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IMPLEMENT OPERATIONAL ACTIONS USING DIGITAL CARDS IN SETTLEMENTS

ABSTRACT

One of the priorities of state policy in the field of defense is to increase the effectiveness of protection of the population of our country from various emergencies. The role of the population in the process of population location and territorial organization, production facilities, and public relations with the environment is enormous. It will be necessary to take operational measures within. The article analyzes the complexities of the rapid (rapid) evacuation of the population to a safe area and what should be considered in the professional implementation of their evacuation without casualties and develops recommendations.

Keywords: Tactical characteristics, emergency, accident, catastrophe, natural disaster, weapons of mass destruction, reconnaissance, intelligence, digital card.

ОСУЩЕСТВЛЯТЬ ОПЕРАТИВНЫЕ ДЕЙСТВИЯ С ИСПОЛЬЗОВАНИЕМ ЦИФРОВЫХ КАРТ В НАСЕЛЁННЫХ ПУНКТАХ

Аннотация

Одним из приоритетов государственной политики в области обороны является повышение эффективности защиты населения нашей страны от различных чрезвычайных ситуаций. Роль населения в процессе размещения и территориальной организации населения, производственных мощностей и связей с окружающей средой огромна, необходимо будет принимать оперативные меры внутри. В статье проанализированы сложности эвакуации населения в оперативно безопасную зону и на что следует обратить внимание при

профессиональном выполнении их эвакуации без пострадавших, а также даны рекомендации.

Ключевые слова: тактические характеристики, чрезвычайная ситуация, авария, катастрофа, стихийное бедствие, оружие массового поражения, разведка, рекогносцировка, цифровая карта.

Introduction. The large-scale reforms being carried out in our country are of great importance for the security and peaceful life of citizens, including the military sector. There is a great need to use the latest generation technologies in the military to ensure the rapid and efficient operation of the industry. In the modern advanced foreign experience in the military field, new methods of using digital cards in the implementation of operational activities are widely used. In recent years, our country has also established cooperation with leading countries in the development of science and technology to increase the military potential of New Uzbekistan. In particular, in cooperation with the CIS countries, military field exercises, various military competitions, exchange of experiences are being carried out. The study and introduction of digital maps in the military field, along with increasing the strength of our National Army, will contribute to the development of the science of military topography.

The tactical features of the area are crucial in combat and emergencies, including in evacuating the population to a safe area. This, in turn, provides an in-depth study of the tactical characteristics of the place, and thus to achieve efficiency and superiority in combat situations. In a war situation, there is a need not only to evacuate civilians but also to protect their homes from weapons of mass destruction, natural disasters, accidents, various catastrophes, to develop tasks of rapid and safe movement in the desired direction using maps.

Relevance of the topic. To increase the efficiency of the Armed Forces of our country, to develop effective tactical features that can be used in combat situations, an in-depth study of geographical conditions and settlements is relevant. By the 1990s, the threat of nuclear war had diminished, the use of biological

weapons had been curtailed, new types of modern weapons had been discovered, and they were aimed at destroying economic facilities rather than being dangerous to humans. The amount of damage caused by various accidents, catastrophes, and natural disasters in the countries is also increasing. Of course, in such a situation, it is possible to turn the situation in a positive direction by considering all ways to eliminate the damage. Currently, there are interactive maps that are part of the digital maps to study the geographical conditions of the selected area and define the tasks in the area, which are characterized by the fact that you can specify the location, distance to the destination, and time to reach the destination. An interactive map helps you identify landmarks that are close to the area you are looking for on the ground, navigate in different directions, and resize the area. This card is effective in carrying out operational actions in emergencies. However, these interactive maps, like topographic maps, do not show the obstacles, road features that impede the movement of equipment in military operations or emergencies. The inability of the interactive maps to fully reveal the tactical features of the location does not ensure that the combat troops can perform the tasks assigned to them to the maximum extent.

The 3D maps created in the ArcGIS program are characterized by a clear representation of natural and anthropogenic barriers that are difficult to cross. It is important to accurately enter the dimensions of combat machines on 3D maps, to know the essence of the colors used in the graphics program, to pay attention to the mixing of colors. The reason is that the color in the observation and masking of the place hurts the complete study of the place. Of particular importance is the availability of officer cadres who can use 3D cards professionally. In general, it is important to provide military personnel who use cards professionally for combat operations and operational movement of the army in emergencies.

