-orientation-decision-action" (OODA) cycle. Gaining information advantage consists in getting inside the enemy's OODA cycle, and thus increasing the efficiency and validity of management decisions. Loss of situational awareness leads to exiting the OODA cycle, and as a result, loss of control over the battlefield [8, p. 252, 253].

The literature notes that the model of situational awareness formation can be presented as a closed cycle consisting of the following stages.

1. Collection of primary input data ("raw") from various sources, their verification, aggregation and storage in databases.

2. Converting primary input data into information (e.g., data normalization) for storage in databases (e.g., relational).

3. Processing information from databases using methods of intellectual analysis and means of geographic information systems, obtaining knowledge and, as a result, mapping the operational

situation and drawing a conclusion with its assessment and recommendations for further actions.

4. The receipt of the operational situation, its assessment and recommendations to the decision-making center and the processing of these results by the person (group of persons) making the decision. At this stage, mental activity, which is inherent and characterizes the person (group of persons) making the decision, is connected and influences the formation of the overall picture of situational awareness. Mental activity affects the interpretation of the information received.

5. Final formation of situational awareness and decision-making based on it.

6. Decision making and implementation.

After the solution is implemented, input data is collected again to evaluate its results and the process is repeated until the desired results are obtained [6, p. 53].

The primary input data block includes physical and cognitive data. Physical data is data that comes from heterogeneous physical devices, various sensors, drones, onboard systems, video cameras, smartphones, computers, as well as other intelligence data. Physical data is usually mapped using geographic information systems and is represented by layers and overlays that cover a variety of topics, including the geolocation of information sources and objects.

Cognitive level data is data about the thoughts, feelings, moods and intentions of enemy personnel. Identification of these individuals is carried out using the analysis of social networks and their topologies. Automation of obtaining cognitive level data involves the use of text analytics algorithms, analysis of discussed topics, measuring the frequency, multiplicity and intensity of specific spoken words, emoticons , videos, etc. Such data is plotted on maps using color shading to indicate intensity or different colors on the social network diagram.

The primary "raw" input data that enters the input data processing unit, after their initial processing – verification and aggregation, are converted into information, which, in turn, is input for procedures and methods of intelligent analysis and situational modeling. The result of this automated activity is a mapped operational situation and diverse assessments of the situation for the reporting period with recommendations for decision-making [6, p. 55].

Data fusion software from different intelligence sources provides the ability to combine information from multiple sources for recognition, which is usually not possible with a single source of information due to technological or geographical limitations. These multi-sensor systems can be used to improve the accuracy of coordinate determination, reduce information deficits, automatically identify man-made objects, and quickly identify potential targets. The tools of the data fusion system from different sources need to be expanded to be able to predict the future actions of objects being monitored. It is no longer enough to simply provide an image description or use information from a single source, because data fusion software must provide better situational awareness and be able to make decisions in an automated mode. Drawing conclusions from assessing the enemy based on reliable data is very easy, even artificial intelligence is capable of doing this. However, selecting the right input data and placing them in the required sequence is a difficult task. The complexity of the task is combining data with different parameters and different temporal, spatial, spectral and radiometric characteristics. They can be heterogeneous, asynchronous and with inaccurate geographical reference due to different mobility, limited field of view or insufficient GPS signal strength. Flexibility and abstract thinking are inherent in humans and allow them to make decisions based on completely unrelated facts. For the application of machine analysis, the initial data must be clearly formalized. Failure to meet this condition can lead to dangerous consequences [9, p. 86].

There are 3 levels of situational assessment, each of which is a precursor to the next, higher level. This model represents a chain of information processing from perception through interpretation to prediction.

The three-level model consists of the following levels.

1. Perception of information is the lowest level of situational awareness.

2. Understanding the current situation – this level is very important for building an understanding of what is happening.

3. Forecasting the future status is the highest level of situational awareness, which makes it possible to predict the further development of a conflict situation.