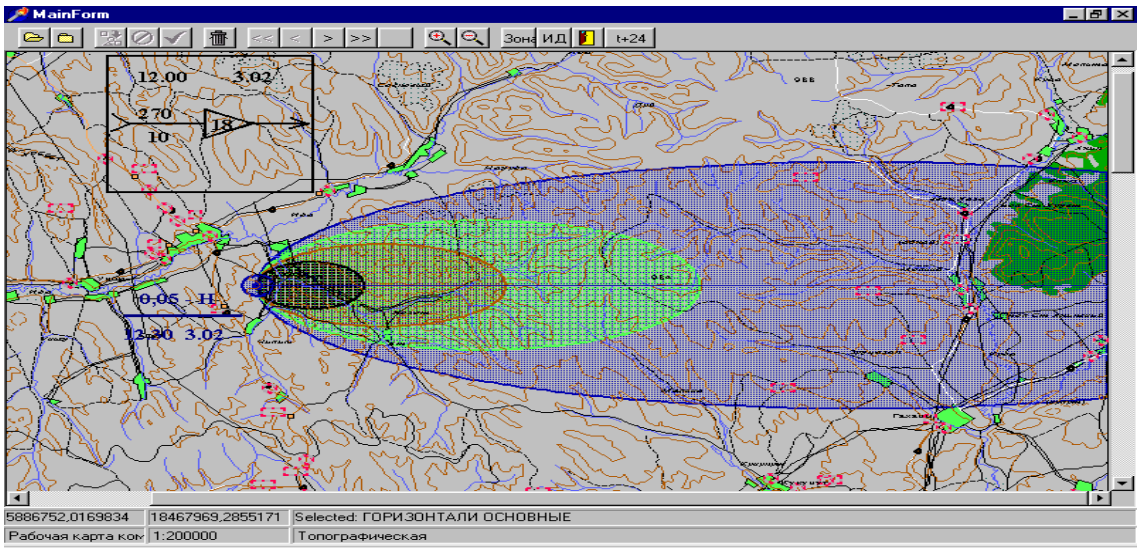

Figure 1. Distribution of radiation on a digital map as a result of the use of weapons of mass destruction on the ground (under the influence of wind)

It is necessary to have in-depth knowledge and skills in distinguishing the characteristics of natural and man-made phenomena in different emergencies, to make quick and clear decisions in the rapid evacuation of the population.

Research Methodology. Theoretical analysis, visual, comparative methods were considered in the study of the work, i.e., historical and modern combat situations were analyzed to more fully cover the tactical features. Maps published in historical and different years; topographic, digital, and three-dimensional maps were visually observed and compared with each other [1. P. 114].

To increase the effectiveness of the study of tactical features of the place, it is necessary to pay attention to the following:

- development of proposals for the selection of suitable positions for the army and equipment, depending on the location, depending on the facilities located in the area;

- effective implementation of topographic, aerial photography, digital relief maps with deep tapping, formation of a system of full location of troops and equipment in combat and emergencies, as well as in motion;

- Development of methods for studying digital maps for various geoinformation tasks based on location information: rapid movement in unfamiliar areas in combat situations, development of a scheme of movement in safe areas for evacuation, and ensuring its effectiveness.

Literature review (Level of study of the topic). Gulyamova L.X. The textbook of geoinformation systems and technologies covers theoretical and practical issues of geoinformation systems and technologies, cartographic bases, databases, features of digital data, specific features of the use of spatial data. There are also ways to represent the conditions of the place on digital maps, the following recommendations for relocating people in different areas:

availability and update of statistics on the evacuation of the population to a safe area in combat and emergencies, the launch of interactive maps to improve public services. Area modeling includes computerized memory of hazardous indicators for the population, including population location, social and economic indicators, daytime or school attendance, number and age of people living at night, availability of communications and transport, and evacuation-free movement patterns [2. P. 128].

Z. N. Tadjieva's textbook "Population Geography" describes the basic terms of population geography, geographical patterns in the distribution of the world's population, the natural growth and mechanical movement of the population, the characteristics of regional diversity. It also provides information on the number and composition of the population in the regions, the laws of reproduction, migration, location, settlements and their formation, types, and factors influencing the formation of urbanization, depending on local conditions[3. P.246]. From the point of view of our research, the main recommendations are given in the following recommendations for achieving efficiency in operational activities in combat and emergencies:

the main trends in the evacuation of the population to a safe area in combat and emergencies - the increase in the spatial scale, dynamics, and resilience of

combat operations - require the collection and processing of information describing the situation and necessary for the commander. In turn, such a process ensures that the commander makes the right decision on the spot;

using topographic, digital maps, and satellite imagery to fully explore the location, the number, size, building material, schools, and hospitals that are close and safe to relocate will be studied;

the general description of the evacuation area is studied: open area and level of intersection, conditions of passage, masking and observation, identification of the protective effect of the site and the scope of impact in the event of a man-made explosion, identification of objects, roads;

the textbook studies the population, birth, migration, urbanization process as criteria, and considers it necessary to take into account these criteria in the resettlement of the population in combat and emergencies.