Nowadays, the development of automation allows the creation of automated decision support systems to automate the processes that occur at these three levels. Such systems find their application in situational centers for responding to conflict situations [6, p. 56].

Understanding the importance of situational awareness, as well as taking into account the experience of using situational centers by NATO countries, led to the adoption of the Resolution of the Cabinet of Ministers of Ukraine dated July 11, 2023

No. 705 "Issues of a network of situational centers", which determined the need to create and further develop a network of situational centers of state authorities, as well as security and defense sector bodies [10]. A component of the specified network is the Situational Center of the Armed Forces of Ukraine, the functionality of which has been analyzed in detail by researchers [11]. A situational center has also been created in the Main Directorate of the National Security Service with a connection to the nationwide network of situational centers.

The formation of situational awareness can be limited primarily due to unreliable and significantly delayed communication and, as a result, untimely receipt of information, lengthy analysis and lack of data visualization, interacting networks, technologies for aggregating incoming data, and working with big data.

One of the main factors in the development and improvement of the quality of situational awareness today is the use of innovative information technologies, in particular control automation [6, p. 58]. An example is the Delta situational awareness system, which is developed and supported by the Center for Innovation and Development of Defense Technologies of the Ministry of Defense of Ukraine.

Conclusions

Therefore, we can draw certain conclusions regarding the meaning and content of the situational awareness of an officer of the National Guard of Ukraine in the process of performing service and combat tasks.

1. Developing situational awareness for a unit commander of the National Guard of Ukraine is a necessary condition for him to make a well-founded and effective decision.

2. Situational awareness is a component of human cognitive activity and can be used as a universal management model in crisis situations.

3. The use of innovative information technologies, in particular situational awareness systems, such as Delta, is important for increasing the level of situational awareness.

The materials of the article can be used in the process of training future officers of the National Guard of Ukraine.

The prospect of further development of this area is the study of the functionality of situational awareness systems and ways to increase the level of situational awareness of officers of the National Guard of Ukraine.

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СИТУАЦІЙНА ОБІЗНАНІСТЬ ОФІЦЕРА НАЦІОНАЛЬНОЇ ГВАРДІЇ УКРАЇНИ

Метою статті є дослідження значення та змісту ситуаційної обізнаності офіцера Національної гвардії України в процесі виконання службово-бойових завдань. Для виконання зазначеної мети поставлені завдання: дослідити спеціальну літературу; дослідити законодавство, що регулює діяльність Національної гвардії України та інших сил оборони. У ході дослідження використано як загальнонаукові (аналіз, синтез, прогноз), так і спеціальні (порівняльно-правовий, системно-структурний, логіко-правовий, догматичний) методи. Ситуаційну обізнаність запропоновано ідентифікувати як отримання достатньо повного і точного набору інформації у режимі реального часу включно з характером і особливостями місцевості, погодними та кліматичними умовами, даними про противника та його війська тощо. Ситуаційна обізнаність відрізняється від інформації тим, що вона дає змогу зрозуміти та передбачити майбутні ситуації. Розрізняють три рівні ситуативного усвідомлення: 1) сприйняття інформації; 2) розуміння поточної ситуації; 3) прогнозування майбутнього стану. На основі проведеного аналізу зроблено висновок, що сформованість ситуаційної обізнаності командувача Національної гвардії України є передумовою прийняття обґрунтованого та ефективного рішення. Визначено, що ситуаційна свідомість є складником пізнавальної діяльності людини і може бути використана як універсальна модель управління у кризових ситуаціях. Обґрунтовано, що для підвищення ситуаційної обізнаності важливим є використання інноваційних інформаційних технологій, зокрема систем ситуаційної обізнаності, наприклад, «Дельта». Перспективою подальшого розвитку цього напряму є дослідження функціональних можливостей систем ситуаційної орієнтації та шляхів підвищення рівня ситуаційної обізнаності офіцерів Національної гвардії України.

Ключові слова: *ситуаційна обізнаність, прийняття рішення, розвідувальне забезпечення, розвідка, розвідувальна інформація.*

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