Analysis and results. Road networks passing through the mountainous areas of the Tashkent region of the Republic of Uzbekistan based on the above information and the data of the atlas of local lore of the Tashkent region; urban and rural buildings; vegetation and soil cover in mountainous areas were analyzed. To reach the designated area in a short time, it is advisable to use the following information on the road surface, the width of the road, and the shortest route to the destination.

Depending on the type of road surface and its condition, the average speed of movement of troops along the column on highways [1]

The coating type	The average speed in km / h			
	The new coating	Renovated coating	With unrepaired coating and damaged areas	
			Up to 10% of the total road	More than 10% of the total road
Cement concrete	50	-	-	-
Asphalt concrete	50	40-50	20-35	10-20
A mixture that binds gravel and small stones	50	40-50	20-30	10-20

[1] Ivankov P.A., Zakharov G.V. “Terrain and its influence on the fighting of troops” M., Military, 1969. page-23

Gravel and small stones	40	30-40	20-30	10-20
Rocky floor	45	30-40	20-30	10-20
The gravel laid on the road	35	25-35	15-25	10-20
A simple way (bed)	30	20-30	10-20	5-12
Uncoated (ground cover)	25	15-25	8-15	5-10
Made of wood	25	20-25	8-10	5-6

Determining the speed about the width of the carriageway and two-way traffic of a fixed vehicle [2]

Width of the road, m	8	7,5	7,25	7	6,5	6,25	6
Constant speed, km / h	50	45	40	35	25	20	10

The total length of roads in the Tashkent region is 6.6 thousand km (including 5.9 thousand km of paved roads). By comparing the data in the table above and the paths through the map, it is possible to determine the speed of the combat technique in the future in the selected direction.

In a combat situation, residential buildings located on the ground perform the functions of defense, protection, and masking. Fire resistance and stability of the building material are some of the main requirements of building construction [4. P. 10]. The effect against firearms, artillery, and nuclear weapons was studied based on the building material. Impact wave and light radiation resistance The impact pressure on the building material is as follows: wooden buildings at 0.2 kg / cm^2, multi-story brick buildings at 0.35-0.45 kg / cm^2, reinforced concrete buildings at 0.6-0.8 kg / cm^2 will be destroyed. The windows, doors, and roofs of the building will be destroyed by a shock wave at 0.1 kg / cm^2. Also, in light radiation, wood materials start to burn at a light pulse of 5-8 cal / cm^2 and the duration of the fire is 40-60 minutes. The duration of the fire in plastered wooden buildings is 1.5-2 hours. Brick, stone, concrete buildings are highlighted on topographic maps in dark flame color, and the duration of the fire in these buildings is 2-3 hours[6. P. 30]. The shock wave resistance of these buildings will also depend on their location. Square-shaped buildings will be more resistant to

[2] Ivankov P.A., Zakharov G.V. “Terrain and its influence on the fighting of troops” M., Military, 1969. *page-28*

longitudinally constructed buildings, a situation that can also be observed in urban defense[6. P. 30]. The shock wave resistance of these buildings will also depend on their location. Square-shaped buildings will be more resistant to longitudinally constructed buildings, a situation that can also be observed in urban defense [5. P. 86]. Of course, information about the buildings is analyzed through satellite images, i.e. information such as the number of apartments, the floor of the buildings, the distance between them must be entered into a digital map in advance.

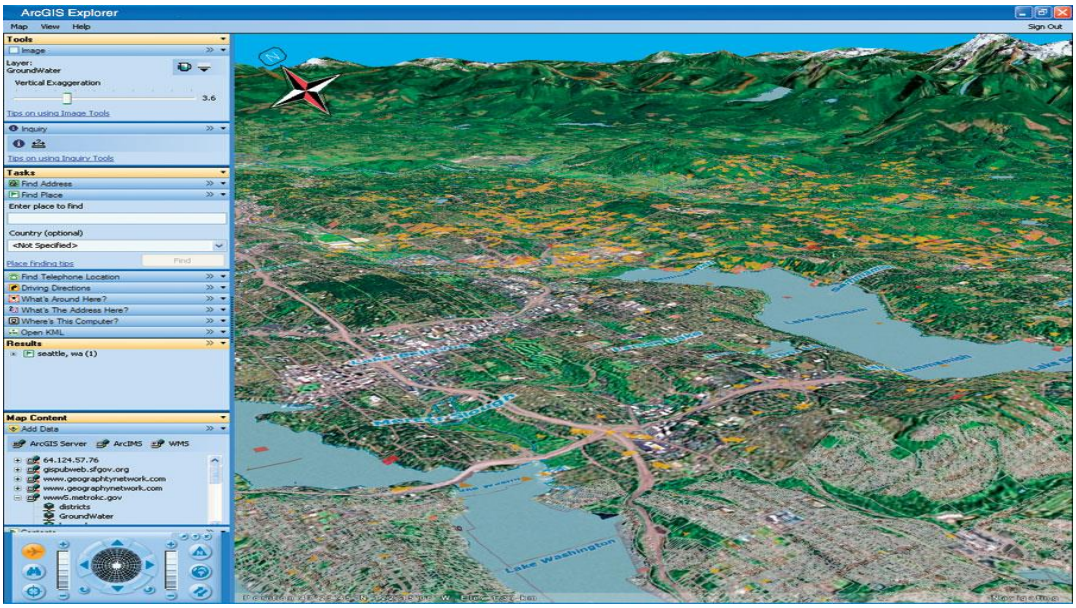

Figure 2. A digital card configured in ArcGIS

Based on the above information, a specific area is selected in the digital relief map created in the GIS program, on the three-dimensional map of this area can be visually analyzed the situation on the ground using the network analysis method, as well as develop protection measures in future situations. Using three-dimensional modeling in the research process allows you to describe the best realistic view of the place, the environment around the objects, and their location relative to each other.[8. P. 15]. It is advisable to use ArcGIS software to display all the details of the relief [9. P. 13], this program has a high advantage in the description of the relief with the ability to perform more than a hundred tasks compared to other programs, the development of plans of tactical tasks and the application of network analysis method to these works are performed on-site automated optimal solutions.

Conclusion/Recommendations. In conclusion, we can say that the full and effective implementation of the tasks set for the combat army can be achieved by studying the landforms that affect the tactical characteristics of the place in combat and emergencies. To do this, it is planned to use a digital model of relief, which clearly and visually demonstrates the combat situation, on a large scale in the region or selected areas (mountainous, hilly areas) and in practice to conduct reconnaissance, location, rapid selection, and search of targets. Based on the above, we make the following suggestions:

- the continuous study of ground conditions in combat and emergencies from maps and available data, gaining professional skills in developing a scheme of movement to safe areas;

- military and working personnel have a certain period (3-5) years of experience to carry out communicative action in combat and emergencies;

- Establishment of exchange of experience to regularly learn the best practices of the world in this area;

-Our country is currently using satellite signals from other countries for rent, and the low number of satellites also reduces the accuracy of the data, which is why it is necessary to develop the field of space geodesy in our country;

- Focus on the development of innovations in this area, as well as the effective use of existing ones.

References

1. Gavrilov A.V., Andreev V.A et al. Military topography. Textbook, 3rd ed. - SPb .:VKA im. A.F. Mojayskogo, 2018. -528 p.
2. Gulyamova L.X. Geoinformation systems and technologies. Textbook. –T.: Universitet, 2018 y. Page 187.
3. Tojieva Z.N. Population geography. Textbook. –T.: Science and Technology, 2019. 248 P.
4. Yudina A.F. Construction of residential and public buildings, textbook. M.: Academy, 2011, 368-p.

5. Ivanov V.G., Bashlaev R. Application of geoinformation systems and means of three-dimensional modeling to create 3D models of the area of deployment of elements of the communication system during combat operations - M., 2017, 217 p.
6. Ivankov P.A., Zakharov G.V. “Mestnost i ee vliyanie na boevye deystviya voysk” M., Voenizdat, 1969. Str-208. 6. Lure I.K. Geoinformatsionnoe kartografirovanie. Methods of geoinformatics and digital processing of space snapshots. - M .: size-vo KDU, 2008. - 428 p.
7. Paul A. Longley, Michael F. Goodchild, David J. Maguire, David W. Rhind. Geographic Information Science and Systems, 2015. 496 pages.
8. Plewe B. GIS Online: Information Retrieval, Mapping, and the Internet. - Geoinformation, International, Cambridge, UK, 1997. - 311 pages.